

	2. Herpes Simplex Infection
Session 21 (Week 24 &25)	<ul style="list-style-type: none"> ● Infectious Diseases Viral Infections. 3. Varicella-Zoster Virus 4. Epstein-Barr Virus 5. Coxsackievirus Infections
Session 22 (Week 26)	<ul style="list-style-type: none"> ● Hand-Foot-and-Mouth Disease ● Acute Lymphonodular Pharyngitis ● Other Viral Infections That May Have Oral Manifestations.
Session 23 (Week 27)	Practical final exam
Session 26 (Week 28)	Theoretical and oral Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	<p>By the end of the course, the student be able to:</p> <ul style="list-style-type: none"> - Communicate effectively with colleagues. - Work in group (team work). - Time management. - Give p.pt presentation. - Implement of dental laboratory instruments and devices. - Write a report about the steps that implemented in the laboratory. - Use the Internet for preparing scientific researches. - Criticize his/her work. - Think critically to solve the problem may be faced during the work.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Pharmacology

1	Course name	Pharmacology
2	Course Code	MT306
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Bachelor in Medical Technology Specializing in Dental Technology
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide how a drug affects a biological system and how the body responds to the drug. The discipline encompasses the sources, chemical properties, biological effects and therapeutic uses of drugs.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Essential of general pharmacology book.Lippincott's Illustrated Reviews: pharmacology book.Pharmacology and drug administration for imaging technology book. • Basic Pharmacology Understanding Drug Actions and Reactions By Maria A. Hernandez,, Appu Rathinavelu, 1st edition 2006. • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor. • A Textbook of Clinical Pharmacology and Therapeutics, 5th By James Ritter, Lionel Lewis, Timothy Mant, Albert Ferro 2008 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		One academic year
Delivery		Lecture-based.Group interaction and discussion. self-directed activities. Active participation.



Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Acquire new knowledge in pharmacology by conducting and promoting innovative research. • Establish the efficacy, safety and effectiveness of medication in humans, to discover new lead compounds and to understand the mechanisms of action of drugs. • Report the clinical applications, side effects of drugs used in medicine. • Translate pharmacological principles into clinical decision making.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<p>B. General pharmacology:</p> <ul style="list-style-type: none"> • Introduction. • Drug sources. • Routes of drug administration. • Pharmacokinetics.
Session 2 (Week 2)	<p>C. General pharmacology:</p> <ul style="list-style-type: none"> • Pharmacodynamics. • Drug adverse effects and toxicity. • Drug-drug interactions.
Session 3 (Week3)	<p>D. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Introduction. • Sympathomimetics. • Sympathetic depressants.
Session 4 (Week4)	<p>B. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Parasympathomimetics. • Parasympathetics depressants.
Session 5 (Week5)	<p>B. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Drug acting on autonomic ganglia. • Skeletal muscle relaxants. • Drug acting on the eye.
Session 6 (Week 6)	<p>C. Autacoids:</p> <ul style="list-style-type: none"> • Histamine & serotonin. • Prostaglandins & eicosanoids. • Vasoactive peptides.
Session7 (Week 7)	<p>D. Central nervous system:</p> <ul style="list-style-type: none"> • Introduction. • Sedative & hypnotics.
Session8 (Week 8)	<p>D. Central nervous system:</p> <ul style="list-style-type: none"> • Analgesics and antipyretics & NSAID. • Narcotic analgesics. • Anticonvulsants & antiepileptics



Session9 (Week 9)	D. Central nervous system: <ul style="list-style-type: none"> • Antiparkinsonian drugs. • Antipsychotics and antianxiety & antidepressants. • Local & general Anaesthetic.
Session10 (Week 10)	E. Cardiovascular system: <ul style="list-style-type: none"> • Antihypertensive & antishock drugs. • Cardiac glycosides and congestive heart failure. • Antiarrhythmic drugs. • Drugs used in angina pectoris.
Session 11 (Week 11)	Topics to be covered in the session (week12) F. Blood: <ol style="list-style-type: none"> 1. Coagulants, anticoagulants, fibrinolytics & antiplatelets. 2. Drugs used in treatment of anemia. 3. Drugs used in treatment of hyperlipidemia.
Session 12(Week 12)	G. Chemotherapy: <ul style="list-style-type: none"> • Sulphonamides & quinolones. • B-lactum antibiotics (penicilins, cephalosporins).
Session 13 (Week 13)	G. Chemotherapy: <ul style="list-style-type: none"> • Chloramphenicol & tetracyclines. • Aminoglucoisides antibiotics. • Antifungal drugs
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	G. Chemotherapy: Antiviral drugs, Antituberculus, Antimalarial drugs & antiprotozal.
Session 16 (Week 16)	H. Endocrie drugs: Antidiabetics drugs and Antithyroid drugs.
Session17 (Week 17)	H. Endocrie drugs: <ul style="list-style-type: none"> • Drug affecting bone mineral homeostasis (pth, vit.D, calcitonin).
Session 18 (Week 18)	H. Endocrie drugs: <ul style="list-style-type: none"> • Corticosteroids. • Sex hormones, contraceptives drugs.
Session 19 (Week 19)	I. Respiratory system: <ul style="list-style-type: none"> • Drugs used in treatment of bronchial asthma.
Session 20 (Week 20)	I. Respiratory system: <ul style="list-style-type: none"> • Cough therapy. * Gas therapy
Session 21(Week 21)	J. GIT: <ul style="list-style-type: none"> • Drugs used in treatment of peptic ulcer • Antiemetic drugs.
Session22(Week22-23)	J. GIT: <ul style="list-style-type: none"> • Drugs used in treatment of constipation and diarrhea. • Antispasmodics.
Session23(Week23-28)	K. Urinary tract: 1. Diuretics. 2. Urinary tract infection.
Session24(Week29)	Revision and discussion
Session25(Week 30)	Final exam



Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	Knowledge of basic clinical skills required to meet the skills objective including interviewing, physical diagnosis, communication and clinical reasoning processes.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Research Methodology

1	Course name	Research Methodology
2	Course Code	MT301
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:

This course will provide students with a fundamental understanding of the research Methodology and offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Includes computer applications for research.

Textbooks required for this Course:

- Tuckman, B. W. & Harper, B. E. (2012). Conducting educational research (6th ed.). Lanham, MD: Rowan & Littlefield Publishers (ISBN: 978-1-4422-0964-0).
- Cohen, L. Lawrence, M., & Morrison, K. (2005). Research Methods in Education (5th edition). Oxford: Oxford University Press.
- Denscombes, M. (2010). The Good Research Guide: For small-scale social research projects. Maiden-Read: Open University Press.
- Dorneyi, Z. (2007). Research Methods in Applied Linguistics. Oxford: Oxford University Press.
- Hoadjli, A.C. (2015). The Washback Effect of an Alternative Testing Model on Teaching and Learning: An exploratory study on EFL secondary classes in Biskra. Unpublished Doctoral Thesis, University of Mohamed Kheider, Biskra.
- Kothari, C. R. (1980). Research Methodology: Research and techniques, New Delhi: New Age International Publishers.



	<ul style="list-style-type: none"> • Kumar, R. (2011). Research Methodology: a step-by-step guide for beginners (3rd edition). London, UK: TJ International Ltd, Padstow, Cornwall • Leedy, P. D. (1980). Practical Research: Planning and design. Washington: Mc Millan Publishing Co., Inc. • Singh, Y. K. (2006). Fundamental of Research Methodology and Statistics. New Delhi. New International (P) Limited, Publishers. • Wallinman, N. (2006). Your Research Project: A step-by-step guide for the first-time researcher. London: Sage Publications. • http://www.pitt.edu/~super7/43011-44001/43911.ppt • http://web.tamu-commerce.edu/academics/graduateSchool/ • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completing this course, each student will be able to:</p> <ul style="list-style-type: none"> • Understand some basic concepts of research and its methodologies and identify appropriate research topics. • Demonstrate knowledge of research processes (reading, evaluating, and developing). • Perform literature reviews using print and online databases. • Understand the formats for citations of print and electronic materials. • Identify, explain, compare, and prepare the key elements of a research proposal/report. • Compare and contrast quantitative and qualitative research paradigms, and explain the use of each of them. • Describe, compare, and contrast descriptive and inferential statistics, and provide examples of their use in research. • Describe sampling methods, measurement scales and instruments, and appropriate uses of each. • Explain the rationale for research ethics and importance • select and define appropriate research problem and parameters • prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner • Write a research report, thesis and research proposal. • Make Critical Appraisal of the Literature
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to research methodology <ul style="list-style-type: none"> • Meaning of Research • Definitions of Research • Objectives of Research
Session 2 (Week 2)	Introduction to research methodology <ul style="list-style-type: none"> • Motivation in Research

	<ul style="list-style-type: none"> • General Characteristics of Research • Criteria of Good Research
Session 3 (Week 3)	<p>The Research Problem</p> <ul style="list-style-type: none"> • Scientific Thinking • What is a Research Problem? • Selecting the Problem • Sources of the Problem • Defining a Problem • Statement of a Problem • Delimiting a Problem • Evaluation of a Problem <p>Assignment 1 handed out</p>
Session 4 (Week 4)	<ul style="list-style-type: none"> • The Review of Literature <ul style="list-style-type: none"> • Meaning of Review of Literature • Need of Review of Literature • Objectives of Review of Literature • Sources of Literature • The Functions of Literature • How to Conduct the Review of Literature • Some Hints for the Review of Literature • Precautions in Library Use • Reporting the Review of Literature
Session 5 (Week 5)	<p>Practice on how to find a literature</p> <ul style="list-style-type: none"> • Selecting a topic • Highlighting the electronic websites that help to better search of literature
Session 6 (Week 6)	<p>The Research Hypotheses</p> <ul style="list-style-type: none"> • Meaning of Hypothesis • Definitions of Hypothesis • Nature of Hypothesis • Functions of Hypothesis • Importance of Hypothesis • Kinds of Hypothesis • Characteristics of a Good Hypothesis • Variables in a Hypothesis • Formulating a Hypothesis • Testing the Hypothesis <p>Assignment 2 handed out</p>
Session 7 (Week 7)	<p>The Research Approach</p> <ul style="list-style-type: none"> • The Philosophical Background • The Qualitative Approach • The Quantitative Approach • The Mixed-Methods Approach
Session 8 (Week 8)	Criteria for Selecting a Research Approach
Session 9 (Week 9)	<p>The Research Designs</p> <ul style="list-style-type: none"> • Meaning of research design • Need for research design • features of a good design
Session 10 (Week 10)	Review
Session 11 (Week 11)	<p>Assignment of research paper</p> <ul style="list-style-type: none"> • selecting paper

	<ul style="list-style-type: none"> • guidelines of reading research paper
Session 12 (Week 12)	Assignment of research paper <ul style="list-style-type: none"> • Review before submitting the assignment
Session 13 (Week 13)	Cross-sectional study
Session 14 (Week 14)	Case-control study
Session 15 (Week 15)	Cohort study
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Experimental study
Session 18 (Week 18)	Criteria for Selecting a Research design
Session 19 (Week 19)	Sampling <ul style="list-style-type: none"> • Meaning and Definition of Sampling • Functions of Population and Sampling • Methods of Sampling • Characteristics of a Good Sample • Size of a Sample
Session 20 (Week 20)	Data Collection Methods <ul style="list-style-type: none"> • Questionnaires • Interviews • Focus Groups • Observation
Session 21 (Week 21)	Interviewing techniques <ul style="list-style-type: none"> • Face-to-face interview • Telephone interview • Computer based interview
Session 22 (Week 22)	Data management and analysis <ul style="list-style-type: none"> • Descriptive statistics • inferential statistics
Session 23 (Week 23)	Writing research proposal
Session 24 (Week 24)	Writing research report
Session 25 (Week 25)	Critical Appraisal of the Literature
Session 26 (Week 26)	Guidelines for submitting graduation project
Session 27 (Week 27)	Review of research methodology
Session 28 (Week 28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Oral Histology

1	Course name	Oral Histology
2	Course Code	DT309
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Biology/Histology
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of oral histology in a complete simplified way. Oral histology course provide dental students with a better understanding of the cellular components of the oral hard and soft tissues, supplying a scientific basis upon which clinical decisions for dental treatment can be made
Textbooks required for this Course:		<ul style="list-style-type: none"> • Essentials of oral biology, first edition, maji jose. india, 2010. • Essentials of Oral Histology and Embryology A Clinical Approach by Daniel Chiego 5th Edition - January 7, 2018 • Fundamentals of Oral Histology and Physiology by Arthur R. Hand, Marion E. Frank 2015 • Textbook of Dental and Oral Histology with Embryology and Multiple Choice Questions by Satish Chandra, Shaleen Chandra, Girish Chandra, Mithilesh Chandra, Nidhee Chandra 2010, DOI: 10.5005/jp/books/10905 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments and apply lecture material during the laboratory session while completing the assignment using the virtual microscope, Histology Atlas located on your external hard drive, and lecture slides
Course Objectives:		<p>Upon completion of this course, the students should have the ability to:</p> <ul style="list-style-type: none"> • Understand the e functional and microscopic organization of normal human tissue and the development of the face and oral cavity • Identify the Cell Structure and Basic Tissues, Histology of Organ Systems and Histology of the Face and Oral Cavity • Recognize the four basic body tissues of the oral cavity, teeth and supporting tissues.



	<ul style="list-style-type: none"> Identify representations, terms, conditions that used in oral histology Recognize the structural similarities and differences between the cells/tissues/organs studied in the course. Explain a foundation for the study of physiological function, pharmacological effects and pathological alterations of the human body. Implement a e histological structure of the human body and understand how this relates to function and the relationship to gross anatomy.
Course Assessments	Midterm exam 20% activities: 10% Attendances 10% Final Exam: 60% A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	General embryology Development of orofacial structures <ul style="list-style-type: none"> Formation of face
Session 2 (Week 2)	<ul style="list-style-type: none"> Histology Course Orientation Cell Structures and Functions basic Types of the body tissues
Session 3 (Week 3)	Epithelium tissue Types of Epithelium tissue Characteristics of epithelial tissues Function of epithelial tissues
Session 4 (Week 4)	Connective Tissue Types of Connective tissue Characteristics of Connective tissues Function of Connective tissues
Session 5 (Week 5)	Nerve Tissue Types of Nerve tissue Characteristics of Nerve tissues Function of Nerve tissues
Session 6 (Week 6)	Muscle Tissue Types of Muscle tissue Characteristics Muscle tissues Function of Muscle tissues
Session 7 (Week 7)	Development of tooth Dental lamina Stages of development of tooth Morphological stages <ul style="list-style-type: none"> Physiological stages
Session 8 (Week 8)	introductin <ul style="list-style-type: none"> Enamel and amelogenesis Characteristic features of enamel
Session 9 (Week 9)	Topics to be covered in the session (week) <ul style="list-style-type: none"> Physical properties of enamel Chemical composition of enamel Structure of enamel
Session 10 (Week 10)	PBL assessment (project based learning)
Session 11 (Week 11)	Midterm exam
Session 12 (Week 12)	<ul style="list-style-type: none"> dentin and dentinogenesis



	<ul style="list-style-type: none"> • Characteristic features of dentin
Session 13 (Week 13)	<p>Topics to be covered in the session (week)</p> <ul style="list-style-type: none"> • Physical properties of dentin • Chemical composition of dentin <p>Microscopic Structure of dentin</p>
Session 14 (Week 14)	<ul style="list-style-type: none"> • pulp <p>Morphological characteristic of pulp Coronal pulp Radicular pulp Apical foramen</p>
Session 14 (Week 14)	<p>Zones of pulp Structure of pulp Functions of pulp Age changes</p>
Session 15 (Week 15)	Midterm practical exam
Session 16 (Week 16)	<ul style="list-style-type: none"> • cementum and cementogenesis • Physical properties • Chemical composition <p>Types of cementum</p>
Session 17 (Week 17)	<p>Structure of cementum Primary acellular cementum Secondary cellular cementum Differences between acellular and cellular Functions of pulp cementum</p>
Session 18 (Week 18)	<ul style="list-style-type: none"> • periodontal ligament <p>Components of periodontal ligament development microscopic structure of periodontal ligament</p>
Session 19 (Week 19)	<p>Structure of periodontal ligament Cellular components Extracellular component</p> <ul style="list-style-type: none"> • Functions of periodontal ligament
Session 20 (Week 20)	<ul style="list-style-type: none"> • alveolar bone <p>Structure of alveolar bone Parts of the alveolar bone, Development</p>
Session 21 (Week 21)	<p>Chemical composition Bone histology , Cells of bone, Bone remodeling</p>
Session 22 (Week 22)	<p>Oral mucosa Function of oral mucosa Classification of oral mucosa Structure of oral mucosa</p>
Session 23 (Week 23)	<p>Salivary glands Classification of salivary glands Gross morphology, Microscopic structure</p>
Session 24 (Week 24)	<p>temporomandibular joint anatomy and histology of TMJ ligaments of TMJ, movements of TMJ</p>
Session 25 (Week 25)	<p>Maxillary sinus Anatomy of maxillary sinus Microscopic features of maxillary sinus</p>
Session 26 (Week 26)	<p>histopathological techniques</p>

	steps of histopathology Tissue processing, Microtomy, Types of microtomes
Session 27 (Week 27)	Revision and discussion
Session 28 (Week 28)	Practical Final Exam
Session 29(Week 29-32)	Theoretical and oral final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ج . المقررات الدراسية للسنة الرابعة قسم تقنية الاسنان

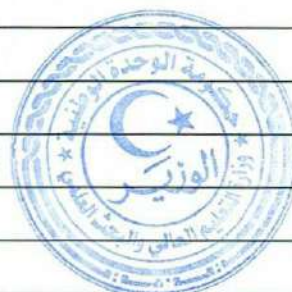


Removable Prosthodontic II

1	Course name	Removable prosthodontic II
2	Course Code	DT401
3	Course type: /general/specialty/optional	specialty
4	Accredited units	4
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Removable Prosthodontic I
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
	Brief Description:	This course is designed to the undergraduate students at the 4 th year, and this course will provide the students with the necessary theoretical background that includes explanations all the types of removable partial denture , indication , contraindication, the laboratory steps of fabricatingetc
	Textbooks required for this Course:	<ul style="list-style-type: none"> • Phillips' Science of Dental Materials by Hiayi Shen, H. Ralph Rawls, Josephine Esquivel-Upshaw 13th Edition - May 13, 2021 • McCracken's Removable Partial Prosthodontics by Alan Carr, David Brown 13th Edition - November 3, 2015 • http://www-personal.umich.edu/~sbayne/dental-materials/RPD- - Acrylic-HO.pdf • (http://www.fotosearch.com/photos-images/dentures.html). • http://www-personal.umich.edu/~sbayne/dental-materials/RPD- - Acrylic-HO.pdf • http://www.fotosearch.com/photos-images/dentures.html. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
	Course Duration	4 * 28 = 112 teaching hours
	Delivery	Lecture- practice lectures – educational videos –training – collect information from libraries and internet - based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
	Course Objectives:	<p>Upon completion of this course students should have the ability to:</p> <ul style="list-style-type: none"> • Understand the various processing steps used during fabrication of partial denture. • Identify various materials used in fabrication. • Recognize the theoretical background of different partial dentures.



	<ul style="list-style-type: none"> Identify the different steps of constructing different partial prosthesis. Construct interim denture and flexible denture. Implement a dental laboratory instruments and devices professionally.
Course Assessments	<p>Assignment 1: PBL (Report, p.pt presentation, Model) 15%</p> <p>Midterm: Theoretical Midterm 10%, practical midterm 10 %, Daily Assessments: Homework and Quizzes 5 %</p> <p>Exam: Theoretical 30%, Practical 30%</p> <p>A 60 % is required for a pass in this course.</p> <p style="text-align: right;">Final</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	- Introduction of removable partial denture (RPD)
Session 2 (Week 2)	- RPD component of Chromium cobalt
Session 3 (Week 3)	- Major connector.
Session 4 (Week 4)	-maxillary major connector.
Session 5 (Week 5)	-Mandibular major connector-
Session 6(Week 6)	- types of minor connector
Session 7 (Week 7)	-fabrication of minor connector
Session 8(Week 8)	- Rest
Session 9 (Week 9)	-Types of Rest
Session 10 (Week 10)	-Rest seat
Session 11 (Week 11)	Midterm Exam
Session 12 (Week 12)	-Types of rest seat
Session 13 (Week 13)	-Direct retainer for class I , II -Direct retainer for class III , IV
Session 14 (Week 14)	-indirect retainer
Session 15 (Week 15)	-types of indirect retainer
Session 16 (Week 16)	- dental surveyor
Session 17 (Week 17)	- Types of dental surveyor
Session 18 (Week 18)	Midterm practical exam
Session 19 (Week 19)	- uses of dental surveyor
Session 20 (Week 20)	- objectives of dental surveyor
Session 21 (week 21)	- tooth selection
Session 22 (week 22)	- types of Denture base
Session 23 (week 23)	- RPD component of acrylic resin
Session 24 (week 24)	- RPD acrylic resin fabrication
Session 25 (week 25)	- Interim partial denture





Session 26 (week 26)	- Flexible denture
Session 27 (week 27)	- repair of partial denture.
Session 28 (week 28)	Revision and discussion
Session29(Week29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Fixed Prosthodontics II (Crowns and Bridges)

1	Course name	Fixed Prosthodontics II (Crowns and Bridges II)
2	Course Code	DT402
3	Course type: general/specialty/optional	Specialty
4	Accredited units	4 units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Fixed Prosthodontics I (Crowns and Bridges I)
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course is designed to the undergraduate students at the 4 th year, and this course will provide the students with the necessary theoretical background that includes explanations the laboratory steps of fabricating metal restoration, metal ceramic system, all ceramic restoration, CAD/CAM, and dental implants.
Textbooks required for this Course:	<ul style="list-style-type: none"> Fundamentals' of fixed prosthodontics. Herbert T. Shillingburg , et.al. 4th edition

	<ul style="list-style-type: none"> Contemporary Fixed Prosthodontics. Stephen F. Rosenstiel, et al. 5th edition Fundamentals' of fixed prosthodontics. 3rd edition Herbert T. Shillingburg , 2022 Fundamentals of Fixed Prosthodontics Fourth Edition by Herbert T. Shillingburg, Jr, DDS Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	6 * 28 = 168 teaching hours
Delivery	Presentation's Lectures, small discussion Groups, seminars, project based learning (PBL), videos, practical (laboratory).
Course Objectives:	<p>Upon completion of this course student should have the ability to:</p> <ul style="list-style-type: none"> Understand the various processing steps used during fabrication of fixed prosthesis such as spruing, Investing and casting. Identify the various materials used in different laboratory steps Perform the casting, finishing, and polishing. Recognize the theoretical background of pontic design and the different types of pontics and indications Identify the different steps of constructing different fixed prosthesis. Recognize different types and classification of sprue formers and the ideal area for attaching in the wax pattern. Construct a metal ceramic restoration. Write a report about the steps that implemented in the laboratory. Develop students' time management skills. Implement a dental laboratory instruments and devices professionally.
Course Assessments	<p>Assignment 1: PBL (Report, p.pt presentation, Model) 15%</p> <p>Midterm: Theoretical Midterm 10%, practical midterm 10 %,</p> <p>Daily Assessments: Homework and Quizzes 5 %</p> <p>Final Exam: Theoretical 30%, Practical 30%</p> <p>A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> The Spruing Sprue Purpose of spruing. Different types of sprue former <ul style="list-style-type: none"> According to material made of According to thickness. According to the Number & Shape of Sprue Former Spruing techniques. 
Session 2 (Week 2)	<p>The spruing II</p> <ul style="list-style-type: none"> Sprue diameter. Sprue former length.

	<ul style="list-style-type: none"> • Sprue former direction. • Reservoir. • Purpose of reservoir. • Crucible former. • Types of crucible former • Casting ring and liners. • Considerations in selection of casting rings. • Purpose of ring liner
Session 3 (Week 3)	<ul style="list-style-type: none"> • Investing. • Requirements of Ideal investment materials. • Steps before investing procedure: • Classification of dental investment materials <ul style="list-style-type: none"> - Gypsum bonded investing material. - Phosphate bonded investing material. - Silica bonded investing material. • Composition of investment materials.
Session 4 (Week 4)	<ul style="list-style-type: none"> • The investing II • Shrinkage Compensation Systems for Solidified Gold. • Mechanisms of expansion <ul style="list-style-type: none"> - Setting Expansion. - Hygroscopic Expansion. - Semi-hygroscopic Expansion. - Thermal Expansion. • Investing techniques. <ul style="list-style-type: none"> - Single technique. • Brush technique. • Vacuum technique. - Double technique. 
Session 5 (Week 5)	<ul style="list-style-type: none"> • Wax elimination (burnout) • Purpose of Burnout. • Types of burnout. <ul style="list-style-type: none"> - Controlled burnout. - Non-controlled burnout. • Calibrating the Burnout Furnace's Temperature Indicator. • process of Burnout: • Technique of Controlled Burnout. <ol style="list-style-type: none"> a. High Heat Technique. b. Low Heat Technique Factors Influencing Burnout Time and Temperature. <ol style="list-style-type: none"> 1- Temperature Rise Time. 2- Number and Size of the Mold. 3- Preheated Oven
Session 6 (Week 6)	<ul style="list-style-type: none"> • Casting Process.

	<ul style="list-style-type: none"> • Definition of casting. • Casting Equipment. <ol style="list-style-type: none"> 1. Heat source. <ol style="list-style-type: none"> a. Blowpipe Flame (Blow Torch). <ul style="list-style-type: none"> • Zones of Blowpipe Flame (Torch Flame). <ul style="list-style-type: none"> - Mixing zone. - Combustion zone. - Reducing zone. - Oxidizing zone.
Session 7 (Week 7)	<ul style="list-style-type: none"> • Casting Procedures <ol style="list-style-type: none"> b. Electric source. 2. Casting Heating Force • Casting Process. <ol style="list-style-type: none"> 1- Balance the Machine. 2- Prepare the Crucible. 3- Determine the Amount of Alloy Needed. 4- Select the Metal Needed. 5- Wind the Casting Machine. 6- Adjust the Torch Flame. 7- Preheat the Crucible. 8- Melt the Gold and Apply Flux. 9- Position the Ring in the Casting Machine.
Session 8 (Week 8)	<ul style="list-style-type: none"> • Casting Recovery <ol style="list-style-type: none"> A- Recovery of the Casting. B- Cleaning of the Casting. C- Pickling. • Pickling Process. • An alternative method of pickling
Session 9 (Week 9)	PBL Assessment (Project Based Learning)
Session 10 (Week 10)	Midterm Exam
Session 11 (Week 11)	<ul style="list-style-type: none"> • Casting Finishing & polishing <ol style="list-style-type: none"> c- Casting Finishing and Polishing: <ol style="list-style-type: none"> I. The finishing <ol style="list-style-type: none"> 1. Inspecting the Casting for Defects. • The major kinds of defects. <ol style="list-style-type: none"> 2. Removing the Sprue. 3. Test-Fitting the Casting on the Die. 4. Rough-Finishing the Casting's Surface. 5. Adjusting Proximal Contacts. 6. Adjusting the Occlusion. II. Polishing the Casting. <ol style="list-style-type: none"> a. Preliminary Polish. b. Final Polish.



Session 12 (Week 12)	<ul style="list-style-type: none"> • Metal-Ceramic Restoration. • Physical Characteristics of the Metal-Ceramic System. <ol style="list-style-type: none"> 1- Strength of the Bond. <ol style="list-style-type: none"> a. A chemical bond. b. A compression bond. c. A mechanical bond. 2- Strength of the Substructure. 3. Coefficients of Thermal Expansion. 4. Melting Range of Ceramic Alloys. 5. Thickness of the Veneer.
Session 13 (Week 13)	<ul style="list-style-type: none"> • Metal Substructure Treatment. • Procedures of metal surface treatment. <ol style="list-style-type: none"> 1. Surface grinding. <ul style="list-style-type: none"> - Purposes of surface grinding 2. Ultrasonic cleaning with distilled water or steam cleaning. 3. Heating under vacuum at 1040° C for 2 minutes. 4. Deoxidizing with acids or air abrading with aluminum oxide. 5. Heating at atmospheric pressure at 1040° C for 2 minutes. • Metal Conditioning Agents. <ol style="list-style-type: none"> 1. Gold Metal Conditioners. 2. Metal Ceramic Conditioners. • Steps of metal conditioners application.
Session 14 (Week 14)	<ul style="list-style-type: none"> • Porcelain Application & Firing. • Opaque Porcelain. • The major functions of opaque porcelain. • Opaque Effects. <p>White, Gray, Lilac Gray, Pink and Brown.</p> <ul style="list-style-type: none"> • Applying Opaque Layer. <ul style="list-style-type: none"> • Applying, Drying and Firing.
Session 15 (Week 15)	Midterm practical exam
Session 16 (Week 16)	<p>Porcelain condensation and shrinkage.</p> <ul style="list-style-type: none"> • Porcelain Condensation. • Porcelain shrinkage. • Methods of Condensing Porcelain <ul style="list-style-type: none"> ○ Apply vibration by serrating or tapping with an instrument.. ○ Perform capillary action ○ Perform pressure packing by smoothing with a spatula or pressing with a clean tissue. ○ Continue by whipping.
Session 17 (Week 17)	<ul style="list-style-type: none"> • All ceramic restoration. • Advantages of all-ceramic restorations. • Disadvantages of all-ceramic restorations. • Types of Dental Ceramics.



	<ul style="list-style-type: none"> ● Tooth Preparation Requirements ● In-Ceram Alumina
Session18(Week18&19)	<p>Preparation Steps for all ceramic restoration.</p> <ol style="list-style-type: none"> 1- Complete a master cast with removable dies. 2- Die preparation. 3- Duplication. 4- Special plaster model. 5- Mixing slip material. 6- Slip application. 7- Sintering and finishing. 8- Glass infiltration. 9- Porcelain application.
Session 19 (Week 20 &21)	<ul style="list-style-type: none"> ● CAD/CAM Restorations. ● Definitions and CAD CAM Process <ol style="list-style-type: none"> 1. The scanning device (optical impression). 2. The computer software (CAD). 3. The Manufacturing devices (CAM) <p>a. Subtractive Manufacturing b. Additive manufacturing.</p> <ul style="list-style-type: none"> ● Fabrication Procedure. ● Materials used to form the ceramic block ● Advantage of CAD–CAM systems. ● Disadvantage of CAD–CAM systems.
Session 20 (Week 22 & 23)	<ul style="list-style-type: none"> ● Pontic and edentulous ridge. ● Ideal requirements of a pontic and Pontic design. ● Factors affecting the design of a pontic. <ul style="list-style-type: none"> -Space available for the placement of the pontic. -The contour of residual alveolar ridge. -Amount of occlusal load that is anticipated for that patient. ● General design consideration for a pontic. <ul style="list-style-type: none"> -Saddle pontic, Ridge lap pontic and Hygienic or sanitary pontic. ● Length of the edentulous span and occluso-gingival height of the pontic
Session21(Week24&25)	<ul style="list-style-type: none"> ● Aesthetic consideration for fixed restorations. ● Definitions. ● General principles of aesthetics. ● Factors of aesthetic dentofacial composition. ● Surgical and non-surgical methods to improve aesthetics. ● Types of aesthetic restorative material. ● Aesthetic fixed restorations.
Session22(Week26-28)	<ul style="list-style-type: none"> ● Dental Implants ● Indications and contra-indications of dental implants. ● General principles of implant planning.



	<ul style="list-style-type: none"> ● Clinical considerations Misch Bone Quality Classification and Bone Density Bone height, Bone width, Bone length and Bone angulation. ● Planning dental implants in different clinical situations. <ul style="list-style-type: none"> - Available implant supported prosthetic solutions. - Number of implants required. ● Special consideration in restoring teeth in esthetic zone
Session 23 (Week 29)	Practical final exam
Session 24(Week30-32)	Theoretical and oral Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	By the end of the course, the student be able to: <ul style="list-style-type: none"> - Communicate effectively with colleagues. - Work in group (team work). - Time management. - Give p.pt presentation. - Criticize his/her work. - Think critically to solve the problem may be faced during the work. - Implement of dental laboratory instruments and devices. - Use the Internet for preparing scientific researches. - Write a report about the steps that implemented in the laboratory.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Removable Orthodontics Appliances

1	Course name	Removable Orthodontics Appliances
2	Course Code	DT403
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	4 units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course is designed to the undergraduate students at the 4 th year, and this course will provide the students with the necessary theoretical background that includes explanations the laboratory steps of fabricating Adam's clasp, Labial Bow, Active components of Removable Appliances and Functional appliances.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Orthodontic Removable Appliances, Sandhya Shyam Lohakare. • An Atlas of Removable Orthodontic Appliances Second edition, Gordon c. Dickson • https://rlmc.edu.pk/themes/images/gallery/library/books/dental/[K. G. Isaacson FDS MOrth RCS(Eng), R. T. Reed B(BookFi).pdf • Removable orthodontic appliances 2 reviews by K. G. Isaacson, J. D. Muir, R. T. Reed, W. J. B. Houston 2022 • Removable Orthodontic Appliances Paperback – January 12, 2018 by Anand Lukose , Saurabh Sonar (Author), Puneet Batra • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		6 * 28 = 168 teaching hours
Delivery		Presentation's Lectures, small discussion Groups, seminars, project-based learning (PBL), videos, practical (laboratory).
Course Objectives:		<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Understand the various processing steps used during fabrication of Removable Orthodontic Appliances. • Identify the various materials used in different laboratory steps. • Recognize the theoretical background of Mechanical Appliances. and Functional Appliances.



	<ul style="list-style-type: none"> Identify the different steps of constructing different Removable Orthodontic Appliances. Write a report about the steps that implemented in the laboratory. Develop students' time management skills. Implement a dental laboratory instruments and devices professionally.
Course Assessments	Assignment 1: PBL (Report, p.pt presentation, Model) 15% Midterm: Theoretical Midterm 10%, practical midterm 10 %, Daily Assessments: Homework and Quizzes 5 % Final Exam: Theoretical 40%, Practical 20% A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> History and Review of Literature Introduction of removable orthodontics appliances The Materials The Tools Wire Bending
Session 2 (Week 2)	<ul style="list-style-type: none"> Classification of Orthodontic Appliances. Biomechanics.
Session 3 (Week 3)	<ul style="list-style-type: none"> Classification of malocclusion Normal occlusion, Class I occlusion, Class II occlusion and Class III occlusion. <ul style="list-style-type: none"> Curve of Spee and Wilson Curve.
Session 4 (Week 4 & 5)	<ul style="list-style-type: none"> Retentive components of Removable Appliances Adam's Clasp Modifications of Adam's clasp:- C' clasp, Ball Clasp Jackson's clasp, Lingual Extension Clasp, Arrowhead Clasp and Delta clasp
Session 5 (Week 6)	<ul style="list-style-type: none"> Labial bow, fabrication of Labial bow
Session 6 (Week 7)	Introduction of Active components of Removable Appliances
Session 7 (Week 8 & 9)	<ul style="list-style-type: none"> Orthodontic Springs, Finger spring Cranked single cantilever spring Z- spring or Double cantilever spring ' T' spring, Coffin spring
Session 8(Week10&11)	<ul style="list-style-type: none"> Orthodontic Springs, Finger spring Cranked single cantilever spring Z- spring or Double cantilever spring ' T' spring and Coffin spring
Session 9 (Week 12)	PBL Assessment (Project Based Learning)
Session 10(Week 13)	Midterm Exam
Session11(Week14-16)	<ul style="list-style-type: none"> Canine distalization and Canine retractors <ul style="list-style-type: none"> - U loop canine retractor, Helical canine retractor - Buccal canine retractor, Palatal canine retraction
Session 12 (Week 17)	<ul style="list-style-type: none"> APPLIANCE FOR ROTATION CORRECTION. SCREW APPLIANCE: FOR EXPANSION
Session 13 (Week 18)	<ul style="list-style-type: none"> Retention.
Session 14 (Week 19)	<ul style="list-style-type: none"> Introduction of Functional appliances



Session 15 (Week 20)	Midterm practical exam
Session 16 (Week 21)	<ul style="list-style-type: none"> • Bionator
Session 17 (Week 22)	<ul style="list-style-type: none"> • Activator.
Session 18 (Week 23)	<ul style="list-style-type: none"> • Space Maintainers
Session 19 (Week 24)	<ul style="list-style-type: none"> • Plate Construction and Finishing.
Session 20 (Week 25)	<ul style="list-style-type: none"> • Functional Occlusion and Occlusion Adjustment
Session 21 (Week 26)	<ul style="list-style-type: none"> • ELEMENTS OF CEPHALOMETRIC
Session 22 (Week 27)	<ul style="list-style-type: none"> • Acrylic base plate Mangment
Session 23 (Week 28)	Revision and discussion
Session 24 (Week 29)	Practical final exam
Session 25(Week 30-32)	Theoretical and oral Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	By the end of the course, the student be able to: Communicate effectively with colleagues. Work in group (team work): Time management. Give p.pt presentation, Criticize his/her work. Think critically to solve the problem may be faced during the work. Implement of dental laboratory instruments and devices. Use the Internet for preparing scientific researches. Write a report about the steps that implemented in the laboratory.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Maxillofacial Prosthetics

1	Course name	Maxillofacial Prosthetics
2	Course Code	DT404
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	4 units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course is designed for the 4 th year undergraduate dental students. It will provide the students with the necessary theoretical and practical knowledge in the field of maxillofacial prosthetics rehabilitation for patients with congenital and acquired oral and maxillofacial defects including fabrication of intraoral prostheses and extraoral prostheses such as artificial eye, nose, or ear.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Maxillofacial Rehabilitation. Prosthetic and surgical management of cancer-related, acquired, and congenital defects of head and neck. John Beumer III, et.al. 3rd edition, Quintessence Publishing. • Clinical Maxillofacial Prosthetics by Thomas D. Taylor 1st edition 2000 • Textbook of Materials in Maxillofacial Prosthodontics: In Daily Practice Paperback – May 30, 2020 by Vishwas Kharsan • Clinical Maxillofacial Prosthetics Hardcover – Import, 1 January 2000 by Thomas D. Taylor 2000 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	6 * 28 = 168 teaching hours
Delivery	Lectures, small discussion Groups, seminars, project-based learning (PBL), videos, practical (laboratory).
Course Objectives:	<p>Upon completion of this course students should be able to:</p> <ul style="list-style-type: none"> • Understand all types of maxillofacial defects, their etiology, and their prosthetic rehabilitation needs. • Recognize the theoretical background related to maxillofacial prosthetic rehabilitation. • Identify the various materials used in maxillofacial prosthetics. • Identify the different steps of constructing different maxillofacial prostheses. • Fabricate all kind of intraoral maxillofacial prostheses such as obturators and dentures. • Fabricate all kind of extraoral maxillofacial prostheses such as orbital and nasal prostheses. • Identify the various digital technologies used in maxillofacial prosthetics. • Write a report about the fabrication steps that implemented in the laboratory. • Develop students' time management skills. • Implement a dental instruments and devices professionally.
Course Assessments	<p>Assignment 1: PBL (Report, p.pt presentation, Model) 15%</p> <p>Midterm: Theoretical Midterm 10%, practical midterm 10%</p> <p>Daily Assessments: Homework and Quizzes 5 %</p> <p>Final Exam: Theoretical 30%, Practical 30%</p> <p>A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to maxillofacial prosthetics Definitions and related terms



	<p>Classification of maxillofacial prosthetics</p> <p>Treatment and team tasks</p>
Session 2 (Week 2)	<p>Maxillectomy defects and their prosthetic rehabilitation</p> <p>Maxillectomy and maxillary resection defects</p> <p>Etiology of Maxillectomy Defects</p> <p>Anatomical structure of maxillectomy defects</p> <p>Maxillectomy classification</p> <ul style="list-style-type: none"> - Aramany's classification - Brown's classification - Okay's classification
Session 3 (Week 3)	<p>Maxillectomy defects and their prosthetic rehabilitation...continued</p> <p>Disabilities associated with maxillectomy defects</p> <ul style="list-style-type: none"> - Function - Appearance (aesthetic) - Psychological Trauma <p>Rehabilitation of maxillectomy defects</p> <ul style="list-style-type: none"> - Surgical rehabilitation - Prosthetic rehabilitation
Session 4 (Week 4)	<p>Maxillectomy defects and their prosthetic rehabilitation....continued</p> <p>Prosthetic rehabilitation of maxillectomy defects</p> <p>I- Surgical obturation for maxillectomy</p> <ol style="list-style-type: none"> 1- Immediate surgical obturation 2- Delayed surgical obturation <p>II- Interim obturation for maxillectomy</p> <p>III- Definitive obturation for maxillectomy</p>
Session 5 (Week 5)	<p>Soft palate defects and their prosthetic rehabilitation</p> <p>Partial and full soft palate defects</p> <p>Etiology of soft palate defects</p> <p>Anatomy and physiology of soft palate defects</p> <p>Disabilities associated with soft palate defects</p>
Session 6 (Week 6)	<p>Soft palate defects and their prosthetic rehabilitation...continued</p> <p>Prosthetic rehabilitation of maxillectomy defects</p> <p>I- Surgical obturation for soft palate defects</p> <p>Immediate surgical obturation</p> <p>Delayed surgical obturation</p> <p>II- Interim obturation for soft palate defects</p> <p>III- Definitive obturation for soft palate defects</p>
Session 7 (Week 7)	<p>Cleft lip and palate defects and their prosthetic rehabilitation</p> <p>Definitions of cleft lip and palate</p> <p>Structure and development of the palate</p> <p>Causes and predisposing factors of clefts</p> <p>Classification of cleft lip and palate</p> <p>Disabilities associated with cleft lip and palate</p>
Session 8 (Week 8)	<p>Cleft lip and palate defects and their prosthetic rehabilitation...continued</p> <p>Management of congenital cleft lip and palate</p> <p>Maxillofacial team</p> <p>Diagnosis and treatment planning</p>



	<p>Infant feeding treatment</p> <p>Surgical treatment</p> <p>Prosthetic treatment</p>
Session 9 (Week 9)	PBL Assessment (Project Based Learning)
Session 10 (Week 10)	Midterm Exam
Session 11 (Week 11)	<p>Mandibulectomy defects and their prosthetic rehabilitation</p> <p>Congenital mandibular defects</p> <p>Acquired mandibular defects</p> <p>Etiology of mandibular defects</p> <p>Disabilities associated with acquired mandibular defects</p>
Session 12 (Week 12)	<p>Mandibulectomy defects and their prosthetic rehabilitation...continued</p> <p>Rehabilitation of the mandibular defects</p> <p>I- Surgical reconstruction rehabilitation using a bone graft</p> <p>II- Prosthetic Rehabilitation</p> <p>Mandibular reconstruction prosthesis</p> <p>Prosthetic fixation of jaw fractures</p> <p>Method of Immobilization</p> <p>1- Wiring</p> <p>2- Arch bar</p> <p>3- Splints</p>
Session 13 (Week 13)	<p>Glossectomy defects and their prosthetic rehabilitation</p> <p>Partial and full glossectomy defects</p> <p>Etiology of glossectomy defects</p> <p>Anatomy and physiology of glossectomy defects</p> <p>Disabilities associated with glossectomy defects</p>
Session 14 (Week 14)	<p>Glossectomy defects and their prosthetic rehabilitation...continued</p> <p>Rehabilitation of glossectomy defects</p> <p>I- Surgical reconstruction and rehabilitation using soft tissue grafting</p> <p>II- Prosthetic Rehabilitation</p> <p>Palatal augmented prosthesis (PAP)</p>
Session 15 (Week 15)	Midterm practical exam
Session16(Week16&17)	<p>Midfacial defects and their prosthetic rehabilitation</p> <p>Anatomy and physiology of midfacial region</p> <p>Etiology of midfacial defects</p> <p>Rehabilitation of midfacial defects</p> <p>I- Surgical reconstruction and rehabilitation using soft tissue and bone grafting</p> <p>II- Prosthetic Rehabilitation</p> <ul style="list-style-type: none"> - Intraoral prostheses - Extraoral prostheses
Session 17 (Week 18)	<p>Facial defects and their prosthetic rehabilitation</p> <p>Etiology of facial defects</p> <p>Ocular defects</p> <p>Orbital defects</p> <p>Nasal defects</p> <p>Auricular defects</p>
Session18(Week19&20)	Facial defects and their prosthetic rehabilitation...continued



	Rehabilitation of facial defects I- Surgical reconstruction and rehabilitation II- Prosthetic Rehabilitation Ocular prostheses Orbital prostheses Nasal prostheses Auricular prostheses
Session 19 (Week 21)	Craniofacial defects and their prosthetic rehabilitation Etiology of Craniofacial defects Craniofacial implants I- Surgical reconstruction and rehabilitation II- Prosthetic Rehabilitation
Session20(Week22&23)	Implant related maxillofacial prosthetics Implant structure and materials Implant types <ul style="list-style-type: none"> - Dental implants - Mini implants - Zygomatic implants Implant prosthesis connections Implant treatment planning
Session21(Week24&25)	Radiotherapy appliances in maxillofacial prosthetics Radiotherapy treatment concept Types of radiotherapy appliances Fabrication of radiotherapy appliances
Session22(Week26&27)	Digital technology for maxillofacial prosthetics Digitization Visualization Modeling and designing Additive manufacturing and 3D printing Evaluation
Session 23 (Week 28)	Revision and discussion
Session 24 (Week 29)	Practical final exam
Session25(Week30-32)	Theoretical and oral Final Exam
Attendance Expectations	Students are expected to attend every session, lecture, and lab. Absences are permitted only if there is unavoidable reason.
Generic Skills	By the end of the course, the student be able to: <ul style="list-style-type: none"> - Communicate effectively with colleagues. - Work in group (team work). - Time management. - Give p.pt presentation. - Criticize his/her work. - Think critically to solve the problem may be faced during the work. - Implement of dental laboratory instruments and devices. - Use the Internet for preparing scientific researches.



	- Write a report about the steps that implemented in the laboratory.
Course Change	The content of the course is revised on an ongoing basis to ensure its relevance to the changes of new materials or techniques. The educator will update the contents accordingly.

Occlusion Concept

1	Course name	Occlusion Concept
2	Course Code	DT405
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	4 Units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Dental Anatomy
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course is designed to the undergraduate students at the 4 th year, and this course will provide the students with knowledge including an understanding of ideal occlusion form , function and the nature of normal occlusion for permanent dentation. In addition to theories of reconstruction of occlusion, tempromandibular joint(TMJ), types of articulators, mandibular movement.it also deals with problems of malocclusion and their relation with TMJ.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Dental anatomy and occlusion. The Williams and Wilkins co,1969 • Ash M, Nelson S "Wheeler's Dental anatomy ,physiology and occlusion"8th Edition, Elsevier 2003. • http://www.quintpub.com/display_detail.php3?psku=B1676# • Occlusion in Implant Dentistry: Concepts and Considerations Paperback – March 28, 2013by Ankita Singh • Mohl ND, Zarb GA, Carlsson GE, Rugh JD. (eds) A Textbook of Occlusion. Carol Stream, IL,USA: Quintessence Publishing Company; 1988. p15. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		6 * 28 = 168 teaching hours

Delivery	Presentation's Lectures, small discussion Groups, seminars, videos, practical (laboratory).
Course Objectives:	<p>Upon completion of this course student should have the ability to:</p> <ul style="list-style-type: none"> • Understand the ideal occlusion form and function. • Identify the occlusal contact point and all mandibular movements. • Perform the balancing occlusion. • Recognize the ecentric (working and balancing) occlusion • Identify the different steps of constructing occlusal surface and discuss types of contacts relating to the area of the occlusal surface on which their occur. • Recognize different types of mandibular movement and classification of malocclusion. • Construct the perfect occlusal surface for success the restoration. • Write a report about the steps that implemented in the laboratory. • Develop students' time management skills. • Implement a dental laboratory instruments and devices professionally.
Course Assessments	<p>Assignment 1: Report, p.pt presentation 15%</p> <p>Midterm: Theoretical Midterm 10%, practical midterm 10%,</p> <p>Daily Assessments: Homework and Quizzes 5%</p> <p>Final Exam: Theoretical 40%, Practical 20%</p> <p>A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage.
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction • Terminology used in occlusion . • Functional –working occlusion. • Nonfunctional-balancing occlusion. • Group function . • Canine guidance. • Incisal guidance
Session 2 (Week 2)	<ul style="list-style-type: none"> • Occlusion Morphology and Occlusion Concepts. • Centric relation and centric occlusion. • Working side and balancing side. • Eccentric occlusion • Traumatic occlusion
Session 3 (Week 3)	<ul style="list-style-type: none"> • Anatomy and physiology of masticatory muscle. • Types of masticatory muscle. • Characteristic of masticatory muscle. • Structure of masticatory muscle.
Session 4 (Week 4)	<ul style="list-style-type: none"> • Action of primary and secondary muscle of mastication. • Function of masticatory muscle. • Neuromuscular control of mandibular movement.



Session 5 (Week 5)	<ul style="list-style-type: none"> • Tempromandibular joint (TMJ). • Anatomy of TMJ. • Components of TMJ. • Relation between TMJ and occlusion. • Signs and symptoms of TMJ disorder.
Session 6 (Week 6)	<ul style="list-style-type: none"> • Occlusal contact point. <ul style="list-style-type: none"> - Occlusal contact points with maxillary teeth. - Occlusal contact points with mandibular teeth. • Occlusal relationship of anterior teeth. • Occlusal relationship of posterior teeth.
Session 7 (Week 7)	<ul style="list-style-type: none"> • Articulator. • Purpose of articulator. • Uses of articulator. • Requirement of articulator • Advantages and limitation.
Session 8 (Week 8)	<ul style="list-style-type: none"> • classification of articulator. <ul style="list-style-type: none"> - Based on theory of occlusion. - Based on type of record. - Based on ability to simulate jaw movement. - Based on adjustability. • Components of articulator.
Session 9 (Week 9)	PBL Assessment (Project Based Learning)
Session 10 (Week 10)	Midterm Exam
Session 11 (Week 11)	<ul style="list-style-type: none"> • Mandibular movement. <ul style="list-style-type: none"> - Rotational movement . - Translation movement. - Opening and closing movement. - Protrusive movement. - Lateral movement.
Session 12 (Week 12)	<ul style="list-style-type: none"> • Envelope of motion. <ul style="list-style-type: none"> • In sagittal plane and In horizontal plane. • In frontal plane.
Session 13 (Week 13)	<ul style="list-style-type: none"> • Principle of occlusion curvatures. • Dental arch formation. • Over bite. • Over jet.
Session 14 (Week 14)	<ul style="list-style-type: none"> • Dental arch segment. • Phases in development of dental arch. • The leeway space.
Session 15 (Week 15)	Midterm practical exam
Session 16 (Week 16)	<ul style="list-style-type: none"> • The curves of dental arch. <ul style="list-style-type: none"> - Curve of Spee. - Curve of Wilson. - Curve of Monson. • The curvatures of individual teeth.
Session 17 (Week 17 & 18)	<ul style="list-style-type: none"> • Angulation of individual teeth in relation to various planes. <ul style="list-style-type: none"> - Definition and Importance. • Frontal view of the angulation of maxillary teeth. • Frontal view of the angulation of mandibular teeth.
Session 18 (Week 19)	<ul style="list-style-type: none"> • classification of occlusion.

	<ul style="list-style-type: none"> - Based on mandibular position. - Based on relation of first permanent molar - Based on organization. - Based on pattern.
Session 19 (Week 20)	<ul style="list-style-type: none"> • Six keys of normal occlusion. • Incorrect crown torque and occlusal findings. • Anterior and posterior occlusion in case of incorrect crown torque.
Session20(Week 1& 22)	<ul style="list-style-type: none"> • Malocclusion. • Definition. • Intra arch malocclusion. <ul style="list-style-type: none"> - Abnormal inclination. - Abnormal displacement. - Spacing and crowding.
Session 21 (Week 23)	Inter arch malocclusion: Deep bite and Open bite. <ul style="list-style-type: none"> • Skeletal malocclusion.
Session22(Week 24)	<ul style="list-style-type: none"> • Classification of malocclusion. • Angel's classification. • Drawbacks of Angle's classification.
Session23(Week 25)	<ul style="list-style-type: none"> • Balanced occlusion. • Objective of balanced occlusion. • Characteristics requirement of balanced occlusion. • Type of balanced occlusion.
Session24(Week26&27)	<ul style="list-style-type: none"> • Factor influencing balancing occlusion. • General consideration for balanced occlusion.
Session25(Week 28)	Revision and discussion
Session 26(Week 29)	Practical final exam
Session27(Week30-32)	Theoretical and oral Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, Implement of dental laboratory instruments and devices and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Oral Hygiene

1	Course name	Oral Hygiene
2	Course Code	DT406
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2 units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Dental Technology Prog.
8	Instruction Language	English
9	Date of course approval	2010/2011

Brief Description:	This course will provide students with a fundamental understanding of the nature of oral pathology and oral hygiene in a complete simplified way. Oral hygiene course gives examples of oral hygiene and those lesions in the wide range of systemic disorders that have oral manifestations.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Clinical Practice of the Dental Hygienist 12th Edition by Esther Wilkins • Clinical Textbook of Dental Hygiene and Therapy, 2nd Edition by Suzanne Noble 2012 • Clinical Textbook of Dental Hygiene and Therapy by Robert Ireland 2006 • Community Oral Health Practice for the Dental Hygienist by Christine French Beatty 5th Edition • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, project based learning (PBL), videos, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course student should have the ability to:</p> <ul style="list-style-type: none"> • Practice of keeping one's mouth clean and free of disease and other problems (e.g. bad breath) by regular brushing of the teeth (dental hygiene) and cleaning between the teeth • Understand the stages of disease formation, its nature and causes • Identify the students on the most important diseases the effect the oral tissue • Recognize the types of dental caries. • Identify representations, terms, conditions that used in oral pathology • Recognize different abnormality of the teeth. • Write the stages of plaque formation.



	<ul style="list-style-type: none"> Implement a diagnoses about the disease by using special instruments.
Course Assessments	<p>Assignment 1: Report, p.pt presentation 15%</p> <p>Midterm: Theoretical Midterm 10%, practical midterm 10%,</p> <p>Daily Assessments: Homework and Quizzes 5%</p> <p>Final Exam: Theoretical 40%, Practical 20%</p> <p>A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> Introduction to principle of Oral Hygiene Emergency procedures Oral Cavity. Intraoral landmarks. Extraoral landmarks.
Session 2 (Week 2)	<p>Pedodontic patient/Family abuse and neglect</p> <p>The Professional Dental Hygienist</p> <p>A. History of the Dental Hygiene Profession</p> <p>B. Objectives for Professional Practice</p> <p>C. Dental Hygiene Process of Care</p> <p>D. Professionalism</p>
Session 3 (Week 3&4)	<ul style="list-style-type: none"> Behavior modification Early childhood caries <ol style="list-style-type: none"> Prevention <ol style="list-style-type: none"> Relationship to maternal caries Fluorides Treatment <ul style="list-style-type: none"> Habits <ol style="list-style-type: none"> Recognition Treatment options Periodontal diseases <ol style="list-style-type: none"> Recognition Etiology
Session 4 (Week 5)	<p>Effective Health Communication</p> <p>A. Types of Communication</p> <p>B. Health Communication</p> <p>C. Health Literacy</p> <p>D. Communication across the Life Span</p> <p>E. Social and Economic Aspects of Health Communication</p> <p>F. Cultural Considerations</p>
Session 5 (Week 6&7)	<p>Topics to be covered in the session (week)</p> <p>. Dental Soft Deposits, Biofilm Calculus, and Stains</p> <p>A. Dental Biofilm and Other Soft Deposits</p> <p>B. Acquired Pellicle</p> <p>C. Dental Biofilm</p> <p>D. Supragingival and Subgingival Dental Biofilm</p> <p>E. Composition of Dental Biofilm</p> <p>F. Clinical Aspects of Dental Biofilm</p> <p>G. Significance of Dental Biofilm</p> <p>H. Materia Alba</p> <p>I. Food Debris</p> <p>J. Calculus</p> <p>K. Calculus Composition</p> <p>L. Calculus Formation</p>



	<p>M. Attachment of Calculus N. Significance of Dental Calculus O. Clinical Characteristics P. Prevention of Calculus</p>
Session 6 (Week 8)	<p>the Periodontium A. The Normal Periodontium B. The Gingival Description C. The Gingiva of Young Children</p>
Session 7 (Week 9)	<ul style="list-style-type: none"> • Infectious diseases • Bacterial infections • Definition • Mode of infection • Exogenous infection <p>Endogenous infection</p>
Session 8 (Week 10&11)	<p>Periodontal Disease Development A. Periodontal-Systemic Disease Connection B. Risk Assessment C. Etiology of Periodontal Disease D. Risk Factors for Periodontal Diseases E. Pathogenesis of Periodontal Diseases F. Gingival and Periodontal Pockets</p>
Session 9 (Week 12)	PBL assessment (project based learning)
Session 10 (Week 13)	Midterm Exam
Session 11 (Week 14)	<p>Dental Hygiene Diagnosis A. Assessment Findings B. The Periodontal Diagnosis and Risk Level C. Dental Caries Risk Level D. The Dental Hygiene Diagnosis and Prognosis</p>
Session 12 (Week 15)	<p>The Dental Hygiene Care Plan A. Preparation of a Dental Hygiene Care Plan B. Components of a Written Care Plan C. Sequencing and Prioritizing Patient Care D. Presenting the Dental Hygiene Care Plan E. Informed Consent</p>
Session 13 (Week 16)	<p>Topics to be covered in the session (week)</p> <ul style="list-style-type: none"> • dental caries • definition of dental caries <p>Theories for dental caries Hypothesis for etiology of dental caries Role of saliva</p>
Session 14 (Week 17)	<p>Reventive Counseling and Behavior Change A. Steps in a Preventive Program B. Patient Counseling C. Patient Motivation and Behavior Change D. Motivational Interviewing E. Exploring Ambivalence F. Eliciting and Recognizing Change Talk</p>



Session 15 (Week 18)	<p>Protocols for Prevention and Control of Dental Caries</p> <p>A. History of Dental Caries Management</p> <p>B. The Dental Caries Process</p> <p>C. Dental Caries Classification</p> <p>D. Caries Risk Assessment</p> <p>E. Implementation of CRA in the Process of Care</p>
Session 16 (Week 19)	Midterm practical Exam
Session 17 (Week 20)	<p>Oral Infection Control: Toothbrushes and Toothbrushing</p> <p>A. Development of Toothbrushes</p> <p>B. Manual Toothbrushes</p> <p>C. Power Toothbrushes</p> <p>D. Toothbrush Selection</p> <p>E. Methods for Manual Toothbrushing</p> <p>F. Adverse Effects of Toothbrushing</p>
Session 18 (Week 21)	<p>Oral Infection Control: Interdental Care</p> <p>A. The Interdental Area</p> <p>B. Planning Interdental Care</p> <p>C. Selective Interdental Biofilm Removal</p> <p>D. Methods for Interdental Aids</p>
Session 19(Week 22)	<p>Fluorides</p> <p>A. Fluoride Metabolism</p> <p>B. Fluoride and Tooth Development</p> <p>C. Demineralization vs. Remineralization</p> <p>D. Effects and Benefits of Fluoridation</p>
Session 20 (Week 23)	<p>Principles of Evaluation</p> <p>A. Evaluation based on Goals and Outcomes</p> <p>B. Evaluation of Clinical Outcomes</p> <p>C. Evaluation of Behavior Changes</p> <p>D. Comparison of Assessment Finding</p>
Session 21 (Week 24)	<p>abnormalities of teeth</p> <p>Alterations in size, microdontia, macrodontia</p>
Session 22 (Week 25)	<p>Continuing Care</p> <p>A. Goals of the Continuing Care Program</p> <p>B. Continuing Care Procedures</p> <p>C. Appointment Intervals</p> <p>D. Methods for Continuing Care System</p>
Session 23 (Week 26)	<p>Pulp calcification</p> <p>Abnormalities of dental pulp</p>
Session 24 (Week 27)	<p>Internal resorption</p> <p>External resorption</p>
Session 25 (Week 28)	Revision and discussion
Session 26 (Week 29)	Practical final exam
Session27(Week28-32)	Theoretical and oral final exam
Attendance Expectations	<p>Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.</p>
Generic Skills	<p>By the end of the course, the student be able to:</p> <ul style="list-style-type: none"> - Communicate effectively with colleagues.



	<ul style="list-style-type: none"> - Work in group (team work). - Time management. - Give p.pt presentation. - Implement of dental laboratory instruments and devices. - Write a report about the steps that implemented in the laboratory. - Use the Internet for preparing scientific researches. - Criticize his/her work. - Think critically to solve the problem may be faced during the work.
<p>Course Change</p>	<p>Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.</p>



سادسا: المقررات الدراسية لقسم تقنية التخيير

أ - المقررات الدراسية السنة الثانية قسم تقنية التخيير



Human Anatomy



1	Course name	Human Anatomy
2	Course Code	MT201
3	Course type: /general/specialty/optional	general
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will serve as an introduction to the systems of the human body. Necessary life functions and survival needs will be examined, followed by an orientation of the language of anatomy. Students will learn the terminology, anatomy of each body system. Thorough analyses of tissue types, the integumentary system, skeletal tissue and the human skeleton, joints, muscle tissue and the muscular system, the fundamentals of nervous tissue, the nervous system, the study of blood, cardiovascular system including lymphatic system, immune system, respiratory system, digestive system, urinary system and male and female reproductive systems. Emphasis is placed on the integration of systems as they relate to normal health.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Essentials of Human Anatomy & Physiology by Elaine Marieb 10th Edition or later (recommended). • Human Anatomy & Physiology, Books a la Carte Edition 10th Edition by Elaine N. Marieb (Author), Katja N. Hoehn. • Introduction to the Human Body, 10th Edition • Gerard J. Tortora, Bryan H. Derrickson ISBN: 978-1-118-88413-3, 2014. • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability:</p> <ul style="list-style-type: none"> • Define the anatomic terms used to refer to the body in terms of directions and geometric planes and describe the structure and function of various human organs and systems; • Describe the major cavities of the body and the organs they contain.



- Explain what a cell is? and explain how human organs and systems interact.
- Describe the major functions of the four types of human tissue.
- List the major systems of the body, the organs they contain and the functions of those systems.
- Define the terms anatomy and physiology.
- Define homeostasis.
- Describe the relationship between and processes related to nutrition and metabolism; and recognize the stages of growth and development

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	<ul style="list-style-type: none"> • Introduction to Anatomy • Levels of organization • Body regions, planes, and orientations and body cavities
Session 2 (Week 3-4)	<ul style="list-style-type: none"> • Skeletal system • Bone structure and types, cartilage, ligaments, tendons, and joints • Axial and appendicular skeletons • Scientific terminologies of the main body bones
Session 3 (Week 5-6)	<ul style="list-style-type: none"> • Muscular system • Types of muscles, Differences and their microscopic structure • Skeletal muscle structure and neuromuscular junction • Scientific terminologies of the main body Muscles
Session 4 (Week 7-9)	<ul style="list-style-type: none"> • Cardiovascular (Circulatory) system • Components of cardiovascular system and types of circulations • The heart, arteries, veins, capillaries, and lymphatic vessels • The blood components (plasma and blood cells) • Scientific terminologies of the main cardiovascular components
Session 5 (Week 10-11)	<ul style="list-style-type: none"> • Respiratory system • Upper respiratory system (nose, pharynx, larynx, and trachea) • Lower respiratory system (Lungs, thoracic cage, and pleura) • Bronchi, bronchioles, alveoli and respiratory membrane • Respiratory muscles and lung volumes and capacities • Scientific terminologies of the main respiratory system parts
Session 6 (Week 12-14)	<ul style="list-style-type: none"> • Digestive system • Upper digestive system (mouth, pharynx, and esophagus) • Lower digestive system (stomach, small intestine, and large intestine) • Structure of digestive system walls • Accessory parts of the digestive system (salivary gland, teeth, pancreas, liver, and gall bladder) • Scientific terminologies of the main Digestive system parts
Session 7 (Week 15)	Midterm Exam
Session 8 (Week 16-17)	<ul style="list-style-type: none"> • Integumentary system • Skin structure and types • Skin layers and skin color



	<ul style="list-style-type: none"> • Receptors and glands • Skin burns and disorders • Scientific terminologies of the main skin structures
Session 9 (Week 18-19)	<ul style="list-style-type: none"> • Urinary system • The main parts of the urinary system • Kidney structure • Nephron and Glomerulus • Types of blood vessels in the kidney • Uterus, bladder and urethra • Scientific terminologies of the main urinary system parts
Session 10 (Week 20-22)	<ul style="list-style-type: none"> • Endocrine system • Endocrine glands names and locations • Structure, location, and hormones of hypothalamus and pituitary gland • Structure, location, and hormones of thyroid and parathyroid glands • Structure, location, and hormones of pineal and thymus glands • Structure, location, and hormones of pancreas and adrenal glands • Structure, location, and hormones of the ovaries and testicles gland • Structure, location, and hormones of other glandular structures • Scientific terminologies of the main endocrine glands
Session 11 (Week 23-24)	<ul style="list-style-type: none"> • Reproductive system • Reproductive systems of male and female • Structure and hormones of the ovaries and testes • Production of the sperms and ova • Scientific terminologies of the main parts of reproductive system parts
Session 12 (Week 25-26)	<ul style="list-style-type: none"> • Central Nervous system • brain, spinal cord, & peripheral nerves • Neurons (types and structure) • Neurotransmitters and synapses • Scientific terminologies of the main parts of the central nervous system parts
Session 13 (Week 27-28)	<ul style="list-style-type: none"> • Autonomic Nervous system • Sympathetic and parasympathetic autonomic nervous system • Preganglionic and postganglionic neurons • Neurotransmitters in the sympathetic and parasympathetic autonomic nervous system • Scientific terminologies of the main parts of the autonomic nervous system parts
Session 14 (Week 29)	Revision and discussion
Session 15 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long

	learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Biochemistry

1	Course name	Biochemistry
2	Course Code	MT202
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description: This course explores the basic principles of biochemistry and develops the student's appreciation and understanding of biological networks. including proteins, enzymes, carbohydrates, lipids and nucleic acids in relationship to biological and metabolic processes.

Textbooks required for this Course:

- Lippincott's Illustrated Reviews: Biochemistry. ISBN-13: 978-1496344496 ISBN-10: 1496344499.
- Harper's Illustrated Biochemistry. ISBN-13: 978-1259837937. ISBN-10: 1259837939.
- Leininger Principles of Biochemistry. ISBN-13: 978-1429234146. ISBN-10: 1429234148.
- Textbook of Medical Biochemistry. ISBN-13: 978-9350254844. ISBN-10: 9350254840.
- Clinical Chemistry Techniques, Principles, Correlations. ISBN-13: 978-1496335586. ISBN-10: 9781496335586.
- Additional textbooks and web links may be used in this course at the discretion of the instructor.
- <http://www.kume.edu/biochemistry/resource.html>

Course Duration

4 * 28 = 112 teaching hours

Delivery

Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.

Course Objectives:

Upon completion of this course, the student will have reliably demonstrated the ability to:





	<ul style="list-style-type: none"> The chemical nature of carbohydrate, lipid, protein, nucleotide and vitamin biomolecules; and the principles of bioenergetics and enzyme catalysis. The metabolism and the metabolic control of dietary and endogenous carbohydrate, lipid, protein and nucleotides; and how the DNA in a genome is organized, replicated, and repaired and how the genetic information in the DNA is selectively expressed as functional proteins and RNA and how this expression is regulated. The tools used in biochemistry, and their potential applications to medical technology science. The commonly used measurements in clinical biochemistry and how these measurements can contribute to assessment of the health status of individuals. Use correct terminology to discuss the chemistry, cell structure, and tissues of the human body. Identify and explain the structure and functions of each body system.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction and definition of biochemistry
Session 2 (Week 2)	Biochemistry of the cell
Session 3 (Week 3&4)	• Body fluids of the cell
Session 4 (Week 5 & 6)	• biochemistry of the cell
Session 5(Week 7,8)	• Chemistry of Carbohydrate
Session6(Week 9)	• Nucleotide
Session 7(Week 10)	• Nucleic acid
Session 8(Week 11)	• Chemistry of Lipids
Session9(Week 12)	Midterm Exam
Session10(Week 13)	• Chemistry of Lipids
Session11(Week 14 & 15)	Midterm practical exam
Session12(Week 16)	•Enzymes
Session13(Week 17)	• Porphyrins
Session14(Week 18 & 19)	Hemoglobin
Session15(Week 20)	•Vitamins
Session16(Week 21)	Revision of lecture
Session17(Week22 & 23)	•Carbohydrate Metabolism
Session18(Week 24 & 25)	•Lipid metabolism
Session19(Week 26,27)	•Protein Chemistry and Metabolism
Session20(Week 28)	Revision of lecture
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To

	ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



General Microbiology

1	Course name	General Microbiology
2	Course Code	MT203
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>By the end of the course students will be able to:</p> <ul style="list-style-type: none"> * The definition of microorganism and all branch of microbiology * The classification of Microorganisms and different between prokaryotic and eukaryotic cells. *know Methods and types sterilization and disinfectant. * Culturing and cultivation of Microorganisms and basic way of their identifications
Textbooks required for this Course:		<ul style="list-style-type: none"> • Text book of microbiology First Published in 2010 by Prem C. Bakliwal for Aavishkar Publishers ISBN 978-81-7910-306-7. • https://rlmc.edu.pk/themes/images/gallery/library/books/Microbiology/Text Book of Microbiology.pdf • https://open.umn.edu/opentextbooks/textbooks/873 • https://www.britannica.com/science/microbiology • https://bio.libretexts.org/Bookshelves/Microbiology/Book%3AMicrobiology_(Boundless)/1%3A_Introduction_to_Microbiology • https://faculty.ksu.edu.sa/sites/default/files/140_mbio-final_notes.pdf • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of the structural similarities and differences among microbes and the unique structure/function relationships of prokaryotic cells. • Comprehend the fundamentals of molecular microbiology. • Appreciate the diversity of microorganisms and microbial communities and recognize how microorganisms solve the fundamental problems their environments present.





	<ul style="list-style-type: none"> Recognize how the underlying principles of epidemiology of disease and pathogenicity of specific microbes affect human health. Understand Microbial Cell Structure, Function and methabolism.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction, of microbiology
Session 2 (Week 2)	History of Microbiology
Session 2 (Week 3)	<ul style="list-style-type: none"> Defining Microbes and Basic concepts and scope of microbiology
Session 3 (Week 4)	Pasteur and spontaneous Generation
Session 4 (Week 5 & 6)	Types of microorganisms
Session 5(Week 7,8)	Classification of microorganisms
Session6(Week 9)	Immunization, antiseptics and antibiotics
Session 7(Week 10)	Microscopy
Session 8(Week 11)	Bacteria : 1-Naming, Shape and arrangement, Classification, Size
Session9(Week 12)	Bacterial structure& composition
Session10(Week 13)	Bacterial Genetics
Session11(Week 14 & 15)	4. Microbial Growth (growth and metabolism of Bacteria): Requirement of Microbial Growth: physical and chemical requirements. Culture media
Session12(Week 16)	Midterm exam
Session13(Week 17)	Isolation and culturing of Bacteria
Session14(Week 18 & 19)	Microbial metabolism
Session15(Week 20)	Classification of bactria
Session16(Week 21)	Dyes and staining (gram stain, acid fast staining, and other staining metods).
Session17(Week22 & 23)	Fungi: 1. what is mycology? 2. Classification and structure 3. Moulds, yeasts and dimorphic fungus. Fungal diseases Algae: 4. Characteristics, structure and division of algae
Session18(Week 24 & 25,26)	Viruses 1. Definition, Characteristics, symmetry and structure of viruses, 2. Classification and growth of Viruses. 3. Detection, multiplication of Viruses. 4. Laboratory methods used for viral detection
Session19(Week 27,28)	Parasites 1. Definition, Characteristics and structure of parasites, 2. Summary of Parasitic Classification (Protozoa and Helminths). 3. Detection, multiplication of Protozoa and Helminths. 4. Laboratory methods used for viral detection
Session21 (Week 29)	Revision and discussion
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.

	Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Histology



1	Course name	Histology
2	Course Code	MT204
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of Histology and Know the different types of tissues of the body Recognize the function performed by each tissue Learn about common terms and definitions used in histology
Textbooks required for this Course:		<ul style="list-style-type: none"> • DiFiore's atlas of histology with functional correlations. • Junqueira's Basic Histology. • Histology: An Essential Textbook by D. J. Lowrie Jr 2020 • Junqueira's Basic Histology: Text and Atlas, Sixteenth Edition by Anthony L. Mesche 2021 • Textbook of Histology by Leslie P. Gartner PhD 2021 • Histology: A Text and Atlas 7th edition : With Correlated Cell and Molecular Biology by Ross, Michael H., M.D. Pawlina, Wojciech 2015 • Wheater's Functional Histology: A Text and Colour Atlas 3rd edition by William K. Ovalle Ph.D., Patrick C. Nahirney PhD 2020 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based. Group interaction and discussion.

	self-directed activities. active participation. Laboratory experiments.
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to: <ul style="list-style-type: none"> • Acquire a basic background in histology and comparative histology in different and to understand the properties of cells and their interactions with one another as components of tissues and organs. • Understand how structure and function correlate at the microscopic level and be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination. • Understand the changes that occur to tissues • Identify the different types of tissues • Recognize the types of tissues and the mechanisms of identifying them • understand the various diagnostic tools and medical equipment in the correct way to discover histological changes • Understand how to distinguish tissue and how it develops • deduce the causes of the changes that have occurred within the tissues
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction to histology • histology and its mode of study
Session 2 (Week 2)	• The cell
Session 3 (Week 3)	• Epithelial Tissue
Session 4 (Week 4)	• Connective tissue
Session 5 (Week 5)	• Cartilage
Session 6 (Week 6)	• Bone
Session 7 (Week 7)	• Bone.
Session 8 (Week 8)	Muscle Tissue
Session 9 (Week 9)	Nerve Tissue
Session 10 (Week 10)	• Nervous System
Session 11 (Week 11)	The Immune System &
Session 12 (Week 12)	Lymphoid Organs
Session 13 (Week 13)	Blood and Hemopoiesis
Session 14 (Week 14)	Endocrine System
Session 15 (Week 15)	Hormones
Session 16 (Week 16)	The integumentary system
Session 17 (Week 17)	The Circulatory system
Session 18 (Week 18)	The Circulatory system
Session 19 (Week 19)	The Circulatory system
Session 20 (Week 20)	• Respiratory system
Session 21 (Week 21)	Respiratory system
Session 22 (Week 22)	Respiratory system
Session 23 (Week 23)	Digestive system



Session 24 (Week 24)	The urinary system
Session 25 (Week 25)	The urinary system
Session26(Week26- 27)	Reproductive system
Session26(Week28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Ability to perform tasks in accordance with ethical and professional principles. The student should be able to write a report on the histological conditions. The student should be able to think critically to solve problems and make decisions.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Physiology

1	Course name	Physiology
2	Course Code	MT205
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
 Brief Description:		<p>Physiology is studying of biological function. medical physiology course will study human function at the level of whole organisms, tissues, cells and molecules (Study of human body function). Physiology is fundamental to medicine and studying function in both health and disease. (Content : Introduction, Autonomic nervous system, Blood, Nerve & muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> Textbook of medical physiology / Arthur C. Guyton, John E. Hall.—11th ed.ISBN 0-7216-0240-1 Principles of anatomy and physiology/Arthur Gerard J., Bryan D. – 12th ed.ISBN 978-0-470-08471-7

	<ul style="list-style-type: none"> Human physiology / ArthurMAGDI SABRY, MD -5thed. JSBN 977. 203- 256-2 Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor <p>Microbiology text book can be used,</p>
Course Duration	4 * 28 = 112 teaching hours
Delivery	Interactive Lecturer introduces of common clinical conditions and explains the underlying phenomena through questions, pictures and videos and students are actively involved in the learning process, and Students' take responsibilities of their own learning through selfstudy, sharing and discussing with peers, search information from Learning Resource Center of teachers and resource persons within and outside the college. Students can utilize the time within Laboratory hours.
Course Objectives:	<p>The primary objective of the course is to ensure that students understand how the body works and after completing this course student should be able to:</p> <ul style="list-style-type: none"> Have sufficient basic knowledge in medical physiology. Define homeostasis and explain how homeostatic mechanisms normally maintain a constant interior milieu. State the functions of each organ system of the body, explain the mechanisms by which each functions, and relate the functions and the anatomy and histology of each organ system. Understand and demonstrate the interrelations of the organ systems to each other. Predict and explain the integrated responses of the organ systems of the body to physiological and pathological stresses. Explain the pathophysiology of common diseases related to the organ systems of the body The ability to understand, recognize different medical term and identify the normal function and diseases of human organ body. Ability to use basic laboratory devices related to the subject and have the ability of measuring and evaluating vital variables (blood pressure, pulse, ECG, nerve conduction velocity, basic pulmonary function tests) of the normal functions of the body in the laboratory.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<p>Introduction, Autonomic nervous system, Blood, Nerve& muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)</p> <ul style="list-style-type: none"> Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year



	<ul style="list-style-type: none"> • Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year • Guide students on assessment methods, rules and regulations • Introduction (Total body water , cell membrane and cell transport)
Session 2 (Week 2)	<p>Autonomic Nervous System</p> <ul style="list-style-type: none"> • Types Autonomic Nervous System <ul style="list-style-type: none"> • Chemical neurotransmitters • Function of sympathetic & Parasympathetic
Session 3 (Week 3)	<p>The blood:</p> <ul style="list-style-type: none"> • Major components and function of the blood • Red & white blood cells • Plasma protein and function
Session 4 (Week 4)	<ul style="list-style-type: none"> • Blood groups & hemostasis Blood clotting disorders
Session 5 (Week 5)	<p>Nerve & Muscle</p> <ul style="list-style-type: none"> • Structure of nerve cell • Properties of neuron • Resting membrane potential
Session 6 (Week 6)	<p>Nerve & Muscle</p> <ul style="list-style-type: none"> • Action potential • Excitation- contraction coupling • Mechanism of muscle contraction & relaxation
Session 7 (Week 7)	<p>Cardiovascular system</p> <ul style="list-style-type: none"> • Anatomy of the heart • Functional properties of cardiac muscle • Action potential & Conducting System
Session 8 (Week 8)	<ul style="list-style-type: none"> • Cardiac Cycle & Heart sound • Electrocardiograph
Session 9 (Week 9)	<ul style="list-style-type: none"> • Blood pressure • Cardio dynamic • Arrhythmia & circulatory Shock
Session 10 (Week 10)	<ul style="list-style-type: none"> • Arrhythmia • circulatory Shock
Session 11 (Week 11)	<p>Respiratory System</p> <ul style="list-style-type: none"> • Structure of the respiratory system • Lung volume & Capacities
Session 12 (Week 12)	<ul style="list-style-type: none"> • Oxygen & Carbon Dioxide in blood • Dissociation oxygen curve shift
Session 13 (Week 13)	<ul style="list-style-type: none"> • Transport carbon dioxide • Regulation of respiratory • Hypoxia
Session 14 (Week 14)	<p>Nervous System</p> <ul style="list-style-type: none"> • Division of the nervous system • Units of Nervous system • Types of Receptors
Session 15 (Week 15)	Mid exam
Session 15 (Week 16)	<p>Nervous System:</p> <ul style="list-style-type: none"> • Properties of receptors, Synapse, Types of synapse, Mechanism of neurotransmitter
Session 16 (Week 17)	<ul style="list-style-type: none"> • Somatic sensation



	<ul style="list-style-type: none"> •TypesSomatic sensation • Pain sensation •Pathways
Session17(Week 18)	<ul style="list-style-type: none"> •Referred Pain •Pain Control System
Session18(Week19)	Special senses <ul style="list-style-type: none"> •Vision •Hearing
Session19(Week 20)	<ul style="list-style-type: none"> •Special senses •Gustation •Olfaction
Session20(Week 21)	Gastrointestinal tract <ul style="list-style-type: none"> •characteristics of gastrointestinal wall •Explain functional types of movements in GIT •Control of GIT
Session21(Week 22)	<ul style="list-style-type: none"> •GIT hormones and their role in digestive process •Describe GIT reflexes •Mastication and salivary secretions
Session22 (Week 23)	<ul style="list-style-type: none"> •Describe motor functions of stomach •Explain regulation of stomach emptying &the composition, function and •regulation of gastric secretions •Vomiting reflex
Session23 (Week 24)	<ul style="list-style-type: none"> •Gall bladder and biliary tract •intestinal motility •Defecation reflex
Session25 (Week 25,26)	Urinary system <ul style="list-style-type: none"> •The kidney •Urine formation •Micturition •Renal failure •Male reproductive •Female reproductive
Session26 (Week 27,28)	Endocrine System Pituitary gland Thyroid gland Parathyroid Adrenal gland Endocrine cell in other organs
Session27 (Week 29)	Final Exam
Attendance Expectations	Students must attend each of lecture, arriving on time, . Absences are permitted only for medical reasons and must be supported with a doctor's note. Because collage bylaw do not allow student to absences for more than 25%
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses. Numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.



Course Change

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Medical Psychology & Teaching Methodology

1	Course name	Medical psychology& Teaching Methodology
2	Course Code	MT206
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	BSc Of Medical Technology
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>Fisrt part of this course will provide students with a fundamental understanding of medical Psychology, a subfield of behavioral medicine, is the study of psychological factors important in the promotion and maintenance of health and the psychological factors contributing to illness and disease. It is designed to apply a scientific and research perspective to the study of health promoting and health damaging behaviors. Modification of health-related behaviors will be explored.</p> <p>Second part of the course will cover different teaching methods and techniques.</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> • Textbook of Medical Psychology Hardcover – January 1, 1961 • https://bookauthority.org/books/best-medical-psychology-books • https://www.elsevier.com/books/medical-psychology/prokop/978-0-12-565960-4 • Anthony, Michael J. Introducing Christian Education: Foundations for the Twenty-first Century. Baker Academic, 2001. • Armstrong, Thomas. Multiple Intelligences in the Classroom: 2nd Edition. Association for Supervision and Curriculum Development, 2000. • Dawn, Marva J. Is It A Lost Cause? Having the Heart of God for the Church's Children. William B Eerdmans Publishing Company, 1997. • Unfettered Hope: A Call to Faithful Living in an Affluent Society. Westminster John Knox Press, 2003. • Durka, Gloria. The Teachers Calling: A Spirituality for Those Who Teach. Paulist Press, 2002. • Church Educational Ministries: More than Sunday School. Evangelical Training Association, 1985.






	<ul style="list-style-type: none"> • Teaching Techniques for Church Education. Evangelical Training Association, 1983. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Up on completion of this course students will be able to:</p> <ul style="list-style-type: none"> • Understand the principle domains of psychology that are most relevant to medicine. • Know the key areas of psychology that would provide the basis for viewing people not only as biological but also as psychological beings. • Be familiar with the application of psychology in the wider practice of medicine. • understand the interaction between psychological and medical principles in the development, assessment and diagnosis and in the treatment of medical illnesses. • Will be able to define and list the fruits of the spirit. • The student will be able to explain why the fruit of the spirit are important to believers. • The student will be able to assess which fruits are most and least evident in their own lives. • The student will develop a plan to practice more of the fruit of the spirit for the next week • Understand the basics of teaching methods • Know different techniques of teaching and questions preparations.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An introduction to Medical psychology
Session 2 (Week 2)	Psychology and Medicine <ul style="list-style-type: none"> • Explain what the field of Psychology studies. • Describe the different areas of Psychology. • Describe the way by which Psychology is linked to Medicine.
Session 3 (Week3-4)	Brain Mechanisms and Behaviour <ul style="list-style-type: none"> • Describe the basics of Neural Communication. • Explain the Basic Structure and function of the Nervous system. • Outline the link between biology and behavior.
Session 4 (Week 5)	Senses and Integration on Senses <ul style="list-style-type: none"> • Describe the role and the importance of the different types of senses. • Outline the main functional theories of vision. • Outline the main functional theories of audition. • Outline the main theories of somatosensation. • Outline the main theories of the functions of smell

Session5 (Week 6)	<ul style="list-style-type: none"> • Perception, attention and Memory • Outline the role of the different types of perception. • Describe the main theories of visual perception. • Describe the main theories of auditory perception. • Outline the main types of attention. • Describe the main theories of attention. • Outline the main types of memory. • Describe the main theories of memory
Session 6 (Week 7)	<p>Child Development (from birth to adolescence)</p> <ul style="list-style-type: none"> • Describe the different stages of development from birth to adolescence. • Outline the main theories of child development. • Outline the main theories of early stages of language acquisition. • Describe the main theories of language development. • Outline the theories connecting language and cognition. • Language and the brain.
Session 7(Week 8)	<p>Language, Motivation and Emotions</p> <p>Individual Differences in Intelligence and Personality</p> <ul style="list-style-type: none"> • Outline the area of Motivation. • Outline the way by which motivation is link with emotion. • Outline the main theories of Emotions. • Describe the biological theories of emotions. • Describe the psychological theories of emotions. • Outline the role of individual differences as observed in everyday activities and as measured by psychometric tools. • Outline the main Psychometric tools and their role in diagnosis. • Outline the main Personality tests and their value in clinical assessment.
Session 8 (Week 9)	<p>Adulthood and Sexual Behaviour</p> <ul style="list-style-type: none"> • Describe the characteristics of Adulthood. • Outline the interconnection between psychological and biological characteristics of this stage of human development. • Distinguish between Psychoanalytic and Psychological views on sexuality. • Describe the role of sex in human relationships • Describe the psychological factors contributing to our better understanding of sexual behaviour between sexes.
Session 9 (Week 10)	<ul style="list-style-type: none"> • Sleep, Consciousness, Family Aging, Death and Bereavement • Explain the different stages of sleep as described by EEG studies <p>Outline the three theories of sleep.</p> <ul style="list-style-type: none"> • Explain the usefulness of sleep with reference to research studies on total and on selective sleep deprivation. • Describe the role of the family from a developmental perspective and its contributory role in the development of individuals as social and biological beings.




	<ul style="list-style-type: none"> • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family. • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family.
Session 10 (Week 11)	<p>Psychology and Medicine: Patients and Doctors</p> <ul style="list-style-type: none"> • Outline the role played by psychological factors such as emotions and stress in the development of illnesses and/or dysfunctions. • Outline the Biomedical and the Biopsychosocial Approaches to Medicine. • Identify the advantages and disadvantages of each approach in the development of modern medicine. • Outline the impact of psychological principles in doctor patient contact and communication.
Session 11 (Week 12) 	<p>Psychosomatic Problems, Psychosocial Aspects of Hospitalization and Psychosocial Approaches Treatment</p> <ul style="list-style-type: none"> • Describe the different factors contributing to the impact that hospitalisation has on people. • Describe the potential psychological impact that hospitalisation may have on people. • Outline the role of psychosocial approaches in medical practice. • Outline the role of placebo effect in the treatment of both physical and psychological treatments. • Describe the role of psychological principles and psychoeducation in facilitating problem solving and diagnosis. • Outline the way by which psychological factors contribute to the development of somatic problems. • Describe different types of psychosomatic problems. • Outline possible ways of distinguishing between psychosomatic and physical problems.
Session 12 (Week 13)	<p>Coping with illness and Disability, Psychopathology and Mental illness and Rehabilitation</p> <ul style="list-style-type: none"> • Outline the psychological factors contributing to coping with illness and disability. • Describe the different approaches and techniques employed for coping with these difficulties. • Outline the different areas of Psychopathology. • Outline the methods employed in the diagnosis of psychological and psychiatric disorders. • Outline the treatments often used in the treatment of psychiatric and psychological disorders. • Explain what is meant by chronic mental illness and the process of rehabilitation.
Session 14 (Week 14)	Midterm Exam

Session 16 (Week 16)	• Teaching Principles
Session 17 (Week 17)	• Student Centered vs. Teacher Centered Learning
Session 18 (Week 18)	• Learning Styles
Session 19 (Week 19)	• Creating a Lesson: Overview • Creating a Lesson: Goals • Creating a Lesson: Outcomes
Session 20 (Week 20)	• Creating a Lesson: Information Delivery
Session 21(Week 21-22)	• Teaching Methods
Session 22 (Week 23)	• Creating a Lesson: Activities
Session 23 (Week 24)	• Creating a Lesson: Measurement
Session 24 (Week 25)	• Creating a Lesson: Evaluation
Session 25 (Week 26)	• The Teacher's Responsibilities
Session26(Week27-28)	• Presentations
Session27(Week29)	Revision and discussion
Session28(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Professional Ethics



1	Course name	Professional Ethics
2	Course Code	MT207
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English

9	Date of course approval	2022
Brief Description:	The content is designed to enable the student to be aware of the basic rules of medical ethics. The student will become familiar with the definitions and ethical behavior that is required by the healthcare professional.	
Textbooks required for this Course:	<ul style="list-style-type: none"> • القيم الخلقية وتطبيقاتها العملية، د. عبد الباسط الأمير • مقدمة في زراعه الاعضاء، د. الهادي عصمان • WMA medical ethics manual 2015 • Principles of Biomedical Ethics, 5th edn. • https://www.elsevier.com/books/medical-ethics-and-law/wilkinson/978-0-7020-7596-4 	
Course Duration	2 * 28 = 56 teaching hours	
Delivery	Lectures, Problem based learning and Class discussion.	
Course Objectives:	 <p>This course introduces medical technology students to the field of medical ethics. The objective of the course is:</p> <ul style="list-style-type: none"> • To convey to students, the pivotal role ethics holds in medical practice. • It introduces the key underlying ethical principles required in medicine. • The application of these principles will be brought to life through case based learning (CBL). • Recognize ethical issues when they arise in their practice • Deal with these issues in a systematic manner • Understand the ethics of medical research • To create an awareness on medical Ethics and Human Values. • To instill Moral and Social Values and Loyalty • To appreciate the rights of others. 	
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.	
Content Breakdown	Topics Coverage	
Session 1 (Week 1)	Introduction and history of medical ethics	
Session 2 (Week 2)	Principles of medical ethics	
Session 3 (Week 3-5)	Physicians and patients, Physicians and society Physicians and colleagues	
Session 4 (Week 6 -7)	Ethics of medical research	
Session5 (Week 8 - 9)	Informed consent	
Session6 (Week 10 - 11)	Ethics of gynecology and obstetrics Ethics of infertility	
Session 7 (Week 12 -13)	Ethics of healthcare system	
Session 8(Week 14)	Professionalism	
Session 10(Week 15)	Review and general discussion	
Session 11(Week 16)	Med term exam	
Session 12(Week17-18)	Medical errors	
Session13(Week 19-20)	Libya law of medical responsibility	
Session 14 (Week 21-22)	Humanism in medicine and Ethics of end of life	
Session 15 (Week 23)	Ethics of authorship and publication	

Session 16 (Week 24-25)	Ethics of medical education
Session 17 (Week 26-27)	Theories of ethics
Session 18 (Week 28)	Revision and discussion
Session 19 (Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Health Management



1	Course name	Health management
2	Course Code	MT208
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>Health Care Management provides a framework for addressing management problems in health care organizations. By the end of the course you will have been exposed to many management ideas, theories and applications, students will be able to:</p> <p>Know the process of communication and its nature, and get to know the environment surrounding the hospital. Identify the forms and</p>
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	types of management, Getting to know the correct and nursing information collection system
Textbooks required for this Course:	<ul style="list-style-type: none"> Principles of Hospital Administration and Planning (First Edition: 1998, Second Edition: 2009 ISBN 978-81-8448-632-2). Buchbinder, S.B., & Shanks, N.H. (2012). Introduction to Health Care Management Jones & Bartlett, Publishers, 2nd Edition. Essential Textbook of Health Management 5. July 2019: Publisher: Samiksha Publication ISBN: 978-9937710-55-8. Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	A Lecture-based ppt and practical training B Group interaction and discussion
Course Objectives:	<p>Up on completion of the course the students will be enable to:</p> <ul style="list-style-type: none"> Learn concepts and theories in health care management; Develop skills in using materials tools and/or technology central to health care mgt; Learn to understand perspectives and values of health care management; Develop the basic management skills and ability to work productively with others; Learn to select, use, and critically analyze current HCMN research and literature; Integrate health care management theory with real world situations Develop the ability to work productively with others in diverse teams. To have reliably demonstrated the ability to make decisions on sound grounds, and can understand the concept of the hospital, can arrange health services, structure the health facilities and develop administrative skills.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An Introduction to the Health management
Session 2 (Week 2)	The historical role of medical and nursing health services
Session 3 (Week 3)	Hospital Operation Management Epidemiological basis for healthcare management. Management development-towards development of professional management of the Health system>
Session 6(Week 6)	Hospital concept and classification hospital environment
Session 7 (Week 7)	Hospital health planning
Session 8 (Week 8)	The organizational structure of the hospital
Session 9(Week 9)	Hospital Operational Management





	Management of Quality Assured services of professional service units of hospitals. Quality control mechanisms.
Session 10(Week 10)	Outpatient & In Patient Services in the Following Fields (Basic knowledge only): Radiotherapy, Nuclear medicine, surgical units, and OT Medical units, G & Obs. units & LR. Pediatric, neonatal units, Critical care units, Rehabilitation. Skin, Eye, ENT, Neurology, Dental, Gastroenterology, Endoscopy, Pulmonology, Cardiology, Cath lab, Nephrology & Dialysis, Urology, Orthopedics, Transplant units, Burn Unit
Session 11(Week 11)	Medical Record Science Definition and types of medical record, Importance of medical record, Flow chart of function, Statutory requirements of maintenance, coding, indexing and filing, Computerization of record, Report and returns by the record department, Statistical information and ICD
Session 12(Week 12)	Leadership and management An overview of healthcare management and leadership
Session 13(Week 13)	Management and motivation
Session 14(Week 14)	Midterm Exam
Session 15(Week 15)	Organizational Behavior (OB) and Management Thinking
Session 16(Week 16)	Quality Improvement
Session 17(Week 17)	Health care information Technology Health and Nursing Information Collection System
Session 18(Week 18)	Healthcare Financing, Cost and revenue management
Session 19(Week 19-20)	Health Care Professionals Management Health personnel management The Strategic Management of Human Resources
Session 20(Week 21)	Addressing Health Disparities: Cultural Proficiency, Ethics and Law.
Session 21(Week22)	Fraud and abuse
Session 22(Week 23)	Communication, health administration
Session 23(Week 24)	Administrative Support in Healthcare Organizations
Session 24(Week 25)	Clinical Care in Healthcare Organizations
Session 25(Week 27)	Medical Laboratories Management
Session 26(Week 28)	Revision and discussion
Session 27(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Physics related Anesthesia

1	Course name	Physics related Anesthesia
2	Course Code	AT201
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Physics
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will cover all topics related to equipment, physics and clinical measurement. Presents easy to understand information in a highly readable format with figures throughout to illustrate equipment and principles.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Text book Basic Physics & Measurement in Anesthesia, 5th Edition • An introductory text to the physical principles and their clinical application in anesthesia. • Basic Physics & Measurement in Anaesthesia by Paul Davis, Gavin Kenny 5th Edition - June 3, 2003 • Fundamental Physics in Anaesthesia by Lalit GuptaAnshul 2022 DOI: 10.9734/bpi/ntpsr/v7/2902A • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		4 * 28 = 112 traching hours
Delivery		Lecture-based. Group interaction and discussion. self-directed activities. active participation. Laboratory experiments.
Course Objectives:		Upon completion of this course, the student will have the ability to: <ul style="list-style-type: none"> • Knowledge of simple physics in order to understand fully the function of many items in anesthetic apparatus. • Offers a comprehensive guide to physical principles and their clinical application in anesthesia to help the reader practice safe and reliable anesthesia.





	<ul style="list-style-type: none"> • Uses clinical examples throughout to aid in understanding. • Provides practical advice on essential measurement and monitoring using the latest equipment and technology. <ul style="list-style-type: none"> • Students are expected to understand states of matter, principles of dynamics of gases and fluid, apply knowledge in practice, and to demonstrate abilities in the anesthesia management of in the realm of physics
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction of physics
Session 2 (Week 2)	Pressure <ul style="list-style-type: none"> • This part discusses pressure measurements both in patients and on the anesthetic machine. Pressure is the force applied or distributed over a surface, and it is expressed as force per unit area.
Session 3 (Week 3)	Fluid Flow <ul style="list-style-type: none"> • This part discusses the different types of fluid flow. Flow is defined as the quantity of a fluid. In laminar flow, a fluid moves in a steady manner, and there are no eddies or turbulences. This is the type of flow normally present in smooth tubes at low rates of flow.
Session 4 (Week 4)	Volume and Flow Measurement I <ul style="list-style-type: none"> • This part discusses different techniques used for volume and flow measurement in clinical situations. The Benedict Roth spirometer is widely used for both physiological and clinical studies.
Session 5 (Week 5)	Volume and Flow Measurement II <ul style="list-style-type: none"> • In this method, a light bell moves with the patient's breathing, and this movement may be recorded by a pen on a rotating drum, the motion of the bell being transferred to the pen through a connecting wire that passes over two pulleys. A water seal prevents the leakage of gas from the bell, and this seal is kept small to reduce the volume of gas that dissolves in the water.
Session 6 (Week 6)	The Gas Laws I



	<ul style="list-style-type: none"> This part discusses the gas laws. All substances are composed of atoms or molecules. In a solid, the atoms or molecules are usually arranged in a regular formation called a lattice, and each molecule in the lattice exerts forces on its neighbors and is continuously in motion, oscillating about a mean position.
Session 7 (Week 7)	<p>The Gas Laws II</p> <ul style="list-style-type: none"> If heat is added to a solid, each molecule vibrates with greater amplitude and, therefore, takes up a greater amount of space.
Session 8 (Week 8)	<p>Natural Exponential Functions</p> <ul style="list-style-type: none"> Natural exponential function is a special form of nonlinear change often encountered in medicine and usually referred to for convenience as an exponential. If the flow from the bath is assumed to be laminar, then the rate of flow is directly proportional to the pressure head. On the other hand, the pressure head of water driving the flow out
Session 9 (Week 9)	<p>Solubility</p> <ul style="list-style-type: none"> This chapter discusses the concept of solubility. When a liquid is placed in a closed container, equilibrium is eventually established at the surface between the vapor of the liquid and the liquid itself. In this equilibrium state, the partial pressure exerted by the vapor is known as the saturated vapor pressure.
Session10(Week10-11)	<p>Diffusion and Osmosis I</p> <ul style="list-style-type: none"> This chapter discusses osmosis and diffusion as the transport of molecules from a surface of the solution. Diffusion is the process by which the molecules of a substance transfer through a layer or area, such as the surface of a solution.
Session 11 (Week 12)	<p>Diffusion and Osmosis II</p> <p>Diffusion can take place without a membrane or a gas-liquid barrier. Fick's law applies only in a single homogeneous phase if gases are transferring from one phase into another as in the case of gases passing into solution.</p>
Session 12(Week 13)	<ul style="list-style-type: none"> Understanding of anesthesia cylinder, colorcoding, arrangement of different type of cylinder
Session 13(Week 14)	<ul style="list-style-type: none"> Medical gas pipeline system. Understanding administration of gas flow
Session 14 (Week 15)	Midterm exam
Session 15(Week 16)	<p>Work, Energy and Power I</p> <p>This part discusses work, energy, and power, with special reference to ventilation and cardiac output. Mechanical work is a</p>

	form of energy, and other forms of energy include heat energy and chemical energy. Work is done or energy is expended whenever the point of application of a force moves in the direction of the force.
Session 16(Week 17)	Work, Energy and Power II A constant-pressure generator type of ventilator presents a good example of the interrelationship between the force and distance moved and the pressure and volume changes. During expiration, the pressure at the ventilator falls rapidly to atmospheric and remains at zero while the air is expired. During inspiration, about half the mechanical energy used is stored as potential energy in the elastic tissues of the lung and the chest wall
Session 17 (Week 18)	Temperature: This part discusses the concept of heat and temperature. An analogy may be drawn between the relationship of heat to temperature and the relationship of the quantity of a solute to its concentration. Thus, in the same way that temperature rises as heat energy is added to a substance, concentration rises as a solute is added to a solution. In each case, if the substance or solution is divided into two equal parts, each part will have the same temperature or concentration although the heat energy or quantity of solute in each case is halved.
Session 18 (Week 19)	Heat Capacity and Latent Heat
Session 19 (Week 20)	Simple oxygen administration devices
Session 20 (Week 21)	Method of controlling gas flow
Session 21 (Week 22)	Vaporizers <ul style="list-style-type: none"> This part discusses the clinical application of saturated vapor pressure in vaporizers. A vaporizer is a device for adding clinically useful concentrations of anesthetic vapor to a stream of carrier gas.
Session22(Week23-24)	Humidification I This chapter discusses the clinical importance of humidity. Humidity is of importance in the operating theater because high humidity is unpleasant while low humidity may allow the build-up of static charges with a risk of explosion if flammable agents are in use. There are two methods of increasing the inspired humidity artificially. The first is by humidifying the environment, and the second is by humidifying the inspired gases alone
Session 23 (Week 25)	Humidification II <ul style="list-style-type: none"> There are two methods of increasing the inspired humidity artificially. The first is by humidifying the environment, and the second is by humidifying the inspired gases alone
Session 24 (Week 26)	Oxygen concentrator
Session 25(Week 27)	Use of oxygen purity meter
Session 26(Week 28)	Revision and discussion
Session 26(Week 29-30)	Final Exam



Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Ability to perform tasks in accordance with ethical and professional principles. The student should be able to write a report on the histological conditions. The student should be able to think critically to solve problems and make decisions.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.





Anesthesia Equipment Principles and Applications


1	Course name	Anesthesia Equipment Principles and Applications
2	Course Code	AT202
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of basic Principles of anesthesia and Resuscitation Urgent Care cover the basic principles of physiology and relevant pharmacology related to anesthesia field.
Textbooks required for this Course:		<ul style="list-style-type: none"> Anesthesia Equipment text book, Authors: Jan Ehrenwerth, James Eisenkraft, James Berry ,3rd edition 2020 The MGH Textbook of Anesthetic Equipment by Warren Sandberg, MD, Richard Urman, MD, and Jesse Ehrenfeld, MD, 2011


	<ul style="list-style-type: none"> Anesthesia Equipment Principles and Applications by Jan Ehrenwerth, James Eisenkraft, James Berry 3rd Edition - August 7, 2020 Anesthesia Equipment: Principles and Applications by J. Ehrenwerth & J. B. Eisenkraft & J. M. Berry 2013 Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, active participation, Laboratory experiments, Hospital training
Course Objectives:	<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> provides guidance on the safe use of a wide range of anaesthesia apparatus and best anesthetic equipment. Technology-driven changes, together with the high risks associated with anesthesia delivery, require that you understand everything from physics fundamentals to special situations to troubleshooting so you can safely and effectively use all the equipment and instrumentation in today's operating rooms. provide detailed information on the intricate workings of each device or workstation keeping fully up to date and helping you meet both equipment and patient care challenges. <p>The methodology followed in this course is oriented towards the achievement of the learning objectives.</p> <ul style="list-style-type: none"> A wide range of teaching and learning tasks are implemented, such as Lectures will be lead following classical oral presentation for all students Practice sessions: the methodology follows is based on participate group students and it will be held in the research seminars The workshops will be in small groups that we split according to the number of students.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Gases and Ventilation <ul style="list-style-type: none"> Medical Gases: Storage and Supply Overview Medical Gas Cylinders and Their Use Characteristics of Gas Cylinders Gas Cylinder Safety Issues
Session 2 (Week 2)	Gases and Ventilation <ul style="list-style-type: none"> Guidelines for Use of Medical Gas Cylinders Medical Gas Pipeline Systems Medical Gas Central Supply Systems



	<ul style="list-style-type: none"> • Medical Gas Pipelines • Hazards of Medical Gas Delivery Systems • Procedures
Session3 (Week 3)	The Anesthesia Machine and Workstation <ul style="list-style-type: none"> • Anesthesia Gas Delivery System • Anesthesia Machine Components • Gas Flow Through the Anesthesia Machine • Anesthesia Workstation Obsolescence and Pre-Use Checks • Contemporary U.S. Anesthesia Workstations
Session 4 (Week 4)	Anesthesia Vaporizers <ul style="list-style-type: none"> • General Principles • Vapor, Evaporation, and Vapor Pressure • Regulating Vaporizer Output • Effect of Use Variables on Vaporizer Function • Contemporary Vaporizers
Session 5 (Week 5)	Breathing Circuits <ul style="list-style-type: none"> • Introduction • History of Device Development • Classifications of Breathing Circuits • Components of a Breathing Circuit • Carbon Dioxide Absorption • Bacterial Filters • Analysis of Specific Circuits • Circuit Malfunction and Safety 
Session 6 (Week 6)	Waste Anesthetic Gases and Scavenging Systems <ul style="list-style-type: none"> • Trace Concentrations of Anesthetic Gases • Sources of Anesthetic Gas Contamination • Operating Room Ventilation Systems • Waste Gas Scavenging Systems • Hazards of Scavenging
Session 7 (Week 7)	Waste Anesthetic Gases and Scavenging Systems <ul style="list-style-type: none"> • Low-Flow Scavenging Systems • Anesthetic Leak Detection and Waste Gas Management • Work Practice Recommendations • Monitoring Trace Levels of Anesthetic Gases • Are Trace Concentrations of Waste Anesthetic Gases Hazardous? • Environmental Concerns • Technologies for Reduction of Waste Gas Release to the Environment
Session 8(Week 8)	Anesthesia Ventilators <ul style="list-style-type: none"> • Overview • History • Physiology and Mechanical Concepts • Physics of Gas Flow • Lung Function During Anesthesia And Mechanical Ventilation • Classification, Special Features, and Modes of Ventilation

Session 9 (Week 9)	Anesthesia Ventilators Capabilities and Limitations of Anesthesia Ventilators Modes of Ventilation Current Designs of Anesthesia Ventilators Ventilator Concerns With Use Check-Out Procedures
Session 10 (Week 10)	Humidification and Filtration <ul style="list-style-type: none"> • Overview • Physics of Humidity • Physiology of Humidification • Filtration • Heat and Moisture Exchangers
Session 11 (Week 11)	Respiratory Gas Monitoring <ul style="list-style-type: none"> • Overview • Gas Sampling Systems • Units of Measurement • Gas Analysis Technologies • Infrared Analysis • Raman Spectroscopy 
Session 12 (Week 12)	Respiratory Gas Monitoring <ul style="list-style-type: none"> • Water Vapor and Accuracy of Capnometers • Colorimetric Carbon Dioxide Detectors • Oxygen Analyzers • Balance Gas • Exotic Gases • Applications of Gas Monitoring
Session 13(Week 13)	Respiratory Gas Monitoring <ul style="list-style-type: none"> • Complications of Gas Monitoring • Credentialing for Use of Gas Monitoring • Practice Parameters • American Society of Anesthesiologists Standards for Post anesthesia Care
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Monitoring Ventilation <ul style="list-style-type: none"> • Overview • Respiratory Rate • Airway Pressures • Volume Measurement • Measurement of Gas Flows • Spirometry, Curves, and Loops • Capnography and Volumetric Capnography • Display of Ventilation Data • Practice Parameters
Session 16 (Week 16)	Patient Monitors Capnography <ul style="list-style-type: none"> • Overview • Terms and Definitions • Measurement Techniques • Systematic Interpretation of Time Capnography • Volumetric Capnography

	<ul style="list-style-type: none"> • Clinical Applications – Time-Based Capnography • Common Pitfalls • The Future
Session 17(Week 17)	Pulse Oximetry <ul style="list-style-type: none"> • Hemoglobin Saturation and Oxygen Transport • History of Pulse Oximetry • Physics and Engineering of Pulse Oximetry • Sources of Error • Multiwavelength Pulse Oximetry • Clinical Applications: Accuracy, Response, and Limitations
Session 18 (Week 18)	Temperature Monitoring <ul style="list-style-type: none"> • Overview • Thermoregulation • Effects of Anesthesia • Mechanisms of Intraoperative Heat Loss • Effects of Mild Perioperative Hypothermia • Hyperthermic States • Perioperative Temperature Management • Transducers and Devices for Measuring Temperature • Temperature Monitoring Sites • Guidelines for Temperature Monitoring
Session 19 (Week 19) 	Other Equipment Airway Equipment <ul style="list-style-type: none"> • Airway Patency, Access, and Patient Positioning • Patient Positioning • Techniques for Perioperative Oxygenation • Tracheal Tubes • Laryngoscopy • Intubating Adjuncts: Tube Introducers, Tube Exchangers, and Lighted Stylets • Airway Exchange Catheters • Optical Stylets and Tubes • Flexible Intubation Devices • Supraglottic Airways • Invasive Airway Techniques
Session20 (Week 20)	Preventing Transmission of Infectious Diseases <ul style="list-style-type: none"> • Overview • Hand Hygiene • Equipment • Preventing Blood-Borne Transmission • The Anesthesia Machine • Airborne Transmissible Disease • Managing Infectious Disease Risks to Anesthesia Professionals
Session 21 (Week 21)	Infusion Pumps <ul style="list-style-type: none"> • Background • Gravity-Driven Infusions • Positive-Pressure Pumps • Patient-Controlled Analgesia • Modern Infusion Pump Features • Infusion Safety • Emerging Technologies

<p>Session 22 (Week 22)</p>	<ul style="list-style-type: none"> • Considerations for Pump Selection <p>Vigilance, Alarms, and Ergonomics Vigilance, Alarms, and Integrated Monitoring Systems</p> <ul style="list-style-type: none"> • Overview • Anesthesia Mishaps • Vigilance and Monitoring Performance • Role of Standards in Anesthesia Equipment Design • Alarms • Integrated Monitoring Systems
<p>Session 23 (Week 23-28)</p> 	<p>Ergonomics of the Anesthesia Workspace</p> <ul style="list-style-type: none"> • History • What is Ergonomics? • Ergonomics Research in Anesthesiology • Ergonomics Guidelines • Ergonomics in Design <p>Safety, Standards, and Quality</p> <p>A. Hazards of the Anesthesia Delivery System</p> <ul style="list-style-type: none"> • Perspective • Complications • Circuit Pressure and Volume Problems • Anesthetic Agent Dosage and Administration Problems • Prevention of Complications • Cybersecurity of Medical Devices and the Implications of Cybersecurity Vulnerabilities • Definitions <p>B. Machine Checkout and Quality Assurance</p> <ul style="list-style-type: none"> • Overview • Background • Pre-anesthesia Checkout • Equipment Quality Assurance <p>C. Electrical and Fire Safety</p> <ul style="list-style-type: none"> • Introduction • Principles of Electricity • Electrical Shock Hazards • Electrical Power: Grounded • Electrical Power: Ungrounded • The Line Isolation Monitor • Ground Fault Circuit Interrupter • Double Insulation • Microshock • Electrosurgery • Environmental Hazards • Electromagnetic Interference • Construction of New Operating Rooms • Fire Safety <p>D. Standards and Regulatory Considerations</p> <ul style="list-style-type: none"> • Overview • Regulation of Medical Devices • Role of Standards in Medical Device Regulation • Medical Device Voluntary Standards

Session24(Week 29)	Revision and discussion
Session 25(30-32Week)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Research Methodology




1	Course name	Research Methodology
2	Course Code	MT301
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description: This course will provide students with a fundamental understanding of the research Methodology and offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Includes computer applications for research.

- Textbooks required for this Course:**
- Tuckman, B. W. & Harper, B. E. (2012). Conducting educational research (6th ed.). Lanham, MD: Rowan & Littlefield Publishers (ISBN: 978-1-4422-0964-0).
 - Cohen, L. Lawrence, M., & Morrison, K. (2005). Research Methods in Education (5th edition). Oxford: Oxford University Press.
 - Denscombes, M. (2010). The Good Research Guide: For small-scale social research projects. Maiden-Read: Open University Press.
 - Dornyei, Z. (2007). Research Methods in Applied Linguistics. Oxford: Oxford University Press.

	<ul style="list-style-type: none"> • Hoadjli, A.C. (2015). The Washback Effect of an Alternative Testing Model on Teaching and Learning: An exploratory study on EFL secondary classes in Biskra. Unpublished Doctoral Thesis, University of Mohamed Kheider, Biskra. • Kothari, C. R. (1980). Research Methodology: Research and techniques, New Delhi: New Age International Publishers. • Kumar, R. (2011). Research Methodology: a step-by-step guide for beginners (3rd edition). London, UK: TJ International Ltd, Padstow, Cornwall • Leedy, P. D. (1980). Practical Research: Planning and design. Washington: Mc Millan Publishing Co., Inc. • Singh, Y. K. (2006). Fundamental of Research Methodology and Statistics. New Delhi. New International (P) Limited, Publishers. • Wallinman, N. (2006). Your Research Project: A step-by-step guide for the first-time researcher. London: Sage Publications. • http://www.pitt.edu/~super7/43011-44001/43911.ppt • http://web.tamu-commerce.edu/academics/graduateSchool/ • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completing this course, each student will be able to:</p> <ul style="list-style-type: none"> • Understand some basic concepts of research and its methodologies and identify appropriate research topics. • Demonstrate knowledge of research processes (reading, evaluating, and developing). • Perform literature reviews using print and online databases. • Understand the formats for citations of print and electronic materials. • Identify, explain, compare, and prepare the key elements of a research proposal/report. • Compare and contrast quantitative and qualitative research paradigms, and explain the use of each of them. • Describe, compare, and contrast descriptive and inferential statistics, and provide examples of their use in research. • Describe sampling methods, measurement scales and instruments, and appropriate uses of each. • Explain the rationale for research ethics and importance • select and define appropriate research problem and parameters • prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner • Write a research report, thesis and research proposal. • Make Critical Appraisal of the Literature
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>




Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to research methodology <ul style="list-style-type: none"> • Meaning of Research • Definitions of Research • Objectives of Research
Session 2 (Week 2)	Introduction to research methodology <ul style="list-style-type: none"> • Motivation in Research • General Characteristics of Research • Criteria of Good Research
Session 3 (Week 3)	The Research Problem <ul style="list-style-type: none"> • Scientific Thinking • What is a Research Problem? • Selecting the Problem • Sources of the Problem • Defining a Problem • Statement of a Problem • Delimiting a Problem • Evaluation of a Problem Assignment 1 handed out 
Session 4 (Week 4)	•The Review of Literature <ul style="list-style-type: none"> • Meaning of Review of Literature • Need of Review of Literature • Objectives of Review of Literature • Sources of Literature • The Functions of Literature • How to Conduct the Review of Literature • Some Hints for the Review of Literature • Precautions in Library Use • Reporting the Review of Literature
Session 5 (Week 5)	Practice on how to find a literature <ul style="list-style-type: none"> • Selecting a topic • Highlighting the electronic websites that help to better search of literature
Session 6 (Week 6)	The Research Hypotheses <ul style="list-style-type: none"> • Meaning of Hypothesis • Definitions of Hypothesis • Nature of Hypothesis • Functions of Hypothesis • Importance of Hypothesis • Kinds of Hypothesis • Characteristics of a Good Hypothesis • Variables in a Hypothesis • Formulating a Hypothesis • Testing the Hypothesis Assignment 2 handed out
Session 7 (Week 7)	The Research Approach <ul style="list-style-type: none"> • The Philosophical Background • The Qualitative Approach • The Quantitative Approach • The Mixed-Methods Approach
Session 8 (Week 8)	Criteria for Selecting a Research Approach

Session 9 (Week 9)	The Research Designs <ul style="list-style-type: none"> • Meaning of research design • Need for research design • features of a good design
Session 10 (Week 10)	Review
Session 11 (Week 11)	Assignment of research paper <ul style="list-style-type: none"> • selecting paper • guidelines of reading research paper
Session 12 (Week 12)	Assignment of research paper <ul style="list-style-type: none"> • Review before submitting the assignment
Session 13 (Week 13)	Cross-sectional study
Session 14 (Week 14)	Case-control study
Session 15 (Week 15)	Cohort study
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Experimental study
Session 18 (Week 18)	Criteria for Selecting a Research design
Session 19 (Week 19)	Sampling <ul style="list-style-type: none"> • Meaning and Definition of Sampling • Functions of Population and Sampling • Methods of Sampling • Characteristics of a Good Sample • Size of a Sample
Session 20 (Week 20)	Data Collection Methods <ul style="list-style-type: none"> • Questionnaires • Interviews • Focus Groups • Observation
Session 21 (Week 21)	Interviewing techniques <ul style="list-style-type: none"> • Face-to-face interview • Telephone interview • Computer based interview
Session 22 (Week 22)	Data management and analysis <ul style="list-style-type: none"> • Descriptive statistics • inferential statistics
Session 23 (Week 23)	Writing research proposal
Session 24 (Week 24)	Writing research report
Session 25 (Week 25)	Critical Appraisal of the Literature
Session 26 (Week 26)	Guidelines for submitting graduation project
Session 27 (Week 27)	Review of research methodology
Session 28 (Week 28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.




Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.
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Pathology

1	Course name	Pathology
2	Course Code	MT305
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	ENGLISH
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of the disease, including its causes, growth patterns, and consequences, plus investigation of those pathological mechanisms common to all tissue-cell pathology. Attention is paid to the processes of cellular adaptation, inflammation, repair, immunology, cellular accumulation, and neoplasia.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Robbins & Cotran Pathologic Basis of Disease 10th Edition - May 18, 2020 • Robbins & Cotran Pathologic Basis of Disease (Robbins Pathology) 10th Edition by Vinay Kumar MBBS MD FRCPATH Abul K. Abbas MBBS, Jon C. Aster MD PhD 2020 • Human Diseases: Systemic Approach - Text Only - 8th edition 2015 ISBN: 9780133424744. • Textbook of pathology by Harsh Mohan 6th edition, ISBN: 978-81-8448-702-2, 2010. • https://morfopatologie.usmf.md/wpcontent/blogs.dir/78/files/sites/78/2016/09/Harsh-Mohan-Textbook-of-Pathology-6th-Edition.pdf • Additional Resources, Handouts and sheets, also some web links may be used in this course provided after any lecture by instructor
		
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based. Group interaction and discussion. self-directed activities. active participation. Laboratory experiments.
Course Objectives:		Upon completion of this course, the student will have reliably demonstrated the ability to:



	<ul style="list-style-type: none"> • Understand the common terms and definitions used in pathology • Identify of the nature of the disease, including its causes, growth patterns, and consequences • Recognize the biological characteristics that distinguish each disease from the other. • The ability to distinguish the origin of the disease and how it develops <p>The ability to distinguish the origin of the disease and how it develops</p> <ul style="list-style-type: none"> • That the student distinguishes between the causes of disease, its mechanisms, and the method of treatment • The student will infer the causes of disease and its growth patterns • The student determines the appropriate diagnostic tools and mechanisms to detect the disease
Course Assessments	Activities 10% Midterm exam 20 % Attendances 10% Final Exam 60% A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to pathology • Pathology gives explanations of a disease by studying the following four aspects of the disease <ol style="list-style-type: none"> 1. Aetiology 2. Pathogenesis 3. Morphologic changes 4. Functional derangements and clinical significance • The causes of disease <ul style="list-style-type: none"> Environmental factors Genetic Factors
Session 2 (Week 2)	Cell injury. <ul style="list-style-type: none"> - Homeostasis & Cellular adaptation. - Cellular injury and its etiology & pathogenesis. - Hypoxic cell injury (Reversible & Irreversible cell injury).
Session 3 (Week 3)	Cell injury. <ul style="list-style-type: none"> - Free radicals (sources, effects & destruction of FR). - Cell injury by chemicals and Cell injury by viruses.
Session 4 (Week 4)	Cell injury. <ul style="list-style-type: none"> - Cell Aging. - Necrosis, Apoptosis & Gangrene. - Calcification, Pigmentation & Intracellular Accumulations.
Session 5 (Week 5)	<ul style="list-style-type: none"> • Inflammation . a. Acute inflammation & its types.
Session 6 (Week 6)	b. Chronic inflammation, Granuloma & its types.
Session 7 (Week 7)	<ul style="list-style-type: none"> • Repair and healing.
Session 8 (Week 8)	<ul style="list-style-type: none"> • Infectious diseases. a. Bacterial, Viral, Fungal and Parasitic infection - a general outline b. Granulomatous diseases: Tuberculosis, Syphilis, Leprosy, Actinomycosis, Bilhaziasis, typhoid, Amebiasis & Hydatid disease.
Session 9 (Week 9)	<ul style="list-style-type: none"> • Immunopathology. 1. Immune mechanism of tissue injury:

	a. Type I hypersensitivity. b. Type II hypersensitivity. c. Type III hypersensitivity. d. Type IV hypersensitivity. e. Tissue transplantation.	
Session 10 (Week 10)	2. Autoimmune diseases: a. Systemic Lupus Erythematosus. b. Rheumatoid arthritis. c. Sjogron's Syndrome. d. Systemic Sclerosis (Scleroderma) and Psoriasis.	
Session 11(Week 11)	3. Immunodeficiency I.D: Congenital "primary I.D, Acquired "secondary I.D, AIDS - Amyloidosis	
Session 12(Week 12)	<ul style="list-style-type: none"> • Nutrition disorder. Malnutrition, Obesity and Vitamin deficiency disorders. 	
Session 13 (Week 13)	<ul style="list-style-type: none"> • Ionizing radiation. a. Sources of radiation. b. Mechanisms of radiation injury. c. Effects of ionizing radiation on cells and tissues. 	
Session 14(Week 14)	<ul style="list-style-type: none"> • Hemodynamic disorders Edema, Hyperemia, Congestion, Hemorrhage 	
Session 15Week 15)	, embolism, thrombosis & Infarction & Shock.	
Session 16Week 16)	GENETIC DISORDERS	
	a. Single - Gene Defect "Mendelian Disorders" b. Disorders with Multifactorial Inheritance	
Session 17Week 17	c. Cytogenic Disorders "Chromosomal Aberations"	
Session18(Week18)	<ul style="list-style-type: none"> • Neoplasia. - Tumours, Aetiology & spread, common tumours. 	
Session19(Week19 - 22)	Respiratory diseases. Pneumonias, Bronchiectasis Emphysema, Chronic bronchitis,Asthma.	
Session20(Week23 - 27)	Cardiovascular diseases . - Blood, anemia, Heart and blood Vessels, common congenital anomalies, Rheumatic & Coronary heart diseases	
Session 21(Week28)	Revision and discussion	
Session 22(Week29 - 30)	Final exam	
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.	
Generic Skills	The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition. The student should be able to think critically to solve problems and make decisions	
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.	

Principle of Anesthesia

1	Course name	Principle of Anesthesia
2	Course Code	AI301
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Anatomy , physiology and pharmacology
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of Principles of anesthesia cover the basic principles of physiology and relevant pharmacology related to anesthesia field.
Textbooks required for this Course:		<ul style="list-style-type: none"> ▪ Fundamental Principles and Practice of Anaesthesia 1st Edition ▪ Anesthetic Pharmacology Basic Principles and Clinical Practice, 2nd Edn, A. Evers, M. Maze and E. Kharasch (editors). ▪ Principles of Anesthesia Equipment by Yasodananda K Areti, Bhavani Shankar Kodali 1st edition 2016 ▪ Atlas of Anesthesia: 8-Volume Set 1st Edition ▪ by Ronald D. Miller MD MS (Editor), Robert R. Kirby MD (Editor), Debra A. Schwinn MD (Editor) ▪ Additional Resources, Handouts and sheets, also some web links may be used in this course provided after any lecture by instructor
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion , active participation, Laboratory experiments Hospital training
Course Objectives:		<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> • Understand basic physiological and pharmacological action of anesthetic drugs within all types (local, general, regional, analgesic and sedative and muscle relaxant, etc.) • Identify concepts in the principles of anesthesia. • Describe the different anesthetic drugs, their preparation methods, and their use • Identify representations, terms, conditions, and principles of anesthesia • Recognize different Anaesthetic triad, the component parts of a typical general Anaesthetic, and adjunctive drugs and techniques. • The student should be able to communicate in writing and orally



	<ul style="list-style-type: none"> The student should be able to work in a team
Course Assessments	Activities 10% Midterm exam 20 % Attendances 10% Final Exam 60% A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Anesthesia History of Anesthesia Preoperative assessment and patient history
Session 2 (Week 2)	Introduction to Anesthesia Preoperative assessment and patient history
Session3 (Week 3)	Physiology of Anaesthesia
Session 4 (Week 4)	Anesthesia and the lung
Session 5 (Week 5)	The cardiovascular system
Session 6 (Week 6)	The cardiovascular system and Anesthesia
Session 7 (Week 7)	Anesthesia and the central nervous system
Session 8(Week 8)	The cardiovascular system and Anesthesia
Session 9 (Week 9)	Physiology of Anesthesia Anesthesia for ear and nose procedures
Session 11 (Week 10)	Anesthesia for throat procedures
Session 12 (Week 11)	Physiology of Anesthesia The kidney and Anesthesia.
Session 13(Week 12)	Physiology of Anesthesia The liver and Anaesthesia
Session 14 (Week 13)	Physiology of Anesthesia The liver and Anaesthesia
Session 15 (Week 13)	Midterm exam
Session 16 (Week 16)	Perioperative management of selected endocrine disorders
Session 17(Week 17)	Perioperative management of selected endocrine disorders
Session 18 (Week 18)	Pharmacology of Anaesthesia: General autonomic nervous system pharmacology
Session 19 (Week 19)	General Anaesthetic drugs Intravenous Anaesthetic drugs
Session20 (Week 20)	Inhalation Anaesthetic drugs
Session 21 (Week 21)	The pharmacokinetics of inhaled Anaesthetic drugs
Session 22 (Week 22)	Neuromuscular blocking drugs
Session23(Week23-27)	Local Anaesthetic Drugs
Session24(Week28)	Drug interactions V. Principles of premedication The opioids Sedative drugs Antiemetic drugs Hypertensive drugs
Session25(Week29)	Revision and discussion
Session26(Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.



Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Paediatric

1	Course name	Paediatric
2	Course Code	AI302
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental to Construct basic knowledge about children age stages. Recognize the paediatric illnesses and assessment the severity of cases. Identify the treatment plan.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Essential Paediatrics and Child Health, 4th Edition Mary Rudolf, Anthony Luder, Kerry Jeavons 2020 • American Academy of Pediatrics Textbook of Pediatric Care Edited by Thomas K and others ISBN electronic: 978-1-61002-579-9 • Illustrated Textbook of Paediatrics Fourth Edition Edited by Dr Tom Lissauer MB BChir FRCPCH • Honorary Consultant Paediatrician, Imperial College Healthcare Trust, London, UK 2012, ISBN 978 0 7234 3565 5 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		Upon completion of this course, the student will have reliably to:



	<ul style="list-style-type: none"> • Identify children age stages. • Describe the kids disease. • Compare between morbid child and healthy child in same age. • Recognize child disease. • Ability to assess illness.
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam. A60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Growth and development of a child from birth to 12 years: including physical, social.
Session 2 (Week 2)	Growth and development of a child from birth to 12 years: including adaptive development.
Session 3(Week 3)	List the maternal and neonatal factors contributing to high risk pregnancy. The neonatal inherited diseases; maternal infections - viral and bacterial; maternal diseases incidental to pregnancy.
Session 4(Week 4)	chronic maternal diseases such as heart diseases, renal failure, tuber-culosis, diabetes, epilepsy; bleeding in the mother at any trimester
Session 5 (Week 5)	poliomyelitis, blindness, deafness, mental retardation and Hypothyroidism.
Session 6(Week 6)	Cerebral Palsy: Define and briefly outline etiology Prenatal perinatal and postnatal causes; briefly mention pathogenesis.
Session 7(Week7)	Types of cerebral palsy (Classification), findings on examination; General examination, examination of C.N.S. Musculoskeletal system, respiratory system, Gastro-intestinal tract & nutritional status.
Session8 (Week 8)	Erb's palsy: define and briefly outline etiology, clinical features.
Session9 (Week 9)	Erb's palsy: investigation and management (medical & surgical).
Session 10 (Week 10)	Congenital muscular Torticollis: define and briefly outline etiology.
Session 11 (Week 11)	Congenital muscular Torticollis: clinical features, investigation and management.
Session 12(Week12)	Club foot deformity (Talipes equinovarus): define and briefly outline etiology, clinical features, investigation and management.
Session 13 (Week 13)	Congenital Dislocation of Hip: define and briefly outline etiology, clinical features.
Session14(Week 14)	Midterm Exam
Session 15 (Week 15)	Congenital Dislocation of Hip: investigation and management
Session 16 (Week 16)	Muscular dystrophy: Outline various forms, modes of inheritance and clinical manifestation; physical findings in relation to disabilities progression of various forms and prognosis, Describe medical management
Session 17 (Week 17)	Spina bifida (meningomyelocele): Outline development; clinical features, lower limbs,
Session 18 (Week 18)	Bladder and bowel control; complications - U.T.I.
Session 19 (Week 19)	Hydrocephalus; outline medical treatment and surgical treatment.
Session20(Week20-24)	Still's disease: Classification, pathology in brief, physical findings, course & prognosis. Outline treatment, prevention and correction of deformity
Session21(Week25-26)	Acute C.N.S. infections: Classify (Bacterial and viral) and outline the

	acute illness, CNS sequelae leading to mental retardation, blindness, deafness, speech defect, motor analysis, bladder and bowel problems.
Session22(Week27-28)	Seizure disorder and specific problems such as subdural effusion, hydrocephalus, pressure sores, feeding difficulties.
Session23(Week29)	Revision and discussion
Session24(Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



General Medicine

1	Course name	General Medicine
2	Course Code	A1303
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2 units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the Knowledge of heart and lung anatomy and its functions, Knowledge of gastrointestinal diseases, Know the classifications of heart diseases, Knowing the circulatory system, Knowing the causes of shortness of breath.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Internal medicine • Harrison's Principles of Internal Medicine, ed.20 by J. Larry Jameson; Dan L. Longo; Stephen L.



	<p>Hauser; Dennis L. Kasper; Joseph Loscalzo; Anthony S. Fauci Tulane-subscribed resource. Login required from off-campus, 2018 ISBN: 9781259644030</p> <ul style="list-style-type: none"> • Oxford Textbook of Medicine (6 edn) Get access Arrow John Firth (ed.), Christopher Conlon (ed.), Timothy Cox (ed.) 2020 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion,
Course Objectives:	<p>Upon completion of this course, the student will have reliably to:</p> <ul style="list-style-type: none"> • Understand the functions of the heart • Identify the lung functions • Identify of the nature of the disease, including its causes, growth patterns, and consequences • Recognize the biological characteristics that distinguish each disease from the other. • Construct between lung functions and causes shortness of breath • Writing a report on the patient's condition • Work in a medical team
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam. A60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Anatomy of the lungs.
Session 2 (Week 2)	physiology of the lungs.
Session 3 (Week 3-4)	General overview : assessment in cardio respiratory dysfunction.
Session 4 (Week 5)	Cardiac surgery 1. List the Cardiac conditions, required closed heart surgery.
Session 5 (Week 6-7)	Cardiac surgery: List the cardiac conditions, required open heart surgery.
Session 6 (Week 8)	• Thoracic surgery
Session 7 (Week 9)	• Thoracic surgery
Session 9 (Week 10)	• Thoracic surgery
Session 9 (Week 11)	• Thoracic surgery
Session 10 (Week 12)	Midterm Exam
Session 11 (Week 13)	• Miscellaneous
Session 12 (Week 14)	Miscellaneous
Session 13 (Week 15-16)	Cerebrovascular accident
Session 15 (Week 17)	• Metabolic diseases
Session 16 (Week 18)	• Metabolic diseases
Session 17 (Week 19)	• Metabolic diseases
Session 18 (Week 20-23)	• Bleeding disorders
Session 19 (Week 24-27)	• Peptic ulcer disease, Hypertension and Inflammatory bowel disease

Session20(Week 28)	Revision and discussion
Session 21 (Week29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition The student should be able to think critically to solve problems and make decisions.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



General Surgery

1	Course name	General Surgery
2	Course Code	AI304
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	ENGLISH
9	Date of course approval	2022
Brief Description:		General surgery is a discipline of surgery having a central core of knowledge embracing anatomy, physiology, metabolism, immunology, nutrition pathology, wound healing, shock and resuscitation, intensive care, and neoplasia, which are common to all surgical specialties.
Textbooks required for this Course:		<ul style="list-style-type: none"> Farquharson's textbook of operative general surgery, 10th edition by brendan farquharson, margaret; hollingshead, james; moran 2014 Textbook of Surgery, 4th Edition by Julian A. Smith , Andrew H. Kaye ,Christopher Christophi , Wendy A. Brown 2020

	<ul style="list-style-type: none"> • Oxford Textbook of Fundamentals of Surgery by William E. G. Thomas (ed.), Malcolm W. R. Reed (ed.), Michael G. Wyatt (ed.) 2016 https://doi.org/10.1093/med/97 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based. Group interaction and discussion. self-directed activities. active participation.
Course Objectives:	<p>Upon completion of this course, the student will have reliably to:</p> <ul style="list-style-type: none"> • know the diagnosis, preoperative, operative and postoperative management, including the management of complications. • Complete clinical evaluation of patients of common surgical problems • Carry out necessary investigations and interpret the results • Perform minor surgical procedures and treat minor surgical problems • Recognize the major surgical problems needing specialized care, • Provide competent primary care in surgical emergencies • Demonstrate the right attitude in Patient care, Community health care, Continuing medical education and research • Observing the moral and legal codes of medical ethics
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam. A60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction on general and plastic surgery
Session 2 (Week 2)	1. INFLAMMATION AND INFECTION: a. Inflammation. b. Wounds and Wound healing.
Session 3 (Week 3)	c. Traumatic wounds. d. Soft-Tissue infection. e. Abscess and cellulitis
Session 4(Week 4)	2. COMMON SURGICAL PROBLEMS: a. Tumours. b. Cysts
Session 5 (Week 5)	ULCERS: a. Sinus and Fistulas. b. Gangrene.
Session 6(Week 6)	SHOCK: a. Definition, Types, etiology and Management.
Session 7(Week 7)	BURNS AND MANAGEMENT a. Classification of burns. b. Medical management of burns. c. Deformities due to burns. d. Prevention and treatment measures. e. Burns rehabilitation




Session 8 (Week 8)	GENERAL SURGERY AND GASTRO-INTESTINAL DISEASE: a. Acute Intestinal Obstruction.
Session 9 (Week9)	b. Nephrectomy, Appendicectomy, Herniorraphy, Mastectomy, Thyroidectomy, Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy and Ileostomy.
Session 10(Week 10)	Midterm Exam
Session 11(Week 11)	DESCRIBE ABDOMINAL SURGICAL INCISIONS
Session 12 (Week 12)	POST- OPERATIVE COMPLICATIONS AND MANAGEMENT OF: Nephrectomy, Appendicectomy, Herniorraphy Mastectomy, Thyroidectomy,
Session 13(Week 13)	Colostomy, Adrenalectomy, Cystectomy, Hysterectomy, Prostatectomy, Cholecystectomy and Ileostomy
Session 14 (Week 14)	VASCULAR SURGERY: a. Varicose veins.
Session 15 (Week 15)	b. The post phlebotic limb. c. Amputations.
Session 16 (Week 16)	d. Deep Vein Thrombosis.
Session 17 (Week 17)	PULMONARY COLLAPSE: a. Pulmonary embolus. b. Burst abdomen.
Session 18 (Week 18)	c. Post- operative fistula.
Session 19 (Week 19)	d. Post- operative pyrexia.
Session 20 (Week 20)	POST- OPERATIVE FLUID AND ELECTROLYTE IMBALANCE
Session 21 (Week 21)	UROLOGICAL: a. Renal colic.
Session 22(Week 22)	CATHETERIZATION: a. Circumcision. b. Haematuria.
Session 23 (Week 23)	NEUROSURGERY 1. NEUROANATOMY. 2. NEUROPHYSIOLOGY' CLINICAL FEATURES & MANAGEMENT. Cerebrovascular accident.
Session24(Week24-27)	HEAD INJURY. Diseases of the muscle: classification, signs, symptoms, progression and management. 2- Peripheral nerve disorders.
Session 25 (Week28)	Revision and discussion
Session 26 (Week29-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Good organizational ability and effective decision making skills. Excellent communication skills to deal with a wide rang of colleagues, patients and their families.



	Emotional resilience, a calm temperament and the ability to work well under pressure. Physical stamina to cope with the demands of surgery. The ability to lead and manage a team effectively.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Diagnostic Investigation

1	Course name	Diagnostic Investigation
2	Course Code	AI305
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

<p>Brief Description:</p> 	<p>This course will provide students with a fundamental understanding of the nature of medical investigations: laboratory, radiological, electrical, etc.</p> <p>Definition: Group of investigations advised by the treating doctor to get diagnosis and treatment of the disease.</p> <p>- Diagnostic test: refers to the various methods used to assess body structures and function to determine the presence or absence of a definite disease and nature of the disease if present.</p> <p>- Objectives of the diagnostic test:</p> <p>- To determine any abnormality.</p> <p>- Used to follow up the cases.</p> <p>- To help the physician [DR] in diagnosis and treatment.</p> <p>- Classifications:</p>
<p>Textbooks required for this Course:</p>	<ul style="list-style-type: none"> • McPhee, S. J., Papadakis, M. A., & Rabow, M. W. (2014). Current medical diagnosis & treatment 2014. 53rd ed. New York: McGraw-Hill Medical • Differential diagnosis and medical therapeutics: a treatise on clinical by rao, psrk – 2011 • EKG ECG Interpretation Made Easy: An Illustrated Study Guide For Students To Easily Learn How To Read & Interpret ECG Strips • Interpreting ECGs: A Practical Approach Paperback • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.

Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, hospital training....etc.
Course Objectives:	<p>Upon completion of this course, the student will have reliably to:</p> <ul style="list-style-type: none"> • Understand various types of medical investigations • Identify type of device used for the health problem • Recognize the status of the patient • Identify representations, terms, conditions, and clinical examination. • Recognize different type of disease • Construct good information about medical device • Write clinical examination for health problem • Develop the student skills to choose appropriate patient examination • Implement some medical investigation at hospital
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam. A60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to medical investigation • Types of medical investigation
Session 2 (Week 2)	<ul style="list-style-type: none"> • Aims of medical investigation
Session 3 (Week 3)	<ul style="list-style-type: none"> • Classification of medical investigation • Diagnostic test
Session 4 (Week 4)	<ul style="list-style-type: none"> • Laboratory investigation
Session 5 (Week 5)	<ul style="list-style-type: none"> • Urinalysis
Session 6 (Week 6)	<ul style="list-style-type: none"> • Methods of collecting urine
Session 7 (Week 7)	<ul style="list-style-type: none"> • Blood investigation
Session 7 (Week 8)	<ul style="list-style-type: none"> • Complete blood count, erythrocyte sedimentation rate
Session 7 (Week 9)	<ul style="list-style-type: none"> • The chemistry panel , blood glucose , FBS indicate
Session 10 (Week 10)	Midterm Exam
Session 11 (Week 11)	<ul style="list-style-type: none"> • uric acid test, creatinine test, electrolyte test
Session 12 (Week 12)	<ul style="list-style-type: none"> • liver function test
Session 13 (Week 13)	<ul style="list-style-type: none"> • blood test
Session 14 (Week 14)	<ul style="list-style-type: none"> • blood gases test
Session 15 (Week 15)	<ul style="list-style-type: none"> • cardiovascular system, heart function
Session 16 (Week 16)	<ul style="list-style-type: none"> • Types of cardiovascular disease and reducing the risk for cv disease
Session 17(Week 17)	Cardiovascular disorders) <ul style="list-style-type: none"> • Cytology.
Session 18(Week 18)	Medical investigation of gastrointestinal system.
Session 19(Week 19)	Medical investigation of urinary system disorder.
Session 20 (Week 20)	- - Medical investigation of respiratory system.
Session 21 (Week 21-25)	- Medical investigation of central nervous system. - Medical investigation of cardiovascular system.
Session 22 (Week 26-27)	Medical investigation of bone diseases. Medical imaging
Session 23 (Week 28)	Revision and discussion
Session 24 (Week 29 - 32)	Final Exam



Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Pharmacology

1	Course name	Pharmacology
2	Course Code	MT306
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide how a drug affects a biological system and how the body responds to the drug. The discipline encompasses the sources, chemical properties, biological effects and therapeutic uses of drugs.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Essential of general pharmacology book.Lippincott's Illustrated Reviews: pharmacology book.Pharmacology and drug administration for imaging technology book. • Basic Pharmacology Understanding Drug Actions and Reactions By Maria A. Hernandez,, Appu Rathinavelu, 1st edition 2006. • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.



	<ul style="list-style-type: none"> • A Textbook of Clinical Pharmacology and Therapeutics, 5th By James Ritter, Lionel Lewis, Timothy Mant, Albert Ferro 2008 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based. Group interaction and discussion. self-directed activities. Active participation.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Acquire new knowledge in pharmacology by conducting and promoting innovative research. • Establish the efficacy, safety and effectiveness of medication in humans, to discover new lead compounds and to understand the mechanisms of action of drugs. • Report the clinical applications, side effects of drugs used in medicine. • Translate pharmacological principles into clinical decision making.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<p>C. General pharmacology:</p> <ul style="list-style-type: none"> • Introduction. • Drug sources. • Routes of drug administration. • Pharmacokinetics.
Session 2 (Week 2)	<p>E. General pharmacology:</p> <ul style="list-style-type: none"> • Pharmacodynamics. • Drug adverse effects and toxicity. • Drug-drug interactions.
Session 3 (Week3)	<p>F. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Introduction. • Sympathomimetics. • Sympathetic depressants.
Session 4 (Week4)	<p>B. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Parasyathomimetics. • Parasympathetics depressants.
Session 5 (Week5)	<p>B. Autonomic nervous system:</p> <ul style="list-style-type: none"> • Drug acting on autonomic ganglia. • Skeletal muscle relaxants. • Drug acting on the eye.
Session 6 (Week 6)	<p>C. Autacoids:</p> <ul style="list-style-type: none"> • Histamine & serotonin. • Prostaglandins & eicosanoids. • Vasoactive peptides.
Session7 (Week 7)	<p>D. Central nervous system:</p> <ul style="list-style-type: none"> • Introduction. • Sedative & hypnotics.





Session8 (Week 8)	D. Central nervous system: <ul style="list-style-type: none"> • Analgesics and antipyretics & NSAID. • Narcotic analgesics. • Anticonvulsants & antiepileptics
Session9 (Week 9)	D. Central nervous system: <ul style="list-style-type: none"> • Antiparkinsonian drugs. • Antipsychotics and antianxiety & antidepressants. • Local & general Anaesthetic.
Session10 (Week 10)	E. Cardiovascular system: <ul style="list-style-type: none"> • Antihypertensive & antishock drugs. • Cardiac glycosides and congestive heart failure. • Antiarrhythmic drugs. • Drugs used in angina pectoris.
Session 11 (Week 11)	Topics to be covered in the session (week12) F. Blood: <ol style="list-style-type: none"> 1. Coagulants, anticoagulants, fibrinolytics & antiplatelets. 2. Drugs used in treatment of anemia. 3. Drugs used in treatment of hyperlipidemia.
Session 12(Week 12)	G. Chemotherapy: <ul style="list-style-type: none"> • Sulphonamides & quinolones. • B-lactum antibiotics (penicilins, cephalosporins).
Session 13 (Week 13)	G. Chemotherapy: <ul style="list-style-type: none"> • Chloramphenicol & tetracyclines. • Aminoglucoisides antibiotics. • Antifungal drugs
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	G. Chemotherapy: <p>Antiviral drugs, Antituberculosis, Antimalarial drugs & antiprotozal.</p>
Session 16 (Week 16)	H. Endocrine drugs: <p>Antidiabetics drugs and Antithyroid drugs.</p>
Session17 (Week 17)	H. Endocrine drugs: <ul style="list-style-type: none"> • Drug affecting bone mineral homeostasis (pth, vit.D, calcitonin).
Session 18 (Week 18)	H. Endocrine drugs: <ul style="list-style-type: none"> • Corticosteroids. • Sex hormones, contraceptives drugs.
Session 19 (Week 19)	I. Respiratory system: <ul style="list-style-type: none"> • Drugs used in treatment of bronchial asthma.
Session 20 (Week 20)	I. Respiratory system: <ul style="list-style-type: none"> • Cough therapy. * Gas therapy
Session 21(Week 21)	J. GIT: <ul style="list-style-type: none"> • Drugs used in treatment of peptic ulcer • Antiemetic drugs.
Session22(Week22-23)	J. GIT: <ul style="list-style-type: none"> • Drugs used in treatment of constipation and diarrhea. • Antispasmodics.
Session23(Week23-28)	K. Urinary tract: 1. Diuretics. 2. Urinary tract infection.
Session24(Week29)	Revision and discussion
Session25(Week 30)	Final exam

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	Knowledge of basic clinical skills required to meet the skills objective including interviewing, physical diagnosis, communication and clinical reasoning processes.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ب - المقررات الدراسية للسنة الرابعة قسم تقنية التخدير




Anesthesia



1	Course name	Anesthesia
2	Course Code	AI401
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	4 units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>This course will provide students with a fundamental understanding how to use medication that prevents people from feeling pain during or following surgery.</p> <p>This course will provide students known the type of anesthesia .the type of anesthetic a person receives may vary according to the kind of medical procedure they require and their individual health needs.</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> • Miller's Anesthesia : International Edition Volume 1 Hardcover • Clinical Anesthesia Paul G. Barash Lippincott Williams & Wilkins, 2009 • Oxford Textbook of Anaesthesia by Jonathan G Hardman (ed.), Philip M Hopkins , Michel M.R.F Struys 2017, https://doi.org/10.1093/med/97 • Anesthesiology, Third Edition by Sean Mackey; David E. Longnecker; Mark F. Newman; Warren M. Zapol; Warren Sandberg 2017 • Basics of Anesthesia by Manuel Pardo; Ronald D. Miller 2017 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		6 * 28 = 168 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments
Course Objectives:		<p>Upon completion of this course, the students will have the ability to:</p> <ul style="list-style-type: none"> • Understand the safe anesthesia techniques for various elective and emergency procedures in and outside the operation theatre. • Obtain knowledge about the proper functioning of various anesthetic equipment's such as the work station, anesthesia monitors, syringe pumps




	<ul style="list-style-type: none"> Recognize different types of anesthetic drugs and loading of drugs. Understand the basic skills of cardiopulmonary resuscitation, post-operative and intensive care unit management. Recognize to prepared and maintained patient monitoring devices and anesthesia delivery systems before, during and after anesthesia. Checking the emergency drug tray, defibrillator, difficult airway cart.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1(Week 1-2)	<ul style="list-style-type: none"> Introduction to Anaesthetic Equipment's The Anaesthetic machine. Anaesthetic breathing systems Monitoring in Anaesthesia Airway management Patient position during operation
Session 3 (Week3)	Special Anesthesia: <ul style="list-style-type: none"> ➤ Obesity ➤ Pediatric Anaesthesia ➤ Anaesthesia for the obstetric patient ➤ Anaesthesia for laparoscopic surgery ➤ ENT Anaesthesia Orthopedic Anaesthesia
Session 4 (Week 4-6)	Basic concepts in Regional Anaesthesia Post-operative complications (early & late complications) <ul style="list-style-type: none"> ▪ Respiratory complication ▪ Cardiovascular complication ▪ Nausea and vomiting ▪ Malignant hyperthermia.
Session5 (Week 7)	Emergency Anaesthesia & Anesthesia for traumatic patient Perioperative & postoperative fluid therapy in the adult
Session 6(Week 8 -11)	Anaesthetic Equipment's Anaesthetic machine Airway equipment's Monitoring system <u>Anaesthetic machine:</u> The purpose of Anaesthesia Machine Main components of AM including the following in details Anaesthetic delivery system Supply of gases, Flow meter and Vaporizer
Session 7 (Week 12)	Midterm Exam
Session 8 (Week 13)	Breathing Systems 'patient breathing circuit'

	<p>Breathing systems are known as 'Anaesthetic Circuits' previously classified as:</p> <ul style="list-style-type: none"> open circuit & Semi open circuit close circuit & semi close circuit
Session 9(Week 14 -16)	<p>The most useful classification of breathing circuit is: Non-rebreathing, Partial re-breathing rebreathing (circle) Other component of breathing system such as: Unidirectional valves, reservoir bag, oxygen flush valve, pop-off valve, regulator and co2 Absorber.</p>
Session 10 (Week 17 -18)	<p>Scavenging system →(using to expel of waste of anaesthetic gases) Ventilator: Minute volume driver , Bag squeezer</p>
	<p>Session 11(Week 19 -22)</p> <p>Airway equipment's: Laryngoscope: types ,structure and main function Facemasks: types and function Simple adjuncts including: Intubating Oral Airways (IOA) or oropharyngeal airway Nasopharyngeal airway The main function of each type Method of insertion and technique Complications Contraindications</p>
Session 12(Week 23 -24)	<p>Endotracheal Tube (ETT) Types of ETT Size of ETT: internal diameter (ID) and Depth of insertion Technique of insertion ETT including: Oral-endotracheal intubation Nasal-endotracheal intubation; Advantages , Disadvantages Contraindications (NTI) Indications of ETT Complication of ET Intubation during, while intubation and during extubation.</p>
Session 13(Week 25)	<p>Supraglottic Airways: Combitube: Laryngeal Mask Airway (LMA) and Intubating LMA (ILMA), LMA – Fastrach (intubating LMA). Explain the main structure and function of each device and identify the different between them. Give the advantaged and disadvantages, indication, contraindicated and complication for each one.</p>
Session 14 (Week 26)	<p>Other Equipment's used for Airway management: Stilette Intubation Forceps; the most common used Magill forceps. Laryngeal spray Suction Apparatus explain structure, function and types. Explain main function of the other equipment could be found in Anaesthetic table such as: Syringe, Lubricating jelly and Dynaplast/ tape.</p>
Session 15 (Week 27 - 28)	<p>Monitoring in Anaesthesia Introduction Individual System Monitoring; including the following: Position of ETT.</p>

	<p>Respiratory System; including O2 Saturation, Capnography EtCO2, Airway pressure and ABG samples. CVS & Hemodynamic Monitoring. CNS: Awareness. Temperature. Monitoring after Extubation & Recovery D. Air way management Aims of Preoperative airway assessment Evidences of difficult airway How to examine and assist airway in the preoperative period? Such as : Good history taken Some examination could be done such as:</p>
Session 16(Week 29)	Revision and discussion
Session 17(Week 30 - 32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	<p>The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.</p> <ul style="list-style-type: none"> - Good communication and people skills. - Able to work under pressure. - Good technical and measurement skills. - Able to cope with the physical demands of the job.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Intensive care

1	Course name	Intensive care
2	Course Code	AI402
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	4 units
5	Educational hours	6 hours per week
6	Pre-requisite requirements	The normal pre-requisite will be completion of B.S core models
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description: 		<p>This course will provide students with a fundamental understanding of the nature of intensive care therapy introduce some of the key concepts and terminology regarding the care of critically ill patients.</p> <p>Demonstrate knowledge of the following equipment: Endotracheal tubes. Tracheostomy tubes, Humidifier, ventilators, High frequency ventilators, Differential ventilators, CPAP masks, Suction pump, Electrocardiogram, Pressure monitors - arterial, central venous, pulmonary artery, Pressure monitors - arterial, central venous, pulmonary artery and pulmonary wedge: intracranial and temperature monitors, CPR.</p> <p>Assess: Special instructions pertaining to any operation performed, respiration, level of consciousness, color - blood pressure, pulse temperature, sputum, expectorated (color and quantity), drugs (time last dose of analgesic given), drains, presence of Pacemaker or Intra aortic balloon pump, ECG and blood gas results.</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> • The Beginner's Guide to Intensive Care. A Handbook for Junior Doctors and Allied Professionals.2nd Edition, Edited By Nitin Arora, Shondipon K. Laha • Atlas of Anesthesia: 8-Volume Set 1st Edition, by Ronald D. Miller MD MS (Editor), Robert R. Kirby MD Debra A. Schwinn MD • Clinical anesthesia textbook. Paul Barash, Bruce Cullen, Robert K. Stoelting 6th edition • The Intensive Care Unit Manual: Expert Consult - Print (Expertconsult.com) 2nd Edition by Paul N. Lanken MD ,Scott Manaker MD PhD Benjamin A. Kohl MD FCCM (Author), C. William Hanson III MD

	<ul style="list-style-type: none"> • Textbook of Critical Care: First South Asia Edition Hardcover, 2007 • by Mitchell P. Fink Jean-Louis Vincent ,Edward Abraham ,Frederick A. Moore Patrick Kochanek (Author) • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	6 * 28 = 168 teaching hours
Delivery	A Lecture-based ppt and practical training B Group interaction and discussion "Case Based Discussion [CBD]" C Laboratory experiments D Direct Observation of Procedural Skills [DOPS] E Examination S Simulation Hospital training within "intensive care unit "
Course Objectives:	Upon completion of the course students should be able to: <ul style="list-style-type: none"> • Understand acute and critical care practice and are involved in the care of acutely/critically ill patients. • Demonstrate and apply a thorough knowledge of the physiology and relevant pathophysiology underlying the assessment of acutely/ critically ill adults • Recognize critically appraise and demonstrate effective teamwork and communication strategies necessary for ensuring safe care and practice • Understand systematic clinical assessments; monitoring and interpretation of assessment findings • Recognizing acute cardiac care and rhythm interpretation • Writing report in acute respiratory care and blood gas analysis • Know fluid and electrolyte balance, hydration and nutritional support • Know sepsis and shock • Deal with pain assessment and management • Recognizing acute medical emergencies • Making clinical decision; Risk, patient safety
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to intensive care unit <ul style="list-style-type: none"> ▪ History of INTENSIVE Care
Session 2 (Week 2)	What is intensive care?
Session 3 (Week 3)	<ul style="list-style-type: none"> • Monitoring in intensive care <ul style="list-style-type: none"> ✓ Monitoring Classification according to target parameters ✓ Interpretations of values for reading component
Session 4 (Week 4)	<ul style="list-style-type: none"> • Monitoring in intensive care




	<ul style="list-style-type: none"> ✓ Monitoring Classification according to target parameters
Session 5(Week 5)	<ul style="list-style-type: none"> • Monitoring in intensive care <ul style="list-style-type: none"> ✓ Interpretations of values for reading component
Session 6(Week 6&7)	<ul style="list-style-type: none"> • Acid –Base balance and imbalance <ul style="list-style-type: none"> ✓ Interpretations of ABG analysis ✓ Define cases of imbalance
Session 7 (Week 8)	<ul style="list-style-type: none"> • Acid –Base balance and imbalance <ul style="list-style-type: none"> ✓ Define cases of imbalance
Session 8 (Week 9&10)	<ul style="list-style-type: none"> • Respiratory Failure <ul style="list-style-type: none"> ✓ Identify types of RF and causes ✓ Investigation
Session 9(Week 11)	<ul style="list-style-type: none"> ✓ Management of Respiratory Failure (RF)
Session 10 (Week 12)	Midterm Exam
Session 11(Week 13)	<ul style="list-style-type: none"> • Mechanical Ventilation TYPES /MODES.
Session 12(Week 14)	<ul style="list-style-type: none"> • Mechanical Ventilation ELEMENTS/ USES
Session 13(Week 15)	<ul style="list-style-type: none"> •Renal failure
Session 14(Week 16)	hepatic Failure
Session 15 (Week 17)	<ul style="list-style-type: none"> • Cardiopulmonary resuscitation1
Session 16 (Week 18)	<ul style="list-style-type: none"> • Cardiopulmonary resuscitation2
Session 17 (Week 19)	<ul style="list-style-type: none"> • Shock; types & management & treatment
Session 18 (Week 20)	<ul style="list-style-type: none"> • Sedative and Analgesics & pain management in intensive care.
Session 19 (Week 21 -28)	<ul style="list-style-type: none"> • Vasopressors & inotropes drugs • Intravenous Fluid therapy and Nutrition • Blood transfusion • Patients Transportation
Session 20 (Week 29)	Revision and discussion
Session 21(Week30 -32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Emergency Medicine



1	Course name	Emergency Medicine
2	Course Code	AI403
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	The normal pre-requisite will be completion of B.S core models
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the knowing the functions of the heart, arteries and lungs, Know the classifications of heart diseases.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Rosen's Emergency Medicine: Concepts and Clinical Practice, Sixth Edition, 3 volume set Hardcover – January 1, 2006 by John A. Marx , Robert S. Hockberger, Ron M. Walls • Tintinalli's Emergency Medicine: A Comprehensive Study Guide, 8th edition 8th Edition by Judith Tintinalli , J. Stapczynski , O. John Ma , Donald Yealy , Garth Meckler , David Cline 2015 • Roberts and Hedges' Clinical Procedures in Emergency Medicine (Roberts, Clinical Procedures in Emergency Medicine) 6th Edition by James R. Roberts MD FACEP FAAEM FACMT 2013 • Emergency Medicine Procedures, Second Edition 2nd Edition by Eric Reichman 2013 • Textbook of Adult Emergency Medicine by Peter Cameron, Mark Little, Biswadev Mitra, Conor Deasy 5th Edition - May 23, 2019 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments
Course Objectives:		<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> • Understand the functions of the heart • Identify the lung functions • Recognize the types of high blood pressure and diabetes • Identify representations, terms, conditions,


	<ul style="list-style-type: none"> Recognize different between heart disease and diabetes Construct between lung functions and causes shortness of breath Writing a report on the patient's condition Work in a medical team .
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Diabetic Ketoacidosis What are the Warning Signs of DKA? How Do I Check for Ketones? What Causes DKA? Symptoms, diagnosed & management and treatment.
Session 2 (Week 2 - 4)	Hyperglycemia and Hypoglycemia Definition Signs and symptoms; Central nervous system& Long-term effects The most common cause of hypoglycemia Serious illness, Hormone deficiency, Pathophysiology and Diagnosis
Session 3 (Week 5)	Method of measurement and Age Differential diagnosis, Prevention and Treatment
Session 6 (Week6)	Asthma ASTHMA OVERVIEW Signs and symptoms Associated conditions Causes; Environmental, Genetic and Medical conditions Pathophysiology
Session 7 (Week 7)	Diagnosis, Differential diagnosis and Prevention Management; Lifestyle modification, Medications Others and Alternative medicine
Session 8 (Week 8)	<ul style="list-style-type: none"> Hemoptysis (Differential diagnosis, Diagnosis and Treatment)
Session 9 (Week9)	Revision
Session 10 (Week10)	Midterm Exam
Session 11 (Week11 - 12)	Acute Respiratory Failure <ul style="list-style-type: none"> Definition Types of Acute Respiratory Failure Causes Acute Respiratory Failure Risk Factors Diagnosing Acute Respiratory Failure Treating Acute Respiratory Failure
Session 12 (Week 13 -14)	<ul style="list-style-type: none"> Cardiac Rhythm Treatment
Session 13(Week 15 - 16)	<ul style="list-style-type: none"> Sudden Cardiac Collapse Definition of Sudden cardiac arrest , Symptoms and causes Heart conditions that can lead to sudden cardiac arrest Risk factors, Diagnosis and treatment
Session 14 (Week17 - 20)	Hepatitis Definition and The 5 Types of Viral Hepatitis Causes of Hepatitis and Common Symptoms of Hepatitis

	How Is Hepatitis Diagnosed? Treatment and Prevent Hepatitis Complications of Hepatitis
Session 15 (Week 21)	Revision
Session 16 (Week22 - 27)	Hypertension & Hypotension Causes, Symptoms, Diagnosis and treatment Jaundice <ul style="list-style-type: none"> • Signs and symptoms & Complications Differential diagnosis; Pre-hepatic , Hepatocellular, Post-hepatic and Management & treatment
Session 17(Week28)	Revision and discussion
Session 18(Week29-30)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition The student should be able to think critically to solve problems and make decisions
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Emergency Surgery

1	Course name	Emergency Surgery
2	Course Code	A1404
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2 units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	The normal pre-requisite will be completion of B.S core models
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		Emergency surgery can be defined as surgery that is required to deal with an acute threat to life, organ, limb or tissue caused by external trauma, acute diseases process, acute exacerbation of a chronic diseases process, or complication of a surgical or other interventional procedure.

<p>Textbooks required for this Course:</p> 	<ul style="list-style-type: none"> • https://rlmc.edu.pk/themes/images/gallery/library/books/Surgery/Adam Brooks, Bryan A. Cotton, Nigel Tai , Peter F. Mahoney Em.pdf • Emergency Surgery by Adam J. Brooks, Bryan A. Cotton, Nigel Tai, Peter F. Mahoney 2010 • Emergencies in Clinical Surgery Chris Callaghan (ed.), J. Andrew Bradley (ed.), Christopher Watson (ed.) https://doi.org/10.1093/med/97 • Trauma and Emergency Surgery - The Role of Damage Control Surgery by Georgios Tsoulfas and Mohammad Meshkini DOI 10.5772/intechopen.87629 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
<p>Course Duration</p>	<p>2 * 28 = 56 teaching hours</p>
<p>Delivery</p>	<p>Lecture-based. Group interaction and discussion. self-directed activities. active participation.</p>
<p>Course Objectives:</p>	<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> • Undertake those abdominal (including urological), thoracic, vascular, and soft tissue procedures that need to be performed within 24 hours. • Assess the need for surgery, know when to involve from other specialist surgeons, and be able to perform the life saving procedures as above. • Deal quickly with problems that can be life- threatening.
<p>Course Assessments</p>	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.</p>
<p>Content Breakdown</p>	<p>Topics Coverage</p>
<p>Session 1 (Week 1)</p>	<p>Introduction on emergency surgery</p>
<p>Session 2 (Week 2 - 4)</p>	<p>Upper and lower Gastrointestinal Bleeding Definition, Epidemiology, Pathophysiology. Investigations. Causes Types according to source Investigations Management & treatment ; General and Emergency surgery related to U/LGITB</p>
<p>Session 4 (Week 5 - 7)</p>	<p>Traumatic Brain Injury (TBI) - Definition, Epidemiology, Pathophysiology Glasgow Coma Scale for adult Classification and Complications of Traumatic Brain Injury Classification Primary and secondary injuries Focal and diffuse injuries Measures of severity Complications</p>
<p>Session5 (Week 8 - 10)</p>	<p>Head Injury</p>



	Spinal injuries, musculoskeletal injuries, and Eye injuries). Crush Injuries. Burns. Electrical Injuries. Stab Injuries. Anaesthesia considerations in penetrating trauma.
Session 6 (Week 11)	Emergency anaesthetic management of cardio-thoracic & abdominal injury Gunshot Injuries
Session 7(Week 12)	Midterm Exam
Session 8(Week 13 -15)	Neurosurgery for Cerebral Aneurysm Definition, Epidemiology, Pathophysiology. Causes Investigations. Management & treatment ; General and Emergency surgery related
Session 9 (Week 16)	Neurosurgery for Cauda Equina Syndrome Definition, Epidemiology, Pathophysiology. Causes Investigations.
Session 10 (Week 17)	Neurosurgery for Hydrocephalus. Definition, Epidemiology, Pathophysiology. Causes Investigations.
Session11(Week 18 - 19)	Neuromodulation Surgery for Psychiatric Disorders. Definition, Epidemiology, Pathophysiology. Investigations
Session 12 (Week 20)	Revision
Session 13(Week 21 - 22)	Neuromodulation Surgery for Psychiatric Disorders. Management & treatment ; General and Emergency surgery related. Diagnosis.
Session14(Week 23 - 24)	Stereotactic Surgery in Parkinson Disease Definition, Epidemiology, Pathophysiology. Investigations
Session15 (Week 25 - 27)	Stereotactic Surgery in Parkinson Disease Management & treatment ; General and Emergency surgery related. Diagnosis.
Session 16 (Week 28)	Revision and discussion
Session 17 (Week 29 -30)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Good organizational ability and effective decision making skills. Excellent communication skills to deal with a wide rang of colleagues, patients and their families.

	Emotional resilience, a calm temperament and the ability to work well under pressure. Physical stamina to cope with the demands of surgery. The ability to lead and manage a team effectively.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Obstetrics & Gynecology

1	Course name	Obstetrics & Gynecology
2	Course Code	AI405
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2 units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	The normal pre-requisite will be completion of B.S core models
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		At the end of this course the student will be able to describe and recognize the essentials of gynecology and obstetrics concepts.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Oxford Handbook of Obstetrics and Gynaecology (Oxford Medical Handbooks) 3rd Edition by Sally Collins, Sabaratnam Arulkumaran, Kevin Hayes, Simon Jackson, Lawrence Impey 2013 • Obstetrics and Gynecology PreTest Self-Assessment and Review, 14th Edition. Shireen Madani Sims • Obstetrics & Gynecology. Susan Raatz Stephenson Ma.ed. bsrt-u rdms rvt • Netter's Obstetrics, Gynecology & Women's Health. Roger P. Smith gregory.ginsberg.uphs.upenn.edu • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based Group interaction and discussion
Course Objectives:		At the end of the course, it is expected that the student should be able to : <ul style="list-style-type: none"> • Understand normal physiology of pregnancy • Identify the principles for antenatal controls and risk estimation of pregnancy and delivery



- Recognize pregnancy complications including multiples, fetal growth abnormalities and infections
- Identify representations, terms, conditions of medical disorders in pregnancy including hypertensive disorders, diabetes and epilepsy
- Understand complications in early pregnancy including spontaneous abortion, ectopic pregnancy and molar pregnancy.
- Recognized the major problems that required applied anesthesia (general, regional and local anesthesia)


Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	SECTION 1 OBSTETRICS • Introduction to gynecology
Sesstion2 (week 2)	• Anatomy of the normal female pelvis.
Session 3 (Week3)	• Anatomical and physiological changes during pregnancy.
Session4 (week4)	Topics to be covered in the session (week) • Antenatal care: • Antenatal education.
Session 5 (Week5)	• Aims of adequate antenatal care. • Psychological preparation for pregnant woman
Session 6 (Week6)	• Medical antenatal care for normal pregnant woman 1 (objectives, frequency of Examinations and reassurance & advices
Session 7(Week7)	• Medical antenatal care for normal pregnant woman 2 (objectives, frequency of Examinations and reassurance & advices
Session 8(Week8)	• Risk pregnancy. 1. Pregnancy related hypertension.
Session 9(Week9)	2. Diabetes and pregnancy.
Session 10(Week10)	Midterm Exam
Session 11(Week11)	• Cardiac disease in pregnancy. • Asthma and pregnancy.
Session 12(Week12)	• Normal labour. • Episiotomy (prineotomy).
Session 13(Week13)	• Forceps delivery.
Session 14(Week 14)	• Normal puerperium. I. Abnormal puerperium and post-natal problems.
Session 15(Week 15)	Cesarean section (CS).
Session 16(Week 16)	Section -----2 Gynaecology A. Anatomy of the female genital tract.
Session 17(Week 17)	B. Anatomy of the lower urinary tract.
Session 18 (Week18 - 25)	C. Urinary incontinence (UI). D. Displacements of the uterus. E. Retroversion and retroflexion of the uterus. F. Dysmenorrhea.

	G. Hysterectomy.
Session 19 (Week26 - 28)	H. Menopause. I. Chronic Pelvic Pain (CPP).
Session 20(Week26 - 28)	Revision and discussion
Session 21 (Week 30 -32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.




Pain Management

1	Course name	Pain Management
2	Course Code	AT406
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Principles of Anesthesia
7	Program offered the course	Anesthesia Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description: 	<p>This course will assist learners to develop approaches to the global assessment of the patient with pain (acute and chronic) to guide diagnosis, care and treatment and the identification of complex cases. This will include conventional health assessment techniques (interview and physical examination), pain assessment tools, psychosocial assessment, specific techniques (e.g. examination of lumbar spine, functionality assessments), and the role and value of diagnostic studies.</p>
Textbooks required for this Course:	<ul style="list-style-type: none"> • Churchill's Pocketbook of Pain. By Catherine F. Stannard and Sara Booth. Philadelphia, Churchill Livingstone,uk ,2008- 4TH Edition • Smith and Aitkenhead's Textbook of Anaesthesia, 7th Edition • Churchill's Pocketbook of Pain Managemen. Thomas, P. Sebastian MD • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 8 28 = 112 teaching hours
Delivery	Lecture-based ppt and practical training Group interaction and discussion "Case Based Discussion [CBD]", Laboratory experiments, Direct Observation of Procedural Skills [DOPS], Examination and Simulation Hospital training within "intensive care unit "
Course Objectives:	<p>Upon completing this course, participants should be able to:</p> <ul style="list-style-type: none"> • Recognize features of complex, persistent pain in a patient presentation. • Recognize health and cultural factors that can influence the experience of pain. • Use consistent messaging to explain how pain works and the brain's role in how we experience pain. • Access patient education resources and use shared decision making with patients to plan healthy life-style changes.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to the pain management <ul style="list-style-type: none"> • Understand the definitions of chronic pain and terms used in chronic pain assessment and management, know epidemiology of chronic pain, understand complexity of chronic pain
Session 2 (Week 2)	<ul style="list-style-type: none"> • Understanding the pain experience: Diagnosis and assessment for the whole person
Session 3 (Week 3)	An in depth introduction into the 'whole person' pain experience from world class authors. 3 parts: <ul style="list-style-type: none"> • Making an effective pain diagnosis: a whole person approach

Session 4 (Week 4)	<ul style="list-style-type: none"> The impact and management of psychological factors in pain
Session 5 (Week 5)	<ul style="list-style-type: none"> A whole person approach to acute and chronic pain
Session 6 (Week 6)	<p>Review of types of pain</p> <ul style="list-style-type: none"> Review some definitions related to pain, discuss limitations for patients unable to self-report and suggest an alternative definition for pain.
Session 7 (Week 7)	<ul style="list-style-type: none"> Describe the types of pain (acute, chronic, nociceptive, neuropathic), and be able to relate them to the patient condition
Session 8 (Week 8)	<p>Pre-treatment evaluation I</p> <ul style="list-style-type: none"> Obtain a history and physical examination, including musculoskeletal status, and, at a minimum, note all laboratory, radiographic and pertinent studies that may affect planned pain management protocols and modalities.
Session 9 (Week 9)	<p>Pre-treatment evaluation II</p> <ul style="list-style-type: none"> Obtain a history and physical examination, including musculoskeletal status, and, at a minimum, note all laboratory, radiographic and pertinent studies that may affect planned pain management protocols and modalities.
Session 10 (Week 10)	<p>Basics of Chronic Pain Management Safety and Monitoring.</p> <ul style="list-style-type: none"> Complete a pre-procedure examination of all therapeutic equipment and medications (and including, as appropriate, the anesthesia machine and related monitoring devices
Session 11 (Week 11)	<p>Analgesic Medications or Pharmacology of pain medicine</p> <ul style="list-style-type: none"> Define and describe the pharmacodynamics, pharmacokinetic, physiological, and postoperative effects of all agents used in pain medicine clinical practice as well as appropriate drug interactions.
Session 12 (Week 12)	<ul style="list-style-type: none"> Understand and describe the State and National guidelines for prescribing controlled substances for pain. different mechanisms of action can achieve a better outcome
Session 13 (Week 13)	<ul style="list-style-type: none"> Understand the basic physiology of the pain pathway. Describe where and how different types of pain medicine target this pathway.
Session 14 (Week 14)	<ul style="list-style-type: none"> Explain how different pain medications target specific types and aspects of pain. Understand how combining pain medications with
Session 15 (Week 15)	Midterm Exam
Session 16 (Week 16)	<p>Airway Management</p> <ul style="list-style-type: none"> Be able to maintain an oral, oropharyngeal and/or or tracheal airway.
Session 17 (Week 17)	<p>Spinal, Epidural, and Regional Analgesia/Anesthesia I</p> <p>Describe appropriate patterns of regional anesthesia usage, including indications.</p>
Session 18 (Week 18)	<p>Spinal, Epidural, and Regional Analgesia/Anesthesia II</p> <p>Contraindications, principles of use, physiological effects, medications, basic techniques, proper dosage, as well as recognition of the manifestations of toxicity.</p>



<p>Session19(Week19-25)</p> 	<p>Psychological</p> <ul style="list-style-type: none"> Understand and describe the principles of multimodal and interdisciplinary pain management including psychological, physiotherapy, and rehabilitation evaluations and treatment options. <p>Pain Management: An integrated approach for the clinical setting:</p> <ul style="list-style-type: none"> With interactive case studies, doctor/patient videos and dedicated learning assessments, this self-paced pain management including: <ul style="list-style-type: none"> - Identification and management of neuropathic pain in the primary care setting - Identification and management of low back pain in the primary care setting - Non-joint musculo-skeletal pain - Post-discharge acute pain management - Understanding pain-related procedures - Pain in children - Cancer pain ,,etc.
<p>Session26(Week26-28)</p>	<p>Psychometrics of Pain Assessment Tools</p> <p>Reliability - Describe the main steps of scale development Describe the term reliability Identify various strategies to test reliability and relate them to different types of pain assessment tools Adequately interpret coefficients related to reliability testing</p> <p>Validity- Describe the term validity in accordance with the current measurement guidelines PowerPoint lecture, assigned readings Identify various strategies to test validity and relate them to different types of pain assessment tools Identify strengths and limitations of these strategies</p>
<p>Session27 (Week29)</p>	<p>Revision and discussion</p>
<p>Session 28 (Week29-30)</p>	<p>Final exam</p>
<p>Attendance Expectations</p>	<p>Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.</p>
<p>Generic Skills</p>	<p>The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.</p>
<p>Course Change</p>	<p>Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.</p>



سابعا: المقررات الدراسية لقسم الأجهزة والمعدات الطبية

أ - المقررات الدراسية للسنة الثانية قسم الأجهزة والمعدات الطبية

Human Anatomy




1	Course name	Human Anatomy
2	Course Code	MT201
3	Course type: /general/specialty/optional	general
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will serve as an introduction to the systems of the human body. Necessary life functions and survival needs will be examined, followed by an orientation of the language of anatomy. Students will learn the terminology, anatomy of each body system. Thorough analyses of tissue types, the integumentary system, skeletal tissue and the human skeleton, joints, muscle tissue and the muscular system, the fundamentals of nervous tissue, the nervous system, the study of blood, cardiovascular system including lymphatic system, immune system, respiratory system, digestive system, urinary system and male and female reproductive systems. Emphasis is placed on the integration of systems as they relate to normal health.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Essentials of Human Anatomy & Physiology by Elaine Marieb 10th Edition or later (recommended). • Human Anatomy & Physiology, Books a la Carte Edition 10th Edition by Elaine N. Marieb (Author), Katja N. Hoehn. • Introduction to the Human Body, 10th Edition • Gerard J. Tortora, Bryan H. Derrickson ISBN: 978-1-118-88413-3, 2014. • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability:</p> <ul style="list-style-type: none"> • Define the anatomic terms used to refer to the body in terms of directions and geometric planes and describe the structure and function of various human organs and systems; • Describe the major cavities of the body and the organs they contain.



- Explain what a cell is? and explain how human organs and systems interact.
- Describe the major functions of the four types of human tissue.
- List the major systems of the body, the organs they contain and the functions of those systems.
- Define the terms anatomy and physiology.
- Define homeostasis.
- Describe the relationship between and processes related to nutrition and metabolism; and recognize the stages of growth and development

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	<ul style="list-style-type: none"> • Introduction to Anatomy • Levels of organization • Body regions, planes, and orientations and body cavities
Session 2 (Week 3-4)	<ul style="list-style-type: none"> • Skeletal system • Bone structure and types, cartilage, ligaments, tendons, and joints • Axial and appendicular skeletons • Scientific terminologies of the main body bones
Session 3 (Week 5-6)	<ul style="list-style-type: none"> • Muscular system • Types of muscles, Differences and their microscopic structure • Skeletal muscle structure and neuromuscular junction • Scientific terminologies of the main body Muscles
Session 4 (Week 7-9)	<ul style="list-style-type: none"> • Cardiovascular (Circulatory) system • Components of cardiovascular system and types of circulations • The heart, arteries, veins, capillaries, and lymphatic vessels • The blood components (plasma and blood cells) • Scientific terminologies of the main cardiovascular components
Session 5 (Week 10-11)	<ul style="list-style-type: none"> • Respiratory system • Upper respiratory system (nose, pharynx, larynx, and trachea) • Lower respiratory system (Lungs, thoracic cage, and pleura) • Bronchi, bronchioles, alveoli and respiratory membrane • Respiratory muscles and lung volumes and capacities • Scientific terminologies of the main respiratory system parts
Session 6 (Week 12-14)	<ul style="list-style-type: none"> • Digestive system • Upper digestive system (mouth, pharynx, and esophagus) • Lower digestive system (stomach, small intestine, and large intestine) • Structure of digestive system walls • Accessory parts of the digestive system (salivary gland, teeth, pancreas, liver, and gall bladder) • Scientific terminologies of the main Digestive system parts
Session 7 (Week 15)	Midterm Exam
Session 8(Week 16-17)	<ul style="list-style-type: none"> • Integumentary system • Skin structure and types • Skin layers and skin color

	<ul style="list-style-type: none"> • Receptors and glands • Skin burns and disorders • Scientific terminologies of the main skin structures
Session 9 (Week 18-19)	<ul style="list-style-type: none"> • Urinary system • The main parts of the urinary system • Kidney structure • Nephron and Glomerulus • Types of blood vessels in the kidney • Uterus, bladder and urethra • Scientific terminologies of the main urinary system parts
	<ul style="list-style-type: none"> • Endocrine system • Endocrine glands names and locations • Structure, location, and hormones of hypothalamus and pituitary gland • Structure, location, and hormones of thyroid and parathyroid glands • Structure, location, and hormones of pineal and thymus glands • Structure, location, and hormones of pancreas and adrenal glands • Structure, location, and hormones of the ovaries and testicles gland • Structure, location, and hormones of other glandular structures • Scientific terminologies of the main endocrine glands
Session 11 (Week 23-24)	<ul style="list-style-type: none"> • Reproductive system • Reproductive systems of male and female • Structure and hormones of the ovaries and testes • Production of the sperms and ova • Scientific terminologies of the main parts of reproductive system parts
Session 12 (Week 25-26)	<ul style="list-style-type: none"> • Central Nervous system • brain, spinal cord, & peripheral nerves • Neurons (types and structure) • Neurotransmitters and synapses • Scientific terminologies of the main parts of the central nervous system parts
Session 13 (Week 27-28)	<ul style="list-style-type: none"> • Autonomic Nervous system • Sympathetic and parasympathetic autonomic nervous system • Preganglionic and postganglionic neurons • Neurotransmitters in the sympathetic and parasympathetic autonomic nervous system • Scientific terminologies of the main parts of the autonomic nervous system parts
Session 14 (Week 29)	Revision and discussion
Session 15 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy

	and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Biochemistry

1	Course name	Biochemistry
2	Course Code	MT202
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course explores the basic principles of biochemistry and develops the student's appreciation and understanding of biological networks. including proteins, enzymes, carbohydrates, lipids and nucleic acids in relationship to biological and metabolic processes.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Lippincott's Illustrated Reviews: Biochemistry. ISBN-13: 978-1496344496 ISBN-10: 1496344499. • Harper's Illustrated Biochemistry. ISBN-13: 978-1259837937. ISBN-10: 1259837939. • Leininger Principles of Biochemistry. ISBN-13: 978-1429234146. ISBN-10: 1429234148. • Textbook of Medical Biochemistry. ISBN-13: 978-9350254844. ISBN-10: 9350254840. • Clinical Chemistry Techniques, Principles, Correlations. ISBN-13: 978-1496335586. ISBN-10: 9781496335586. • Additional textbooks and web links may be used in this course at the discretion of the instructor. • http://www.kume.edu/biochemistry/resource.html
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • The chemical nature of carbohydrate, lipid, protein, nucleotide and vitamin biomolecules; and the principles of bioenergetics and enzyme catalysis.




- The metabolism and the metabolic control of dietary and endogenous carbohydrate, lipid, protein and nucleotides; and how the DNA in a genome is organized, replicated, and repaired and how the genetic information in the DNA is selectively expressed as functional proteins and RNA and how this expression is regulated.
- The tools used in biochemistry, and their potential applications to medical technology science.
- The commonly used measurements in clinical biochemistry and how these measurements can contribute to assessment of the health status of individuals.
- Use correct terminology to discuss the chemistry, cell structure, and tissues of the human body.
- Identify and explain the structure and functions of each body system.

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction and definition of biochemistry
Session 2 (Week 2)	Biochemistry of the cell
Session 3 (Week 3-4)	• Body fluids of the cell
Session 4 (Week 5 - 6)	• biochemistry of the cell
Session 5(Week 7,8)	• Chemistry of Carbohydrate
Session6(Week 9)	• Nucleotide
Session 7(Week 10)	• Nucleic acid
Session 8(Week 11)	• Chemistry of Lipids
Session9(Week 12)	Midterm Exam
Session10(Week 13)	• Chemistry of Lipids
Session11(Week 14 - 15)	Midterm practical exam
Session12(Week 16)	•Enzymes
Session13(Week 17)	• Porphyrins
Session14(Week 18 - 19)	Hemoglobin
Session15(Week 20)	•Vitamins
Session16(Week 21)	Revision of lecture
Session17(Week22 - 23)	•Carbohydrate Metabolism
Session18(Week 24 - 25)	•Lipid metabolism
Session19(Week 26 - 27)	•Protein Chemistry and Metabolism
Session20(Week 28)	Revision of lecture
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal

	communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Physiology

1	Course name	Physiology
2	Course Code	MT205
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
	Brief Description:	<p>Physiology is studying of biological function. medical physiology course will study human function at the level of whole organisms, tissues, cells and molecules (Study of human body function). Physiology is fundamental to medicine and studying function in both health and disease. (Content : Introduction, Autonomic nervous system, Blood, Nerve& muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)</p>
	Textbooks required for this Course: 	<ul style="list-style-type: none"> • Textbook of medical physiology / Arthur C. Guyton, John E. Hall.—11th ed.ISBN 0-7216-0240-1 • Principles of anatomy and physiology/ArthurGerard J., Bryan D. – 12th ed.ISBN 978-0-470-08471-7 • Human physiology / ArthurMAGDI SABRY, MD -5thed. JSBN 977. 203- 256-2 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor <p>Microbiology text book can be used,</p>
	Course Duration	4 * 28 = 112 teaching hours
	Delivery	Interactive Lecturer introduces of common clinical conditions and explains the underlying phenomena through questions, pictures and videos and students are actively involved in the learning process, and Students' take responsibilities of their own learning through selfstudy, sharing and discussing with peers, search information from Learning Resource Center of teachers and resource persons within and outside the college. Students can utilize the time within Laboratory hours.
	Course Objectives:	<p>The primary objective of the course is to ensure that students understand how the body works and after completing this course student should be able to:</p> <ul style="list-style-type: none"> • Have sufficient basic knowledge in medical physiology. • Define homeostasis and explain how homeostatic mechanisms normally maintain a constant interior milieu. • State the functions of each organ system of the body, explain the mechanisms by which each functions, and relate the functions and the anatomy and histology of each organ system.



- Understand and demonstrate the interrelations of the organ systems to each other.
- Predict and explain the integrated responses of the organ systems of the body to physiological and pathological stresses.
- Explain the pathophysiology of common diseases related to the organ systems of the body
- The ability to understand, recognize different medical term and identify the normal function and diseases of human organ body.
- Ability to use basic laboratory devices related to the subject and have the ability of measuring and evaluating vital variables (blood pressure, pulse, ECG, nerve conduction velocity, basic pulmonary function tests) of the normal functions of the body in the laboratory.

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction, Autonomic nervous system, Blood, Nerve & muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine) • Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year • Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year • Guide students on assessment methods, rules and regulations • Introduction (Total body water , cell membrane and cell transport)
Session 2 (Week 2)	Autonomic Nervous System • Types Autonomic Nervous System • Chemical neurotransmitters • Function of sympathetic & Parasympathetic Assignment 2 handed out
Session 3 (Week 3)	The blood: • Major components and function of the blood • Red & white blood cells • Plasma protein and function
Session 4 (Week 4)	• Blood groups & hemostasis Blood clotting disorders
Session 5 (Week 5)	Nerve & Muscle • Structure of nerve cell • Properties of neuron • Resting membrane potential
Session 6 (Week 6)	Nerve & Muscle • Action potential • Excitation- contraction coupling

	<ul style="list-style-type: none"> • Mechanism of muscle contraction & relaxation
Session7(Week 7)	Cardiovascular system <ul style="list-style-type: none"> • Anatomy of the heart • Functional properties of cardiac muscle • Action potential & Conducting System
Session 8(Week 8)	<ul style="list-style-type: none"> • Cardiac Cycle & Heart sound • Electrocardiograph
Session 9(Week 9)	<ul style="list-style-type: none"> • Blood pressure • Cardio dynamic • Arrhythmia & circulatory Shock
Session10(Week 10)	<ul style="list-style-type: none"> • Arrhythmia • circulatory Shock
Session11(Week 11)	Respiratory System <ul style="list-style-type: none"> • Structure of the respiratory system • Lung volume & Capacities
Session12(Week 12)	<ul style="list-style-type: none"> • Oxygen & Carbon Dioxide in blood • Dissociation oxygen curve shift
Session13(Week 13)	<ul style="list-style-type: none"> • Transport carbon dioxide • Regulation of respiratory • Hypoxia
Session14(Week 14)	Nervous System <ul style="list-style-type: none"> • Division of the nervous system • Units of Nervous system • Types of Receptors
Session15(Week 15)	Mid exam
Session15(Week 16)	Nervous System: <ul style="list-style-type: none"> • Properties of receptors, Synapse, Types of synapse, Mechanism of neurotransmitter
Session16(Week 17)	<ul style="list-style-type: none"> • Somatic sensation • Types Somatic sensation <ul style="list-style-type: none"> • Pain sensation • Pathways
Session17(Week 18)	<ul style="list-style-type: none"> • Referred Pain and Pain Control System
Session18(Week19)	Special senses <ul style="list-style-type: none"> • Vision • Hearing
Session19(Week 20)	<ul style="list-style-type: none"> • Special senses, Gustation and Olfaction
Session20(Week 21)	Gastrointestinal tract <ul style="list-style-type: none"> • characteristics of gastrointestinal wall • Explain functional types of movements in GIT • Control of GIT
Session21(Week 22)	<ul style="list-style-type: none"> • GIT hormones and their role in digestive process • Describe GIT reflexes • Mastication and salivary secretions
Session22 (Week 23)	<ul style="list-style-type: none"> • Describe motor functions of stomach • Explain regulation of stomach emptying & the composition, function and • regulation of gastric secretions • Vomiting reflex
Session23 (Week 24)	<ul style="list-style-type: none"> • Gall bladder and biliary tract • intestinal motility • Defecation reflex
Session25 (Week 25,26)	Urinary system <ul style="list-style-type: none"> • The kidney, Urine formation, Micturition and Renal failure





	<ul style="list-style-type: none"> Male reproductive and Female reproductive
Session26 (Week 27,28)	Endocrine System, Pituitary gland, Thyroid gland, Parathyriod, Adernal gland and Endocrine cell in other organs
Session27 (Week 29)	Final Exam
Attendance Expectations	Students must attend each of lecture, arriving on time, . Absences are permitted only for medical reasons and must be supported with a doctor's note. Because collage bylaw do not allow student to absences for more than 25%
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses. Numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised..



Medical Psychology & Teaching Methodology

1	Course name	Medical psychology & Teaching Methodology
2	Course Code	MT206
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		Fisrt part of this course will provide students with a fundamental understanding of medical Psychology, a subfield of behavioral medicine, is the study of psychological factors important in the promotion and maintenance of health and the psychological factors contributing to illness and disease. It is designed to apply a scientific and research perspective to the study of health

	<p>promoting and health damaging behaviors. Modification of health-related behaviors will be explored.</p> <p>Second part of the course will cover different teaching methods and techniques.</p>
<p>Textbooks required for this Course:</p> 	<ul style="list-style-type: none"> • Textbook of Medical Psychology Hardcover – January 1, 1961 • https://bookauthority.org/books/best-medical-psychology-books • https://www.elsevier.com/books/medical-psychology/prokop/978-0-12-565960-4 • Anthony, Michael J. Introducing Christian Education: Foundations for the Twenty-first Century. Baker Academic, 2001. • Armstrong, Thomas. Multiple Intelligences in the Classroom: 2nd Edition. Association for Supervision and Curriculum Development, 2000. • Dawn, Marva J. Is It A Lost Cause? Having the Heart of God for the Church's Children. William B Eerdmans Publishing Company, 1997. • Unfettered Hope: A Call to Faithful Living in an Affluent Society. Westminster John Knox Press, 2003. • Durka, Gloria. The Teachers Calling: A Spirituality for Those Who Teach. Paulist Press, 2002. • Church Educational Ministries: More than Sunday School. Evangelical Training Association, 1985. • Teaching Techniques for Church Education. Evangelical Training Association, 1983. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Up on completion of this course students will be able to:</p> <ul style="list-style-type: none"> • Understand the principle domains of psychology that are most relevant to medicine. • Know the key areas of psychology that would provide the basis for viewing people not only as biological but also as psychological beings. • Be familiar with the application of psychology in the wider practice of medicine. • understand the interaction between psychological and medical principles in the development, assessment and diagnosis and in the treatment of medical illnesses. • Will be able to define and list the fruits of the spirit. • The student will be able to explain why the fruit of the spirit are important to believers. • The student will be able to assess which fruits are most and least evident in their own lives. • The student will develop a plan to practice more of the fruit of the spirit for the next week • Understand the basics of the teaching methods

	<ul style="list-style-type: none"> Know different techniques of teaching and questions preparations.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An introduction to Medical psychology
Session 2 (Week 2)	Psychology and Medicine <ul style="list-style-type: none"> Explain what the field of Psychology studies. Describe the different areas of Psychology. Describe the way by which Psychology is linked to Medicine.
Session 3 (Week3-4)	Brain Mechanisms and Behaviour <ul style="list-style-type: none"> Describe the basics of Neural Communication. Explain the Basic Structure and function of the Nervous system. Outline the link between biology and behavior.
Session 4 (Week 5)	Senses and Integration on Senses <ul style="list-style-type: none"> Describe the role and the importance of the different types of senses. Outline the main functional theories of vision. Outline the main functional theories of audition. Outline the main theories of somatosensation. Outline the main theories of the functions of smell
Session5 (Week 6) 	<ul style="list-style-type: none"> Perception, attention and Memory Outline the role of the different types of perception. Describe the main theories of visual perception. Describe the main theories of auditory perception. Outline the main types of attention. Describe the main theories of attention. Outline the main types of memory. Describe the main theories of memory
Session 6 (Week 7)	Child Development (from birth to adolescence) <ul style="list-style-type: none"> Describe the different stages of development from birth to adolescence. Outline the main theories of child development. Outline the main theories of early stages of language acquisition. Describe the main theories of language development. Outline the theories connecting language and cognition. Language and the brain.
Session 7(Week 8)	Language, Motivation and Emotions Individual Differences in Intelligence and Personality <ul style="list-style-type: none"> Outline the area of Motivation. Outline the way by which motivation is link with emotion. Outline the main theories of Emotions. Describe the biological theories of emotions. Describe the psychological theories of emotions.



	<ul style="list-style-type: none"> • Outline the role of psychosocial approaches in medical practice. • Outline the role of placebo effect in the treatment of both physical and psychological treatments. • Describe the role of psychological principles and psychoeducation in facilitating problem solving and diagnosis. • Outline the way by which psychological factors contribute to the development of somatic problems. • Describe different types of psychosomatic problems. • Outline possible ways of distinguishing between psychosomatic and physical problems.
Session 12 (Week 13)	<p>Coping with illness and Disability, Psychopathology and Mental illness and Rehabilitation</p> <ul style="list-style-type: none"> • Outline the psychological factors contributing to coping with illness and disability. • Describe the different approaches and techniques employed for coping with these difficulties. • Outline the different areas of Psychopathology. • Outline the methods employed in the diagnosis of psychological and psychiatric disorders. • Outline the treatments often used in the treatment of psychiatric and psychological disorders. • Explain what is meant by chronic mental illness and the process of rehabilitation.
Session 14 (Week 14)	Midterm Exam
Session 16 (Week 16)	<ul style="list-style-type: none"> • Teaching Principles
Session 17 (Week 17)	<ul style="list-style-type: none"> • Student Centered vs. Teacher Centered Learning
Session 18 (Week 18)	<ul style="list-style-type: none"> • Learning Styles
Session 19 (Week 19)	<ul style="list-style-type: none"> • Creating a Lesson: Overview • Creating a Lesson: Goals • Creating a Lesson: Outcomes
Session 20 (Week 20)	<ul style="list-style-type: none"> • Creating a Lesson: Information Delivery
Session 21(Week 21-22)	<ul style="list-style-type: none"> • Teaching Methods
Session 22 (Week 23)	<ul style="list-style-type: none"> • Creating a Lesson: Activities
Session 23 (Week 24)	<ul style="list-style-type: none"> • Creating a Lesson: Measurement
Session 24 (Week 25)	<ul style="list-style-type: none"> • Creating a Lesson: Evaluation
Session 25 (Week 26)	<ul style="list-style-type: none"> • The Teacher's Responsibilities
Session26(Week27-28)	<ul style="list-style-type: none"> • Presentations
Session27(Week29)	Revision and discussion
Session28(Week 30-32)	Final Exam
Attendance Expectations	<p>Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.</p>
Generic Skills	<p>The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.</p>

Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.
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Professional Ethics

1	Course name	Professional Ethics
2	Course Code	MT207
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	The content is designed to enable the student to be aware of the basic rules of medical ethics. The student will become familiar with the definitions and ethical behavior that is required by the healthcare professional.
Textbooks required for this Course:	<ul style="list-style-type: none"> • القيم الخلقية وتطبيقاتها العملية، د. عبد الباسط الأمير • مقدمة في زراعه الاعضاء، د. الهادي عصمان • WMA medical ethics manual 2015 • <u>Principles of Biomedical Ethics, 5th edn.</u> • <u>https://www.elsevier.com/books/medical-ethics-and-law/wilkinson/978-0-7020-7596-4</u>
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lectures, Problem based learning and Class discussion.
Course Objectives:	<p>This course introduces medical technology students to the field of medical ethics. The objective of the course is:</p> <ul style="list-style-type: none"> • To convey to students, the pivotal role ethics holds in medical practice. • It introduces the key underlying ethical principles required in medicine. • The application of these principles will be brought to life through case based learning (CBL). • Recognize ethical issues when they arise in their practice • Deal with these issues in a systematic manner



	<ul style="list-style-type: none"> • Understand the ethics of medical research • To create an awareness on medical Ethics and Human Values. • To instill Moral and Social Values and Loyalty • To appreciate the rights of others.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction and history of medical ethics
Session 2 (Week 2)	Principles of medical ethics
Session 3 (Week 3-5)	Physicians and patients, Physicians and society Physicians and colleagues
Session 4 (Week 6 -7)	Ethics of medical research
Session5 (Week 8 - 9)	Informed consent
Session6 (Week 10 - 11)	Ethics of gynecology and obstetrics Ethics of infertility
Session 7 (Week 12 -13)	Ethics of healthcare system
Session 8(Week 14)	Professionalism
Session 10(Week 15)	Review and general discussion
Session 11(Week 16)	Med term exam
Session 12(Week17-18)	Medical errors
Session13(Week 19-20)	Libya law of medical responsibility
Session 14 (Week 21-22)	Humanism in medicine and Ethics of end of life
Session 15 (Week 23)	Ethics of authorship and publication
Session 16 (Week 24-25)	Ethics of medical education
Session 17 (Week26-27)	Theories of ethics
Session18(Week28)	Revision and discussion
Session19(Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Health Management

1	Course name	Health management
2	Course Code	MT208
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>Health Care Management provides a framework for addressing management problems in health care organizations. By the end of the course you will have been exposed to many management ideas, theories and applications, students will be able to:</p> <p>Know the process of communication and its nature, and get to know the environment surrounding the hospital. Identify the forms and types of management, Getting to know the correct and nursing information collection system</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> Principles of Hospital Administration and Planning (First Edition: 1998, Second Edition: 2009 ISBN 978-81-8448-632-2). Buchbinder, S.B., & Shanks, N.H. (2012). Introduction to Health Care Management Jones & Bartlett, Publishers, 2nd Edition. Essential Textbook of Health Management 6. July 2019: Publisher: Samiksha Publication ISBN: 978-9937710-55-8. Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		2 * 28 = 56 teaching hours
Delivery		A Lecture-based ppt and practical training B Group interaction and discussion
Course Objectives:		<p>Up on completion of the course the students will be enable to:</p> <ul style="list-style-type: none"> Learn concepts and theories in health care management; Develop skills in using materials tools and/or technology central to health care mgt; Learn to understand perspectives and values of health care management; Develop the basic management skills and ability to work productively with others; Learn to select, use, and critically analyze current HCMN research and literature;





- Integrate health care management theory with real world situations
- Develop the ability to work productively with others in diverse teams.
- To have reliably demonstrated the ability to make decisions on sound grounds, and can understand the concept of the hospital, can arrange health services, structure the health facilities and develop administrative skills.

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An Introduction to the Health management
Session 2 (Week 2)	The historical role of medical and nursing health services
Session 3 (Week 3)	Hospital Operation Management Epidemiological basis for healthcare management. Management development-towards development of professional management of the Health system>
Session 6(Week 6)	Hospital concept and classification hospital environment
Session 7 (Week 7)	Hospital health planning
Session 8 (Week 8)	The organizational structure of the hospital
Session 9(Week 9)	Hospital Operational Management Management of Quality Assured services of professional service units of hospitals. Quality control mechanisms.
Session 10(Week 10)	Outpatient & In Patient Services in the Following Fields (Basic knowledge only): Radiotherapy, Nuclear medicine, surgical units, and OT Medical units, G & Obs. units & LR. Pediatric, neonatal units, Critical care units, Rehabilitation. Skin, Eye, ENT, Neurology, Dental, Gastroenterology, Endoscopy, Pulmonology, Cardiology, Cath lab, Nephrology & Dialysis, Urology, Orthopedics, Transplant units, Burn Unit
Session 11(Week 11)	Medical Record Science Definition and types of medical record, Importance of medical record, Flow chart of function, Statutory requirements of maintenance, coding, indexing and filing, Computerization of record, Report and returns by the record department, Statistical information and ICD
Session 12(Week 12)	Leadership and management An overview of healthcare management and leadership
Session 13(Week 13)	Management and motivation
Session 14(Week 14)	Midterm Exam
Session 15(Week 15)	Organizational Behavior (OB) and Management Thinking
Session 16(Week 16)	Quality Improvement
Session 17(Week 17)	Health care information Technology Health and Nursing Information Collection System
Session 18(Week 18)	Healthcare Financing, Cost and revenue management
Session 19(Week 19-20)	Health Care Professionals Management Health personnel management The Strategic Management of Human Resources
Session 20(Week 21)	Addressing Health Disparities: Cultural Proficiency, Ethics and Law.

Session 21(Week22)	Fraud and abuse
Session 22(Week 23)	Communication, health administration
Session 23(Week 24)	Administrative Support in Healthcare Organizations
Session 24(Week 25)	Clinical Care in Healthcare Organizations
Session 25(Week 27)	Medical Laboratories Management
Session 26(Week 28)	Revision and discussion
Session 27(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Mathematics

1	Course name	Mathematics
2	Course Code	DE207
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of mathematical foundation and provide a common for students in all of the programs, drawing upon the full range of undergraduate courses in mathematics. Mathematical connection will be emphasized in the course,
Textbooks required for this Course:		The following are texts suitable for this course: <ul style="list-style-type: none"> Dunham, william, journey through genius, john wiley & sons, inc., nyc,1990.

	<ul style="list-style-type: none"> Eves, Howard, Foundations and Fundamental Concepts of Mathematics, PWS-Kent Publishing Co., Boston, MA, 1991. Kurtz, David, Foundations of Abstract Mathematics, McGraw Hill Publishing Co., Hightstown, NJ, 1992. Morash, Ronald, Bridge to Abstract Mathematics, McGraw Hill Publishing Co., Hightstown, NJ, 1991. Lial, Greenwell, and Ritchey, Finite Mathematics, 11th edition, Pearson Education, 2016 (ISBN: 978-0-321-97943-8). Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>By the end of the course, students should be able to:</p> <ul style="list-style-type: none"> Develop a positive attitude towards learning Mathematics Perform mathematical operations and manipulations with confidence, speed and accuracy Think and reason precisely, logically and critically in any given situation Develop investigative skills in Mathematics Identify, concretise, symbolise and use mathematical relationships in everyday life Comprehend, analyse, synthesise, evaluate, and make generalizations so as to solve mathematical problems Collect, organize, represent, analyse, interpret data and make conclusions and predictions from its results Apply mathematical knowledge and skills to familiar and unfamiliar situations Appreciate the role, value and use of Mathematics in society Develop willingness and work collaboratively Acquire knowledge and skills for further education and training Communicate mathematical ideas Emphasize mathematical connection, allowing them to relate topics studied separately to one another Understand the mathematical reasoning and communication skills, as applied to mathematics Build upon and share knowledge already acquired while pointing out areas in which additional study may be needed Develop the communication skills and understanding of the process of doing mathematics necessary for graduate-level study.
Course Assessments	Midterm Exam 20% Activities 10% Attendance 10% 60 % Final exam. A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and



	design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	develop a linear model (A, B)
Session 2 (Week 2)	develop a model of a linear system (A, B)
Session 3 (Week 3)	graph lines, inequalities, and the solution set for a system of inequalities (A,B)
Session 4 (Week 4)	perform matrix arithmetic and determine the inverse of a matrix (C)
Session 5 (Week 5)	solve linear equations and systems of linear equations using Gaussian elimination (C)
Session 6 (Week 6)	develop a model for simple linear optimization problems (A, B)
Session 7 (Week7-12)	solve linear programming problems, graphically and via the Simplex Method (C, D), analyze final simplex tableaus for linear optimization problems (D). use correctly the addition and multiplication counting principles (C, D), solve standard probability problems which make use of the counting principles (C, D)
Session 8 (Week 13)	Midterm Exam
Session 9(Week 14-17)	identify and compute probabilities for mutually exclusive or independent events (B,C)
Session 10 (Week18-21)	solve standard probability problems involving inclusion / exclusion, conditional probabilities, Bayes Theorem (B, C)
Session 11 (Week 22)	develop probabilistic models for stochastic processes (A, B) develop models for Markov processes (A, B)
Session 12 (Week 23)	analyze transition matrices to determine expected time to absorption and probabilities of absorption in a Markov process (C,D)
Sessio13(Week 24 -28)	develop models for $n \times m$ 2-person zero-sum games (A, B) 17. analyze payoff matrices to determine optimal strategies in 2-person zero-sum games (C,D)
Sessio14(Week 29)	Revision and discussion
Session 15(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Logical Design

1	Course name	Logical Design
2	Course Code	ME208
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of the logic design and introduce to the students the topics that include combinational and sequential circuit analysis and design, digital circuit design optimization methods using random logic gates, multiplexers, decoders, registers, counters and programmable logic arrays.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Digital Design, 5/E, M. Morris Mano, Michael D. Ciletti, ISBN-10:0132774208 • Digital Logic Design 4th Edition by Brian Holdsworth, Clive Woods MA DPhil 2002 • http://www.uoitc.edu.iq/images/documents/informatics-institute/Competitive_exam/Logic_Design.pdf • Introduction to Logic Circuits & Logic Design with VHDL 2nd edition 2019 DOI https://doi.org/10.1007/978-3-030-12489-2 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>By the end of the course the students should be able to:</p> <ul style="list-style-type: none"> • Perform the conversion among different number systems; Familiar with basic logic gates • Independently work in team to build simple logic circuits using basic. • Understand Boolean algebra and basic properties of Boolean algebra; able to simplify simple Boolean functions by using the basic Boolean properties. • Design simple combinational logics using basic gates. • Able to optimize simple logic using Karnaugh maps, understand "don't care".





	<ul style="list-style-type: none"> Familiar with basic sequential logic components: SR Latch, D Flip-Flop and their usage and able to analyze sequential logic circuits. Understand finite state machines (FSM) concepts and work in team to do sequence circuit design based FSM and state table using D-FFs. Familiar with basic combinational and sequential components used in the typical datapath designs: Register, Adders, Shifters, Comparators; Counters, Multiplier, Arithmetic-Logic Units (ALUs), RAM. Do simple register-transfer level (RTL) design. Understand and use one high-level hardware description languages (VHDL or Verilog) to design combinational or sequential circuits. Understand that the design process for today's billion-transistor digital systems becomes a more programming based process than before and programming skills are important.
Course Assessments	Midterm Exam 20% Activities 10% Attendance 10% 60 % Final exam. A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	. Introduction to number systems, decimal numbering system
Session 2 (Week 2)	Topics to be covered in the session (week) Binary numbering system, decimal to binary and binary to decimal conversion
Session 3 (Week 3)	Hexadecimal numbering system, hexadecimal to decimal and binary conversion.
Session 4 (Week 4)	Octal numbering system, octal to decimal, octal to binary and binary to octal conversions
Session 5 (Week 5)	Binary arithmetic
Session 6 (Week 6)	Two's complement Representation.
Session 7 (Week 7-12)	Logic gates (AND, OR, The Inverter, NAND, NOR, XOR, XNOR) and their operation, truth table and timing analysis. Combinational logic circuits.
Session 8 (Week 13)	Midterm Exam
Session 9 (Week 14-17)	Boolean Algebra Laws and Rules Simplification of Combinational Logic Circuits. De-Morgan's Theorem. and-or-invert Gates for implementing Sum-of-Product Expressions.
Session 10 (Week 18-21)	Karnaugh Map (K-map). Arithmetic circuits (Half Adder and Full Adder circuits). sequential circuits (Latches) (S-R flip flop)
Session 11 (Week 22)	D Flip Flop, J-K Flip Flop. T Flip Flop, Master & Slave Flip Flop. Schmitt Trigger ICs.
Session 12 (Week 23)	Shift Registers basics: Serial to Serial, Serial to Parallel Registers. Parallel to Serial, Parallel to parallel Registers.

Session 13 (Week24-28)	Ring Shift Counter & Johnson Shift Counter. Counter Circuits, Ripple Counters (count UP and count DOWN counters). Multivibrators and 555 Timer
Session 14 (Week29)	Revision and discussion
Session15(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Programming Language C++

1	Course name	Programming Language C++
2	Course Code	DE209
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 Units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022
	Brief Description:	This course will provide students with a fundamental understanding of the nature of computer programming using C++. Emphasis on the fundamentals of object-oriented design with development, testing, implementation, and documentation. Includes language syntax, data and file structures, input/output devices, and files.
	Textbooks required for this Course:	<ul style="list-style-type: none"> Starting Out with C++ Early Objects 6th Edition Tony Gaddis Judy Walters Godfrey Muganda ISBN-13 : 978-0-321-51238-3 ISBN-10 : 0-321-51238-3 The C++ Programming Language Fourth Edition by Bjarne Stroustrup 2013

	<p>http://chenweixiang.github.io/docs/The_C++_Programming_Language_4th_Edition_Bjarne_Stroustrup.pdf</p> <ul style="list-style-type: none"> • A Complete Guide to Programming in C++ by Ulla Kirch-Prinz and Peter Prinz 2002 http://www.lmpt.univ-tours.fr/~volkov/C++.pdf • The C++ Programming Language, 4th Edition by Bjarne Stroustrup 4th edition Released July 2013 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, Laboratory experiments.
Course Objectives:	<p>After completing this course, students should be able to:</p> <ul style="list-style-type: none"> • Describe OOPs concepts • Use functions and pointers in your C++ program • Understand tokens, expressions, and control structures • Explain arrays and strings and create programs using them • Describe and use constructors and destructors • Understand and employ file management • Demonstrate how to control errors with exception handling • Understanding about object oriented programming. • Gain knowledge about the capability to store information together in an object. • Understand the capability of a class to rely upon another class. • Learn how to store one object inside another object • Learn use of one method can be used in variety of different ways • Understanding the process of exposing the essential data to the outside of the world and hiding the low level data • Create and process data in files using file I/O functions • Understand about constructors which are special type of functions • Learn how to write code in a way that it is independent of any particular type.
Course Assessments	Midterm Exam 20% Activities 10% Attendance 10% 60 % Final exam. A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction & variables - Course overview - About programming - Variables and data types - Keyboard input and screen output



Session 2 (Week 2)	Operators - Operator overview - Operator precedence - C++ operators vs. algebra operators
Session 3 (Week 3)	Control flow - Expressions - Branching code
Session 4 (Week 4)	Control flow (part 2) - Boolean expressions - Multipath branches – Loops
Session 5 (Week 5)	Functions - Writing C++ functions - Using C++ functions - Variable scope
Session 6 (Week 6)	Functions (part 2) - Retrieving data from functions - Call by reference
Session 7 (Week 7-12)	I/O streams - Streams - File I/O - Using classes
Session 8(Week 13)	Midterm Exam
Session 9 (Week 14-17)	Arrays - Introduction to arrays - Fixed-size arrays
Session 10 (Week 18-21)	Strings and vectors - C-style strings - C++ style strings – Vectors
Session 11 (Week 22)	Pointers - Using pointers - Memory management
Session 12 (Week 23)	Pointers and dynamic memory - Dynamic arrays - Pointer arithmetic
Session 13 (Week 24-28)	Classes and structures - Structures – Classes Using classes - Abstract data types – Inheritance Expanding classes - Friend functions - Operator overloading - Arrays in classes
Session 14 (Week 29)	Revision and discussion
Session 15 (Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ب - المقررات الدراسية للسنة الثالثة قسم الأجهزة والمعدات الطبية



Research Methodology

1	Course name	Research Methodology
2	Course Code	MT301
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description: This course will provide students with a fundamental understanding of the research Methodology and offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Includes computer applications for research.


Textbooks required for this Course:

- Tuckman, B. W. & Harper, B. E. (2012). Conducting educational research (6th ed.). Lanham, MD: Rowan & Littlefield Publishers (ISBN: 978-1-4422-0964-0).
- Cohen, L. Lawrence, M., & Morrison, K. (2005). Research Methods in Education (5th edition). Oxford: Oxford University Press.
- Denscombes, M. (2010). The Good Research Guide: For small-scale social research projects. Maiden-Read: Open University Press.
- Dornyei, Z. (2007). Research Methods in Applied Linguistics. Oxford: Oxford University Press.
- Hoadjli, A.C. (2015). The Washback Effect of an Alternative Testing Model on Teaching and Learning: An exploratory study on EFL secondary classes in Biskra. Unpublished Doctoral Thesis, University of Mohamed Kheider, Biskra.
- Kothari, C. R. (1980). Research Methodology: Research and techniques, New Delhi: New Age International Publishers.
- Kumar, R. (2011). Research Methodology: a step-by-step guide for beginners (3rd edition). London, UK: TJ International Ltd, Padstow, Cornwall
- Leedy, P. D. (1980). Practical Research: Planning and design. Washington: Mc Millan Publishing Co., Inc.
- Singh, Y. K. (2006). Fundamental of Research Methodology and Statistics. New Delhi. New International (P) Limited, Publishers.
- Wallinman, N. (2006). Your Research Project: A step-by-step guide for the first-time researcher. London: Sage Publications.



	<ul style="list-style-type: none"> • http://www.pitt.edu/~super7/43011-44001/43911.ppt • http://web.tamu-commerce.edu/academics/graduateSchool/ • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completing this course, each student will be able to:</p> <ul style="list-style-type: none"> • Understand some basic concepts of research and its methodologies and identify appropriate research topics. • Demonstrate knowledge of research processes (reading, evaluating, and developing). • Perform literature reviews using print and online databases. • Understand the formats for citations of print and electronic materials. • Identify, explain, compare, and prepare the key elements of a research proposal/report. • Compare and contrast quantitative and qualitative research paradigms, and explain the use of each of them. • Describe, compare, and contrast descriptive and inferential statistics, and provide examples of their use in research. • Describe sampling methods, measurement scales and instruments, and appropriate uses of each. • Explain the rationale for research ethics and importance • select and define appropriate research problem and parameters • prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner • Write a research report, thesis and research proposal. • Make Critical Appraisal of the Literature
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to research methodology <ul style="list-style-type: none"> • Meaning of Research • Definitions of Research • Objectives of Research
Session 2 (Week 2)	Introduction to research methodology <ul style="list-style-type: none"> • Motivation in Research • General Characteristics of Research • Criteria of Good Research
Session 3 (Week 3)	The Research Problem <ul style="list-style-type: none"> • Scientific Thinking • What is a Research Problem? • Selecting the Problem • Sources of the Problem • Defining a Problem • Statement of a Problem • Delimiting a Problem



	<ul style="list-style-type: none"> Evaluation of a Problem Assignment 1 handed out
Session 4 (Week 4)	<ul style="list-style-type: none"> The Review of Literature <ul style="list-style-type: none"> Meaning of Review of Literature Need of Review of Literature Objectives of Review of Literature Sources of Literature The Functions of Literature How to Conduct the Review of Literature Some Hints for the Review of Literature Precautions in Library Use Reporting the Review of Literature
Session 5 (Week 5)	Practice on how to find a literature <ul style="list-style-type: none"> Selecting a topic Highlighting the electronic websites that help to better search of literature
Session 6 (Week 6)	 The Research Hypotheses <ul style="list-style-type: none"> Meaning of Hypothesis Definitions of Hypothesis Nature of Hypothesis Functions of Hypothesis Importance of Hypothesis Kinds of Hypothesis Characteristics of a Good Hypothesis Variables in a Hypothesis Formulating a Hypothesis Testing the Hypothesis Assignment 2 handed out
Session 7 (Week 7)	The Research Approach <ul style="list-style-type: none"> The Philosophical Background The Qualitative Approach The Quantitative Approach The Mixed-Methods Approach
Session 8 (Week 8)	Criteria for Selecting a Research Approach
Session 9 (Week 9)	The Research Designs <ul style="list-style-type: none"> Meaning of research design Need for research design features of a good design
Session 10 (Week 10)	Review
Session 11 (Week 11)	Assignment of research paper <ul style="list-style-type: none"> selecting paper guidelines of reading research paper
Session 12 (Week 12)	Assignment of research paper <ul style="list-style-type: none"> Review before submitting the assignment
Session 13 (Week 13)	Cross-sectional study
Session 14 (Week 14)	Case-control study
Session 15 (Week 15)	Cohort study
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Experimental study
Session 18 (Week 18)	Criteria for Selecting a Research design
Session 19 (Week 19)	Sampling

	<ul style="list-style-type: none"> • Meaning and Definition of Sampling • Functions of Population and Sampling • Methods of Sampling • Characteristics of a Good Sample • Size of a Sample
Session 20 (Week 20)	Data Collection Methods <ul style="list-style-type: none"> • Questionnaires • Interviews • Focus Groups • Observation
Session 21 (Week 21)	Interviewing techniques <ul style="list-style-type: none"> • Face-to-face interview • Telephone interview • Computer based interview
Session 22 (Week 22)	Data management and analysis <ul style="list-style-type: none"> • Descriptive statistics • inferential statistics
Session 23 (Week 23)	Writing research proposal
Session 24 (Week 24)	Writing research report
Session 25 (Week 25)	Critical Appraisal of the Literature
Session 26 (Week 26)	Guidelines for submitting graduation project
Session 27 (Week 27)	Review of research methodology
Session 28 (Week 28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Analogue Electronics

1	Course name	Analogue Electronics
2	Course Code	DE302
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of small signal modeling of transistors. Basic architecture and functionality of linear amplifiers including transistor biasing circuits, current sources, differential amplifier, common emitter amplifier, common source amplifier, emitter follower, source follower, common base amplifier, and common gate amplifier. Frequency response of single stage and multistage amplifiers
Textbooks required for this Course:		<ul style="list-style-type: none"> • Neamen, Donald. <i>Microelectronic Circuit Analysis and Design</i>. 3rd ed. New York, NY: McGraw-Hill, 2006. ISBN: 9780073285962. • The book comes with two free CD-ROMs and is the required textbook for this term Cathey, Jimmie J. <i>Schaum's Outlines Electronic Devices and Circuits</i>. 2nd ed. New York, NY: McGraw-Hill, 2002. ISBN: 9780071362702. • Analogue Electronics Analysis and Design by Malcolm Goodge 1st edition 1990 DOI • https://doi.org/10.1007/978-1-349-20994-1 • Johnson, D. E., and V. Jayakumar. <i>Operational Amplifier Circuits</i>. Upper Saddle River, NJ: Prentice Hall, 1982. ISBN: 9780136374473. • Horowitz, Paul, and Winfield Hill. <i>The Art of Electronics</i>. 2nd ed. Cambridge, UK: Cambridge University Press, 1989. ISBN: 9780521370950. <p>We strongly recommend that you also purchase this book. This reference will be useful in other courses and after graduation.</p> <ul style="list-style-type: none"> • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>By the end of the course students should be able to:</p> <ul style="list-style-type: none"> • Learn different biasing techniques and behavior of BJT, FET at low and high frequencies.





- Understand the principle of operation of different amplifier circuits like feedback amplifiers, power amplifiers.
- Understand the principle of operation of different oscillators circuits.
- Recognize/identify and analyze idealized passive linear circuits
- Apply KCL, KVL, write down node equations for a given circuit correctly using phasor notation
- Understand the principle of operation of different oscillators circuits.
- Apply superposition, whenever necessary and solve circuit equations correctly
- Numerically determine circuit variables, voltage and/or current amplitude, frequency, phase accurately up to the required precision, in specified notation (scientific or engineering);
- Design idealized passive linear circuits under sinusoidal excitation:
- Determine the type and/or value of an element of a circuit for a specified circuit performance (like transfer function, cut off frequency, etc.)
- understand that an ideal model for a component is very useful to real components, and any experience with real components can be predicted through a model based analysis:
- Draw the circuit diagram for any combination of elements correctly;
- Apply the systematic analysis methods and read circuit diagrams of intermediate complexity

Course Assessments	Midterm exam 20 % Activities 10% Attendances 10% Final Exam 60 % final A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Semiconductor Materials
Session 2 (Week 2)	n-type and p-type Materials.
Session 3 (Week 3)	Semiconductor Diode – Diode biases.
Session 4 (Week 4)	Diode applications: Load Line, Series, Parallel and series- Parallel Diode configurations.
Session 5 (Week 5)	Diode as a rectifier: Half wave rectifier and Full wave rectifier.
Session 6 (Week 6)	Diode types.
Session 7 (Week 7-12)	Bipolar junction transistors (BJT): Transistor Construction- Transistor operation Transistors configurations: CB-CE-CC Dc Biasing- BJTs: Operating Point and the biases configurations (Fixed, Emitter, Voltage Divider and Collector Feedback biases Configurations). Current Mirror Circuits and Current Source Circuits.
Session 8 (Week 13)	Midterm Exam
Session 9 (Week 14-17)	Field – Effect Transistors(FET) : Construction and Characteristics of FETs.

	FET Biasing (Fixed-Bias configuration, Self-Bias configuration, Voltage-Divider Biasing, Common Gate configuration) .
Session 10 (Week 18-21)	Diode biases. Diode applications. Series, Parallel and series- Parallel Diode configurations.
Session 11 (Week 22)	Diode as a rectifier: Half wave rectifier and Full wave rectifier. Understand the Diode types and their applications.
Session12 (Week 23)	Transistor Construction. Transistors configurations: CB-CE-CC.
Session 13 (Week 24-28)	Transistor biases configurations (Fixed, Emitter, Voltage Divider and Collector Feedback biases Configurations) Field – Effect Transistors(JFET) biasing
Session 14 (Week 29)	Revision and discussion
Session 15 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Electrical measurements



1	Course name	Electrical measurements
2	Course Code	DE303
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2021- 2020
Brief Description:		This course will provide students with a fundamental understanding and gives an overview of fundamentals of electronic measurement systems and elements of electronic instrumentation. Contents: Digital multimeter and oscilloscope. Eelectronic measurements,

	electronic measurement channel, static and dynamic characteristics, electromagnetic interferences, signal sources and acquisition. Sensors. Amplifiers. Noise. Voltage references. Analog-to-digital conversion. Measurement data communication. Examples and exercises.
Textbooks required for this Course:	<ul style="list-style-type: none"> • E.W.Golding & F.C.Widdis, 'Electrical Measurements & Measuring Instruments', A.H.Wheeler & Co, 1994. 2. A.K. Sawhney, 'Electrical & Electronic Measurements and Instrumentation', Dhanpath Rai & Co (P) Ltd, 2004. • Electrical Measurements in the Laboratory Practice by Rosario Bartiromo, Mario De Vincenzi 1st edition 2016 https://doi.org/10.1007/978-3-319-31102-9 • Principles of Electrical Measurement By Slawomir Tumanski 1st edition 2006 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon Completing the Course, Student should able to:</p> <ul style="list-style-type: none"> • To use the techniques and skills for electrical projects. • Design a system, component or process to meet desired needs in electrical engineering. • Measurement of R,L,C ,Voltage, Current, Power factor , Power, Energy. • Ability to balance Bridges to find unknown values. • Ability to measure frequency, phase with Oscilloscope. • Ability to use Digital voltmeters • Gain a clear knowledge of the basic laws governing theoperation of electrical instruments and the measurement techniques • Emphasis is laid on the meters used to measure current & voltage. • Have an adequate knowledge in the measurement techniques for power and energy, power and energy meters are included. • Elaborate discussion about potentiometer & instrument transformers. • Detailed study of resistance measuring methods. • Detailed study of inductance and capacitance measurement.
Course Assessments	Midterm exam 20 % Activities10% Attendances 10% Final Exam 60 % final A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Inverting and Non-inverting amplifier. AC signal sources, signal generator, Oscillators. Classification of Oscillators. Requirements of oscillation.
Session 2 (Week 2)	<ul style="list-style-type: none"> • Audio Frequency Oscillator, Wien bridge Oscillators, Phase shift Oscillators, Frequency, Gain, Feedback Factor and their Applications



Session 3 (Week 3)	<ul style="list-style-type: none"> Radio Frequency Oscillators :Colpitts Oscillators, Hartley Oscillators, Crystal Oscillators Frequency, Gain, Feedback Factor and their Applications
Session 4 (Week 4)	Function Generators, Characteristics of each part and its analysis
Session 5 (Week 5)	Attenuators circuit, L-type Attenuators, T-type Attenuators, Pi-type Attenuators
Session 6 (Week 6)	Signal Analysis: Harmonic Distortion, Frequency Spectrum of Harmonic distortion, Harmonic Distortion Analyzer.
Session 7 (Week 7-12)	Transducers, Classification of Transducers, Active and Passive Transducers. Digital and Analog Transducers. Primary and Secondary Transducers. Selection of Transducers.
Session 8 (Week 13)	Midterm Exam
Session9(Week 14-17)	Displacement Transducer, Resistive position Transducers and Strain Gauge Transducers.
Session10(Week 18-21)	Capacitive Transducers, rotary plate capacitor, Recti-linear Capacitor, Diaphragm. Inductive Transducers: Tachometers, Linear Variable Differential Transducer (LVDT)
Session 11(Week 22)	Temperature and displacement sensors" Temperature measurement devices and their parameters, Thermistor and Thermometer
Session 12 (Week 23)	Photovoltaic theory of operation" Light intensity and definitions , Dark IV diode characteristics ,Light absorption by semiconductors, Photomultiplier and photoconductive
Session13(Week 24-28)	Data acquisition system: signal conditioning circuit: buffering, filtering, signal level change, signal conversion, linearization and multiplexers. Analog to digital and digital to analog converter "Analog to digital conversion concept, Digital to analog conversion concept, Multiplexing, Interference problem solvers Computer controlled test" Introduction to computer control testing, Case study, Digital control and signal timing concept
Session 14 (Week 29)	Revision and discussion
Session15(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Engineering Drawing

1	Course name	Engineering Drawing
2	Course Code	DE304
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of drawing material, concept of sizes, dimensions and imagination and introduces technical drawing a means of professional engineering communication. It will cover: sketching, line drawing, shape description, projections, drawing standards, sections and dimensioning
Textbooks required for this Course:	<ul style="list-style-type: none"> • https://ia800107.us.archive.org/18/items/TextbookOfEngineeringDrawing_201802/Textbook%20of%20Engineering%20Drawing.pdf • A Textbook of Engineering Drawing: for Undergraduate Engineering Students Paperback – June 23, 2020 by Addisu Dagne Zegeye • Geometric and Engineering Drawing By Ken Morling, Stéphane Danjou 4 edition 2020 • A Textbook of Engineering Drawing First Edition by Roop Lal Ramakant Rana 2020 <p>Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.</p>
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Use drawing instruments and to draw polygons, Engg. Curves. • Draw the projections of the lines inclined to both the planes. • Draw the projections of the various types of solids in different positions inclined to one of the planes • Provide students with knowledge and abilities to design a 3D object on 2D paper including all manufacturing constraints by hand sketching method and by means of computer aided design software.



	<ul style="list-style-type: none"> • Emphasize the importance of drawing as a language for engineers • Develop skills in engineering drawing and drafting. • Develop skills in interpretation of engineering drawings • Develop skills in computer aided drafting and design
Course Assessments	20 % Midterm Exam 10% attendances 10% activities Final Exam 60 %. A60..% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction, Drawing Instruments, Metric and SI units, Title Block, Line, Lettering and Dimensioning, Scaling, Freehand sketching
Session 2 (Week 2- 3)	Dimensioning, Abbreviations and symbols, Interpreting engineering drawing
Session 3 (Week 4)	Applied geometry
Session 4 (Week 5)	Theory of orthographic projection and orthographic drawing
Session 5(Week 6)	Orthographic drawing
Session 6(Week 7)	Pictorial drawing (Isometric drawing)
Session 7 (Week 8)	Auxiliary views drawing
Session 8 (Week 9-10)	Sectional views drawing (Full section, Half section)
Session9 (Week 11)	Review
Session 10 (Week 12)	3D modeling
Session 11 (Week 13-14)	Project drawings
Session 12 (Week 15)	Midterm Exam
Session 13(Week 16 -18)	Sectional views drawing (Broken section and Offset section)
Session 14 (Week 18-20)	Sectional views drawing (Revolve section, Removed section)
Session 15Week 21-22)	Computer-aided design (2D drawing)
Session 16 (Week 23-24)	Computer-aided design (simple assembly drawings)
Session 17 (Week 25-27)	Engineering drawing for environmental engineering and disaster management
Session 18 (Week 28-29)	Revision and discussion
Session 30 (Week 30)	Final Exam 60%
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.



Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Digital Signal Processing

1	Course name	Digital Signal Processing
2	Course Code	DE305
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description: This course will provide students with a fundamental understanding of the nature of basic concepts of discrete-time signals and proceed to learn how to analyze data via the Fourier transform, how to manipulate data via digital filters and how to convert analog signals into digital and to the solid theoretical bases are complemented by applied examples in Matlab. As well as to design and lab exercises are also significant components of the course.

Textbooks required for this Course:



- John G. Proakis, Dimitris G. Manolakis (2007), Digital Signal Processing, Principles, Algorithms, and Applications, Pearson Education / PHI, India.
- A.V. Oppenheim, R. W. Schaffer (2009), Discrete Time Signal Processing, Prentice Hall of India, New Delhi.
- [https://users.dimi.uniud.it/~antonio.dangelo/MMS/materials/Guide to Digital Signal Process.pdf](https://users.dimi.uniud.it/~antonio.dangelo/MMS/materials/Guide%20to%20Digital%20Signal%20Process.pdf)
- [https://www.elec.inaoep.mx/~jmram/Digital Signal Processing LI TAN.pdf](https://www.elec.inaoep.mx/~jmram/Digital%20Signal%20Processing%20LI%20TAN.pdf)
- Digital Signal Processing using Arm Cortex-M based Microcontrollers: Theory and Practice by Cem Ünsalan, M. Erkin Yücel, H. Deniz Gürhan ISBN 978-191153116-6
- Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor

Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	By the end of the course the students should be able to: <ul style="list-style-type: none"> • Understand basic techniques in designing and implementing digital signal processing systems. • Learn basic methods of spectral analysis. • Explore the data communication systems. • Teach students to design digital filters. • Know fundamental material for the analysis and processing of digital signals. • Familiarize the relationships between continuous-time and discrete-time signals and systems. • 3. Study fundamentals of time, frequency and z-plane analysis and to discuss the interrelationships of these analytic method. • 4. Study the designs and structures of digital (IIR and FIR) filters from analysis to synthesis for a given specification. • 5. Introduce a few real-world signal processing applications
Course Assessments	20 % Midterm Exam 10% attendances 10% activities Final Exam 60 %. A60..% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Basics of Digital Signal Processing Sampling and Quantization, Kotelnikov / Nyquist–Shannon sampling theorem. Amplitude, phase, frequency. Periodic signals, aliasing.
Session 2 (Week 2)	Introduction to The Fourier Transform Properties of the Fourier Transform. Digital Fourier transform,
Session 3 (Week 3)	Fast Fourier Transform algorithms FIT, DIT. Window functions
Session 4 (Week 4)	Wavelet transform Wavelet digital transform, Wavelet continuous transform. Orthogonal basis. Types of wavelets.
Session5-9 (Week5-9)	Discrete Time Systems Filter classification in the frequency domain, FIR and IIR filters. Transfer function, Impulse Response, Convolution. Design of filters by windowing
Session10-14(Week 10-14)	The Z-transform Properties of the z transform. Poles, Zeros. Pole-zero diagram and frequency response.
Session 15 (Week 15)	Midterm Exam
Session16-21(Week16-21)	Digital Communication Systems PWM, Keying, Symbol rate, Constellation and Scatter plots. QAM. Filter shaping. Sigma-Delta modulation
Session 22 (Week 22-28)	Modulation and demodulation Amplitude and Angle Modulation. Quadrature modulation. Deviation. Spectral characteristics.
Session 23 (Week 29)	Revision and discussion
Session24 (Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long



	learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Sensors and Transducers

1	Course name	Sensors and Transducers
2	Course Code	DE306
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of the course and provides the theory and application of sensors typically found in an automated manufacturing system. Topics include physical properties, operating range, and other characteristics of numerous sensors and transducers used to detect temperature, pressure, position, and other desired physical parameters.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Textbook or Manual: Handouts posted on the Web 1. Handbook of Modern Sensors, 2nd Ed. By Jacob Fraden (Optional), 2. Semiconductor Sensors, Edited by S. M. Sze (Optional) • Sensors and Transducers by Ian R. Sinclair Third Edition 2001 • Handbook of Sensors and Transducers Gavin Lawrence 2019 • SENSORS AND TRANSDUCERS by Ian Sinclair 3th edition 2001 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments
Course Objectives:		Upon completion, students should be able to:





	<ul style="list-style-type: none"> • Interface a sensor to a PLC, PC, or process control system • Select the right sensor for a given application. • Design basic circuit building blocks. • Simulate, synthesize, and layout a complete sensor or sensor system, MEMS device or microsystem ready for fabrication tools • Familiar with the constructions and working principle of different types of sensors and transducers. • aware about the measuring instruments and the methods of measurement and the use of different transducers • Use concepts in common methods for converting a physical parameter into an electrical quantity • Classify and explain with examples of transducers, including those for measurement of temperature, strain, motion, position and light • Choose proper sensor comparing different standards and guidelines to make sensitive measurements of physical parameters like pressure, flow, acceleration, etc • Predict correctly the expected performance of various sensors • Locate different type of sensors used in real life applications and paraphrase their importance • Set up testing strategies to evaluate performance characteristics of different types of sensors and transducers and develop professional skills in acquiring and applying the knowledge outside the classroom through design of a real-life instrumentation system.
Course Assessments	20 % Midterm Exam 10% attendances 10% activities Final Exam 60 %. A60..% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Example of Smart Sensors in nature (Vision, Hearing, touch, and smell). How we can learn from nature
Session 2 (Week 2)	Principles of Sensing, Classification and Terminology of Sensors,
Session 3 (Week 3)	Measurands. Some basic discussion about electric field, potential, capacitance, resistance etc
Session 4 (Week 4)	<ul style="list-style-type: none"> • Mechanical Sensors, Acoustic, and Magnetic Sensors
Session 5 (Week 5)	Radiation and Thermal Sensors
Session 6 (Week 6)	<ul style="list-style-type: none"> • Chemical and Biosensors
Session 7 (Week 7)	<ul style="list-style-type: none"> • Electronic Interface and Integrated Sensors/Design Projects/ Wireless integration
Session 8 (Week 8)	(Lec) Electronics interfacing overview and technology design rules
Session 9-10 (Week 9-10)	Introduction to Microsystems
Session 11 (Week 11-12)	MEMS microsystem components
Session 12 (Week 13)	Midterm Exam
Session 13 (Week 14-15)	Microfluidics microsystem components

Session 14 (Week 15-16)	Microfluidics continued microsystem components
Session15-20(Week15-20)	Electronic/wireless integration Putting it all together- system design
Session 21-27 (Week 21-27)	Putting it all together part II Design Report/ presentation Due
Session 27 (Week 28)	Revision and discussion
Session 28 (Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Microprocessor and Interface

1	Course name	Microprocessor and Interface
2	Course Code	DE307
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 Units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>This course will provide students with a fundamental understanding of the nature of Microprocessor and Interface required for undergraduate students in the ECE program. The purpose of this course is to teach students the fundamentals of microprocessor and microcontroller systems. The student will be able to incorporate these concepts into their electronic designs for other courses where control can be achieved via a microprocessor/controller implementation.</p>
Textbooks required for this Course:	<ul style="list-style-type: none"> • Ramesh Gaonkar, 'Microprocessor Architecture, Programming & application with 8085', by Ramesh S. Gaonkar 5th Edition, 2002. • B. Ram, 'Fundamentals of Microprocessors and Microcomputers', Dhanpat Rai Publications. • Microprocessors and Interfacing by N. Senthil Kumar, M. Saravanan,, S. Jeevananthan & S.K. Shah 1st edition 2012 • Microcomputers and Microprocessors: The 8080, 8085, and Z-80 Programming, Interfacing, and Troubleshooting (3rd Edition) 3rd Edition by John E. Uffenbeck 1999 • https://easyengineering.net/microprocessors-and-interfacing-by-godse/ • https://libraryfile.university/files/4667271-microprocessor-and-interfacing-douglas-hall-2nd-edition • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>At the end of the course, students should develop ability to</p> <ul style="list-style-type: none"> • Define the history of microprocessors • Study of the basics of control, units of measurement, and Laplace transforms. • Describe the architectures of 8085 and 8086 microprocessors.





	<ul style="list-style-type: none"> • Draw timing diagram • Write programs using 8086 and 8051 • Distinguish between the different modules of operation of microprocessors. • Interface peripherals to 8086 and 8051 • Evaluate the appropriateness of a memory expansion interface based on the address reference with particular application. • Study of open circuit linear systems and closed circuit systems and the schematic drawings of the stages. • Understand dynamic behavior analysis of physical processes (Linear Systems Transient Response Analysis) • Study and design of feed back control systems • Understand frequency response analysis of linear systems • Learn the design aspects of I/O and Memory Interfacing circuits. • Study about communication and bus interfacing. • Get exposed to RSIC processors and design ARM microcontroller based systems • Develop programs and compare microprocessors and microcontrollers
Course Assessments	20 % Midterm Exam 10% attendances 10% Activities Final Exam 60 %. A60..% is required for a pass in this course..
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Microprocessor
Session 2 (Week 2)	Components of a Microprocessor Registers, ALU and control & timing, System bus (data, address and control bus), Microprocessor systems with bus organization
Session 3 (Week 3 -4)	Microprocessor Architecture and Operations, Memory, I/O devices, Memory and I/O operations
Session 4 (Week 5-6)	8085 Microprocessor Architecture, Address, Data And Control Buses,
Session 5(Week 7-8)	8085, Pin Functions, Demultiplexing of Buses, Generation Of Control Signals, Instruction Cycle, Machine Cycles, T-States, Memory Interfacing
Session 6(Week 9-10)	Assembly Language Programming Basics Classification of Instructions, Addressing Modes
Session 7 (Week 11 -12)	8085 Instruction Set, Instruction And Data Formats
Session 8 (Week 13-14)	Writing, Assembling & Executing A Program, Debugging The Programs
Session 9 (Week 15-17)	Writing 8085 assembly language programs with decision, making and looping using data transfer, arithmetic, logical and branch instructions
Session 10 (Week 18)	Midterm Exam
Session 11 (Week 19-22)	Stack & Subroutines, Developing Counters and Time Delay Routines, Code Conversion, BCD Arithmetic and 16-Bit Data operations,
Session 12 (Week 23)	Interfacing Concepts, Ports, Interfacing Of I/O Devices, Interrupts In 8085
Session 13 (Week 24)	Programmable Interrupt Controller 8259A

Session 14 (Week 25)	Programmable Peripheral Interface 8255A
Session 15 (Week 26)	Advanced Microprocessors : 8086 logical block diagram, segmentation, Pin functions, Minimum and maximum mode, 80286/80386:
Session 16 (Week 27)	Overview and architecture, Programming model, Data types and instruction set,
Session 17 (Week 28)	Segments and its types, segment descriptor, descriptor table and selectors
Session 18 (Week 29)	Revision and discussion
Session 19(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Control Systems

1	Course name	Control Systems
2	Course Code	DE308
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	Introductory course in control theory: system modeling, simulation, analysis and controller design. Description of linear, time-invariant, continuous time systems, differential equations, transfer function representation, block diagrams and signal flows. System dynamic properties in time and frequency
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	domains, performance specifications. Basic properties of feedback.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Introduction to Control Systems, an (2nd Edition) (Advanced Electrical and Computer Engineering) 2nd Edition by Kevin Warwick 1996. • Control Systems Engineering by Norman S. Nise 7th edition 2015 • Control Systems an Introduction by Dr. D. Sundararajan 1st edition 2022 https://doi.org/10.1007/978-3-030-98445-8 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon successful completion, students will have the knowledge and skills to:</p> <ul style="list-style-type: none"> • Define and explain feedback and feed-forward control architecture and discuss the importance of performance, robustness and stability in control design • Interpret and apply block diagram representations of control systems and design PID controllers based on empirical tuning rules • Compute stability of linear systems using the Routh array test and use this to generate control design constraints • Use Evans root locus techniques in control design for real world systems • Compute gain and phase margins from Bode diagrams and Nyquist plots and understand their implications in terms of robust stability • Design Lead-Lag compensators based on frequency data for an open-loop linear system
Course Assessments	Midterm exam 20 % 10% attendances 10% activities Final Exam 60%. A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to control system Motivation, examples of control systems, feedback control systems
Session 2 (Week 2)	Motivation, examples of control systems, feedback control systems
Session 3 (Week 3)	Instrumentation
Session 4 (Week 4)	Mathematical modelling: Mathematical modelling of: electrical systems, mechanical systems, electro-mechanical systems.
Session 5 (Week 5)	Mathematical modelling: Laplace transforms, transfer functions, electrical analogues of other dynamical systems
Session 6 (Week 6)	State-space modelling of dynamical systems.

Session 7(Week 7)	Block: diagrams, block diagram reductions. Signal flow graph, Mason's gain formula. Linearity, time-invariance versus nonlinearity and time-variance. Linearization
Session8(Week 8)	Distributed parameter systems.
Session 9 (Week 9)	Modeling and Analysis of Control Processes
Session 10 (Week 10)	Linear Open Circuit Systems
Session 11 (Week 11)	Closed Circuit Systems, Phase Diagrams
Session 12 (Week 12)	Analysis of the dynamic behavior of chemical processes
Session 13 (Week 13)	(Transient response analysis of linear systems)
Session 14 (Week 14)	Analysis and design of feed back control systems
Session 15 (Week 15 -16)	Time response of dynamical systems: Obtaining solutions from mathematical models.
Session 16 (Week 17)	Poles and zeros and their effects on solutions. Step response of standard second order systems, time-domain specifications and their formulae.
Session 17 (Week 18)	Midterm Exam
Session 18 (Week 19)	Properties of feedback: Basic idea of feedback control systems.
Session 19 (Week 20)	Error analysis. P, PI, PD, PID controllers.
Session 20 (Week 21)	Stability: Definition of stability. Routh-Hurwitz test. Lyapunov theory
Session 21 (Week 22 -23)	Stability of feedback control systems
Session 22 (Week 24)	Design of controllers: The root-locus technique, steps in obtaining a root-locus.
Session 23 (Week 25)	Design of controllers using root-locus. Pole placement with state feedback, controllability. Pole placement with output feedback, observability, Luenberger observer. LQR control.
Session 24(Week 26)	Frequency domain analysis: Bode plot, Nyquist plot, Nyquist stability criterion, gain and phase margins, robustness.
Session 25 (Week 27)	Frequency response analysis of linear systems
Session 26(Week 28)	Introduction to Nonlinear Systems.
Session 27 (Week 29)	Design of compensators: Lead compensator, lag compensator, lead-lag/lag-lead compensators, their design.
Session 28 (Week 30)	Revision and discussion
Session 39 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Electrical circuits

1	Course name	Electrical circuits
2	Course Code	DE309
3	Course type:	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the fundamental concepts in electrical circuits; circuit analysis and network theorems; linearity and superposition; series/parallel combinations of R, L, and C circuits; sinusoidal forcing; complex frequency and Bode plots; mutual inductance and transformers; two port networks
Textbooks required for this Course:	<ul style="list-style-type: none"> • J. W. Nilsson and S. Riedel, <i>Electric Circuits</i>, 11th Edition, 2018, Pearson, ISBN13: 978-0134746968. • Hayt, Kemmerly, Phillips, and Durbin, <i>Engineering Circuit Analysis</i>, McGraw Hill, 9th edition (2019) • <i>Electric Circuits A Concise, Conceptual Tutorial</i> by Gengsheng Lawrence Zeng, Megan Zeng 1st edition 2021 https://doi.org/10.1007/978-3-030-60515-5 • <i>Electric Circuits (10th Edition)</i> 10th Edition by James W. Nilsson, Susan Riedel 2019 • <i>Introduction to Electrical Circuit Analysis</i> by Ozgur Ergul 2017 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, Laboratory experiments.
Course Objectives:	<p>Upon completion of the course the student should be able to:</p> <ul style="list-style-type: none"> • Understand the principle of electric circuit design and application. • Understand the principles of DC and AC . • Understand the techniques to analyze different circuit configuration • Develop an understanding of the fundamental laws and elements of electrical circuits. • Learn the energy properties of electric elements and the techniques to measure voltage and current. • Develop the ability to apply circuit analysis to DC and AC circuits. • Understand transient and steady-state response of RLC circuits and to understand advanced mathematical



	<p>methods such as Laplace transforms for solving circuit problems.</p> <ul style="list-style-type: none"> • Apply the knowledge of basic circuit laws and simplify the dc and ac networks using reduction techniques. • Analyze the dc and ac circuits using mesh and nodal analysis and network simplification theorems. Analyze the series and parallel resonant circuits. • Infer and evaluate transient response, steady state response of series, parallel and compound circuits. • Develop Laplace transformed network for steady state and transient analysis. • Analyze dc and ac circuits and time domain response using P-Spice.
Course Assessments	<p>Midterm exam 20 % 10% attendances 10% activities Final Exam 60%. A 60 % is required for a pass in this course..</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	. Fundamental electric circuit quantities
Session 2 (Week 2)	The "alphabet" of circuit schematics
Session 3 (Week 3)	. Kirchhoff's current and voltage laws
Session 4 (Week 4)	Ohm's law
Session 5 (Week 5)	Series and parallel resistor combinations
Session 6 (Week 6)	Voltage and current division
Session 7-12 (Week 7-12)	The venin and Norton equivalents
Session 13 (Week 13)	Midterm Exam
Session 14-17 (Week 14-17)	Linearity and superposition
Session 18-21 (Week 18-21)	Linear algebraic techniques (Node & Mesh)
Session 22 (Week 22)	Op amp circuits Capacitors and inductors
Session 23 (Week 23)	First and second order circuits in time domain)
Session 24-28 (Week 24-28)	Issues in Contemporary Electronics
Session 29 (Week 29)	Revision and discussion
Session 30 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ج. المقررات الدراسية للسنة الرابعة قسم الأجهزة والمعدات الطبية



Electromagnetic Fields

1	Course name	Electromagnetic Fields
2	Course Code	DE401
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 Units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of Rigorous development of fundamental electrostatic, magnetostatic, and electromagnetic behavior, with special attention toward practical applications.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Hayt, W.H., Engineering Electromagnetics, Tata McGraw Hill (2008) 7th ed. • Engineering electromagnetics by William H. Hayt, John A. Buck 7th edition 2006 • Kraus, J.D., Electromagnetics, McGraw Hill (2006) 5th ed. • Sadiku, M.N.O, Elements of Electromagnetics, Oxford University Press (2009) 4th ed. • Jordan, E.C. and Balmain K.G., Electromagnetic Waves and Radiating Systems, Prentice Hall of India (2008) 2nd ed. • https://www.sicyon.com/resources/library/physics/EMFT_Book.pdf • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of the course the students should be able to:</p> <ul style="list-style-type: none"> • Describe the fundamentals of Electrostatics and magnetostatic • Identify the characteristics of materials and relate them to electric and magnetic fields • Demonstrate the theoretical background of Maxwell's equations and electromagnetic wave concepts, regarding propagation characteristics, polarization, reflection • Analyze fields a potential due to static changes • Evaluate static magnetic fields • Understand how materials affect electric and magnetic fields



	<ul style="list-style-type: none"> Understand the relation between the fields under time varying situations Understand principles of propagation of uniform plane waves.
Course Assessments	Midterm exam 20 % 10% Activities 10% participation. Final Exam 60 % final. A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An introduction to electromagnetic Fields
Session 2 (Week 2)	A brief overview of vector calculus. Static electric fields, Fundamental postulates of electrostatics, Coulomb's law
Session 3 (Week 3)	Electric field due to a continuous distribution of charges, Electric flux density, Gauss' law Assignment 2 handed out
Session 4 (Week 4)	Electrostatic potential
Session 5 (Week 5)	The behavior of material media (conductors and dielectrics) in a static electric field,
Session 6 (Week 6)	Capacitance and electrostatic energy
Session 7 (Week 7)	<ul style="list-style-type: none"> Poisson's and Laplace equations, Method of images
Session 8 (Week 8)	<ul style="list-style-type: none"> Steady electric currents, Continuity of current, Resistance
Session 9 (Week9 -10)	Boundary conditions Static magnetic fields, Fundamental postulates of magnetostatics
Session11(Week 11)	Biot-Savart law, Ampere's law
Session12(Week12)	Magnetization, Magnetic flux density
Session13(Week13 -14)	Boundary conditions Homework#3 11 Self and mutual inductance, Magnetic energy, and forces
Session 14 (Week 15)	Midterm Exam
Session 15 (Week 16)	Maxwell's equations to determine field waves, potential waves, energy
Session16 (Week17)	Introduction of Time-varying fields and Maxwell's equations Review of some topics
Session17 (Week18)	Plane-Wave Propagation
Session18 (Week19)	Introduction to Waves and Phasors
Session19 (Week20)	Transmission Lines
Session20 (Week21)	Electrostatics and Magnetostatics
Session21 (Week 22)	Vector Analysis Repetition of vector analysis. Repetition of the electrostatic and magnetostatic fields, including the polarisation field in dielectrics and the magnetisation field in magnetisable media.
Session22 (Week23- 24)	Potential theory (boundary value problems, uniqueness theorem, method of images, separation of variables). with applications in electrostatics, magnetostatics and stationary current distributions
Session23 (Week 25 -26)	Induction law and displacement current. Maxwells equations. Poyntings theorem. Wave equation, plane waves and a brief description of waves along different types of wave guides.
Session24 (Week 27 -28)	Field penetration in conducting media. Skin depth. Generation of electromagnetic radiation (inhomogeneous wave equation, retarded potentials). Electric dipole radiation field.
Session25 (Week 29)	Revision and discussion



Session 26 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Medical Instrumentation

1	Course name	Medical Instrumentation
2	Course Code	DE402
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description	This course is designed for biomedical engineering undergraduate students. The purpose of the course is to provide biomedical instrumentation background on technical aspects. Biomedical measurement systems are introduced in detail. Students are provided with overviews of the major physical techniques that engineers have used to explore in biomedical engineering levels
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Textbooks required for this Course:	<ul style="list-style-type: none"> R S Khandpur, "Handbook of Biomedical Instrumentation", 1st ed., Tata McGraw Hill Publishing Company Limited, 2004. 1. John G. Webster, "Medical Instrumentation Application and Design", John Wiley and sons, New York, 2004 2. Joseph J. Carr and John M. Brown, "Introduction to Biomedical Equipment Technology", Pearson Education, 2004. 3. Leslie Cromwell,
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	<p>"Biomedical Instrumentation and measurement", Prentice hall of India, New Delhi, 2007</p> <ul style="list-style-type: none"> • 20. J.J. Carr, J.M. Brown: Introduction to Biomedical Equipment Technology, Prentice Hall, 2nd Ed. 2001. 21 J.G Webster: Medical Instrumentation: Application and design, Wiley, 2010. • https://www.oss.unist.hr/sites/default/files/dokument_i/courses/electronics/SEL039_Medical_instrumentation.pdf • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Understand the basics of biomedical amplifiers and measurements. • Know the principles of medical instrumentations • Get a considerable understanding on clinical applications of medical instrumentation systems. • Maintain medical instrumentation. • Define basic medical terms and physical values that can be handled by medical instrumentation, • Describe methods and implementation of electrical and nonelectrical medical parameters diagnostic, • Demonstrate measuring of basic medical parameters, • Calculate basic parameters of the equipment for using in electro diagnostic and electro therapy, • Recommend problem solving and service procedures for electrical equipment, • Apply safety standards and select disposal method and procedures for electrical diagnostic equipmen
Course Assessments	<p>20 % Midterm Exam 10% Attendances 10% Activities Final Exam: 60% A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1-2 (Week 1-2)	<p>An introduction: Biological Science Chemical Science Computer Science Foundation Course Mathematical Science</p>
Session 3(Week 3)	<ul style="list-style-type: none"> • Physical Science • Biological Science & Chemical Science Practical • Computer Science & Instrumentation Practical • Physical Science & Mathematical Practical



Session 4-5 (Week 4-5)	Basic concepts of biomedical instrumentation Biomedical signal analysis
Session 6(Week6)	Bio potentials: ECG, EEG, ENG, EMG, ERG
Session 7 (Week 7-8)	Blood pressure, sound and Biomedical sensors
Session 8 (Week 9-10)	Medical instruments and devices 2
Session 9(Week11)	Principles of Diagnostic & Therapeutic Equipment's
Session 10(Week12)	Medical Imaging system
Session 11(Week13)	Biomechanics, Therapeutic and prosthetic devices
Session 12 (Week 14)	Midterm Exam
Session 13 (Week 15)	Basic of Electronics and Overview of Biomedical Industries
Session 14 (Week 16-17)	Basic of Electronics and Overview of Biomedical Industries. Basic Electronics and Connection Electromagnetism
Session 15 (Week 18-19)	Human anatomy and physiology Introduction to Human Body Cell Structure and Function Skeletal System and Muscular System Nervous System Endocrine System and Lymphatic System Respiratory System and Digestive System Reproductive System
Session 16 (Week 20)	Concepts, Principles and Fundamentals of Medical Instrumentation
Session 17 (Week 21-22)	<ul style="list-style-type: none"> • Electrodes- Bio-electric Signals and Bio Electrodes. • Electrode Tissue Interface • Contact Impedance and Types of Electrodes • Uses of Electrodes (ECG, EEG, EOG and EMG). • Transducers (Typical signals from physiological parameters, Pressure Transducer, Temperature Transducer). • Sensors (Pulse Sensor, Respiration Sensor, Recording System). • Based Instrumentations: Type of medical equipment (Diagnostic and Therapeutic).
Session 18 (Week 21-22)	<p>Bio Medical Equipment's Repair and Maintenance</p> <p>Bio Medical Equipment:</p> <ol style="list-style-type: none"> 1. ECG Machine (Basics & Block Diagram, Circuit Diagram, Repair and Maintenance). 2. EEG Machine (Basics & Block Diagram, Circuit Diagram , Repair and Maintenance). 3. EMG Machine : (Basics & Block Diagram, Circuit Diagram, Repair and Maintenance). 4. X-Ray: (Basics & Block Diagram, Circuit Diagram ,Repair and Maintenance).



	5. Ultrasound : (Block Diagram and cards, Repair and Maintenance)
Session 19 (Week 22-25)	Patient Monitoring System: (Heart Rate Measurement , Pulse Rate Measurement, Respiration Rate Measurement, Blood Pressure Measurement, Principle of defibrillator and pace maker).
	Measurement and Calibrating of Instruments Digital Multimeter (Analog Multimeter, Digital Storage Oscilloscope, Function Generator, Simulators). Test and Calibrating Instruments (Use of Test and Calibrating Equipment, Confirming Specifications). Measurement of Output Quantity, Testing Repeatability of Results.
Session 20 (Week 26-28)	Study of Internal Parts in Open Condition X-Ray (30 mA, 50 mA) 1. Pulse Oximeter 2. ECG 3. EEG 4. EMG 5. Multi Para Monito 6. Defibrillator 7. Blood Pressure Meter 8. Physiotherapy Equipment 9. Surgical Diathermy 10. Colorimeter and Ultrasound Doppler 11. Ventilatorand OT Lamp 12. Pace Maker and Oxygen Concentrator 13. Infusion Pump
Session 21 (Week 29)	Revision and discussion
Session22(Week 30-32)	Final Exam
Attendance	Students are expected to attend every session of class, arriving on time,
Expectations	returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Digital image Processing

1	Course name	Digital image Processing
2	Course Code	DE403
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of digital image processing techniques including representation, sampling and quantization, image acquisition, imaging geometry, image transforms, image enhancement, image smoothing and sharpening, and image restoration.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Rafael C. Gonzalez, Richard E. Woods, 'Digital Image Processing', Pearson, Third Edition, 2010. • Anil K. Jain, 'Fundamentals of Digital Image Processing', Pearson, 2002. • Kenneth R. Castleman, 'Digital Image Processing', Pearson, 2006. • Rafael C. Gonzalez, Richard E. Woods, Steven Eddins, 'Digital Image Processing using MATLAB', Pearson Education, Inc., 2011. • D.E. Dudgeon and R.M. Mersereau, 'Multidimensional Digital Signal Processing', Prentice Hall Professional Technical Reference, 1990. • William K. Pratt, 'Digital Image Processing', John Wiley, New York, 2002 • Milan Sonka et al 'Image processing, analysis and machine vision', Brookes/Cole, Vikas Publishing House, 2nd edition, 1999. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments
Course Objectives:	<p>At the end of the course the students should be able to:</p> <ul style="list-style-type: none"> • Become familiar with digital image fundamentals • Learn concepts of degradation function and restoration techniques. • Understand the image segmentation and representation techniques. • Learn and identify ways to compress images



	<ul style="list-style-type: none"> Gain the image fundamentals and mathematical transforms necessary for image processing. Know the image enhancement techniques Understand image restoration and compression procedures.
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam practical. A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction Motivation Why is Computer Vision Difficult? Image Representation and Image Analysis Tasks
Session 2 (Week 2)	Introduction to the MATLAB Image Processing Toolbox MATLAB - general concepts Image processing using the MATLAB Image Processing Toolbox
Session 3 (Week 3 - 4)	The Image, its Representations and Properties <ul style="list-style-type: none"> Image representations and Image digitalization Sampling and Quantization Digital image Properties
Session 4 (Week 5 - 6)	<ul style="list-style-type: none"> Metric and Topological Properties of Digital Images Histograms and Entropy Visual Perception of the Image Image Quality and Noise in Images Color (overview) and Cameras (overview)
Session5 (Week7-8)	Data Structures for Image Analysis <ul style="list-style-type: none"> Levels of Image Data Representation Traditional Image Data Structures
Session6 (Week8 -9)	Matrices, Chains, Topological Data Structures, Relational Structures and Hierarchical Data Structures Pyramids, Quadtrees and Other Pyramidal Structures
Session7 (Week9 - 10)	Image compression and recognition: Need for data compression, Huffman, Run Length Encoding, Shift codes, Arithmetic coding, JPEG standard, MPEG. Boundary representation, Boundary description, Fourier Descriptor, Regional Descriptors –
Session8 (Week 11)	Topological feature, Texture - Patterns and Pattern classes - Recognition based on matching.
Session 9 (Week 12)	Image Pre-Processing Pixel Brightness Transformations Position-Dependent Brightness Correction Gray-Scale Transformation Geometric Transformations
Session 10 (Week 12)	Pixel Co-ordinate Transformations Brightness Interpolation Local Pre-Processing



	Image Smoothing Edge Detectors
Session 11 (Week 12)	Zero-Crossings of the Second Derivative Scale in Image Processing (overview) Canny Edge Detection (overview) Local pre-processing in the frequency domain Image Restoration
Session 12 (Week 14)	Midterm Exam
Session13 (Week15-16)	Degradations That are Easy to Restore Inverse Filtration , Segmentation I Thresholding Threshold Detection Methods Optimal Thresholding Edge-based Segmentation, Edge Image Thresholding, Edge Relaxation
Session14 (Week16-17)	Border Tracing and Border Detection as Graph Searching Border Detection as Dynamic Programming Hough Transform Region-based Segmentation Region Merging Region Splitting Splitting and Merging
Session15 (Week18-19)	Watershed Segmentation Region Growing Post-Processing Matching and Matching Criteria Evaluation Issues in Segmentation Supervised Evaluation Unsupervised Evaluation
Session 16 (Week 20 - 21)	The Image, its Mathematical and Physical Background Overview Linearity The Dirac Distribution and Convolution Linear Integral Transforms Images as Linear Systems Introduction to Linear Integral Transforms 1D Fourier Transform 2D Fourier Transform Sampling and the Shannon Constraint Discrete Cosine Transform
Session 17 (Week22-23)	<ul style="list-style-type: none"> • Image Data Compression <ul style="list-style-type: none"> • Image Data Properties • Discrete Image Transforms in Image Data Compression
Session18 (Week24-26)	Image Segmentation: Introduction, Detection of isolated points, line detection, Edge detection, Edge linking, Region based segmentation- Region growing, split and merge technique, local processing, regional processing, Hough transform, Segmentation using Threshold.



Session 19 (Week 27 -28)	Image Enhancement In Frequency Domain: Introduction, Fourier Transform, Discrete Fourier Transform (DFT), properties of DFT , Discrete Cosine Transform (DCT), Image filtering in frequency domain.
Session 20 (Week 29)	Revision and discussion
Session21 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Medical Imaging Equipment's



1	Course name	Medical Imaging Equipment's
2	Course Code	DE404
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of Fundamentals of Medical Imaging such as the foundations, components and operation of the medical imaging system and includes the steps of data collection and processing, image formation, display and quality.
Textbooks required for this Course:	<ul style="list-style-type: none"> Fundamentals of Medical Imaging 3rd Edition by Paul Suetens, Katholieke Universiteit Leuven, Belgium, May 2017 ISBN: 9781107159785



	<ul style="list-style-type: none"> • Medical Imaging Technology by Victor Mikla, Victor Mikla 1st Edition - July 30, 2013 • https://wwwpub.iaea.org/mtecd/publications/pdf/pub1564webnew-74666420.pdf • Manual of radiographic equipment by Stockley, S M 1986 • Equipment for Diagnostic Radiography by E. Forster 1985 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Compare and contrast conventional and digital equipment. • Explain the physics of x-ray production. • Describe basic x-ray circuits. • Relate conventional and digital equipment components to the imaging process • Understand the foundations, components and operation of the medical imaging system and includes the steps of data collection and processing, image formation, display and quality, errors that occur during imaging, and ways to address them, in addition to discussing ways to protect the patient during imaging. • Gain the knowledge of factors which govern and influence the production of the radiographic image. • Acquaint the knowledge of radiographic image processing. • Describe of for the analog and digital processing and introducing Image receptors. • Describe processing procedures and artifacts . • Evaluate radiographs for the proper density, contrast, detail, noise and artifacts. • Acquaint digital and analog receptors and compare their properties.
Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam practical. A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Medical Imaging introduces the student to the principles and practices of medical imaging. The function of radiographer and their relationship with the health care team is stressed. The student is also oriented to the hospital environment and health care systems.
Session 2 (Week 2)	Medical Terminology . This course introduces the student to medical terminology. Emphasis is placed on terminology pertinent to diagnostic radiology.

Session 3 (Week 3)	<ul style="list-style-type: none"> • Medical Imaging Procedures • course emphasizing routine and specialized procedures used in diagnostic radiology.
Session 4 (Week 4)	<p>Anatomy and Physiology</p> <p>. Human anatomy, emphasizing the body tissues and systems, is included. Emphasis is placed on the skeletal system and other systems closely associated with imaging.</p>
Session 5 (Week 5)	<p>-Physical Principles of Imaging</p> <p>Fundamentals of radiologic physics and its application to diagnostic radiology are covered.</p>
Session 6 (Week 6)	<p>The rudiments of basic physics and elementary principles of electricity and magnetism required for understanding x-ray production and interaction.</p> <p>- Medical imaging Safety.</p>
Session 6 (Week 6)	<p>.Radiation protection, personnel monitoring, radiation shielding, and patient protection are introduced in this course. Emphasis is placed on protection mechanisms utilized in diagnostic radiology. Safety issues related to CT and MRI are also presented.</p>
Session 7 (Week 7)	<p>Principles of Radiographic Technique.</p> <p>Factors regulating the four radiographic qualities of receptor exposure, contrast, spatial resolution, and distortion are emphasized. Students acquire the skills necessary to adapt technical factors in order to produce diagnostic radiographs in the digital imaging environment</p>
Session 8 (Week 8)	<ul style="list-style-type: none"> • Image Processing Technique <p>. Current trends in the processing, analysis, manipulation, and display of digital radiographic images.</p> <p>Capture of image data from CR and DR detectors is discussed. Pre- and post- image processing operations are presented.</p>
Session 9 (Week 9)	<p>The calculation and evaluation of exposure indicators is explained. The practical application of radiographic techniques, technique myths, and image evaluation in digital imaging are discussed. Digital image artifacts are also explained.</p>
Session 10 (Week 10)	<p>Imaging Equipment</p> <p>Prerequisites: This course introduces the student to the different types of imaging systems. The basic principles of digital imaging, CT, MRI, interventional radiology and mammography equipment are presented.</p>
Session 11(Week 11)	<p>Radiation Biology</p> <p>.Prerequisites: organisms following absorption of energy from ionizing radiation. Interactions of radiation in matter, short and long-term biological effects, and cell survival kinetics are emphasized.</p>
Session 12(Week 12)	<p>Quality Control</p> <p>. Prerequisites: This course focuses on external factors affecting the quality of an image. Emphasis is placed on healthcare and imaging accrediting bodies, radiographic equipment evaluation, and repeat analysis. It includes didactic and lab components.</p>
Session 13(Week 13)	<p>The X-ray Tube</p> <ol style="list-style-type: none"> 1. Six support designs for the x-ray tube. 2. Protective components of the tube housing.





	<p>3. The components of the glass or metal envelope that comprise the x-ray tube.</p> <p>4. Cathode and filament current.</p> <p>5. Parts of the anode and the induction motor that spins the rotating anode.</p> <p>6. The three causes of x-ray tube failure.</p> <p>7. Use of tube rating charts to prevent tube failure.</p>
Session 14(Week 14 - 15)	<p>Digital X-ray Imaging</p> <p>1. the frequency of use of digital imaging in modern diagnostic imaging departments.</p> <p>2. Relate the research and development of digital imaging.</p> <p>3. Characteristics of digital images, specifically image matrix and dynamic range.</p> <p>4. Parts of a digital fluoroscopy system and their functions.</p> <p>5. Components and use of a digital radiography system.</p>
Session 15(Week 16)	Midterm Exam
	<p>Picture archiving (PACS, Radiology Information System and Hospital Information Systems) and teleradiology systems used in diagnostic imaging departments.</p> <p>Computer literacy proficiency in order to operate various digital, medical documentation, and image acquisition systems.</p>
Session 16(Week 17)	<ul style="list-style-type: none"> • CT Physics and Instrumentation <p>. Physics topics covered include the characteristics of radiation, CT, beam attenuation, linear attenuation coefficients, tissue characteristics, and Hounsfield number application.</p>
Session 17(Week 18 - 19)	<p>Data acquisition and manipulation techniques and image reconstruction algorithms will be explained.</p> <p>CT systems and operations will be fully explained.</p> <p>CT Procedures</p> <p>Summer, Fall, and Spring. Credit, six hours total. CT protocols will be taught for differentiation of specific structures and pathology.</p>
Session 18(Week 20 - 21)	<p>Patient history, education and preparation, contrast media type, amount and administration route, patient positioning and orientation, scan parameters, image display and common pathology will be covered.</p>
Session19 (Week22)	<ul style="list-style-type: none"> • Physical principles of medical ultrasound imaging Doppler ultrasound methods Bioeffects, dosimetry and safety of ultrasound
Session20 (Week23)	<p>Application of ultrasound in therapy Quality assurance in ultrasound</p>
Session21 (Week24 -25)	<p>Physics of nuclear medicine and equipment: technologists about the basics of radioactivity and their applications in the field of Nuclear Medicine along with the constructions and working principles of Nuclear Medicine equipments.</p>
Session22 (Week26)	<p>Single photon emission tomography (SPECT) Positron emission tomography</p>
Session 23 (Week 27)	<p>(PET) Magnetic resonance imaging (MRI) Devices for radiation oncology treatment planning.</p>
Session 24 (Week 28)	<p>Revision and discussion</p>

Session25(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Medical Information

1	Course name	Medical Information
2	Course Code	DE405
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:



This course is designed to give the student a working knowledge of health care delivery systems; the health information profession; the definition and the purpose of the medical record; the systems and processes for collecting, maintaining and disseminating health information; numbering, retention and storage of medical information; forms control and design; indexes and registers; release of patient information, security, privacy, confidentiality, and ethical issues; documentation requirements; regulatory requirements of healthcare organization, accrediting and licensing agencies, and computerized information management systems utilized by health information management departments.

Textbooks required for this Course:

- The Merck Manual of Medical Information: Second Home Edition (Merck Manual of Medical Information Home Edition) by Mark H. Beers 2008

	<ul style="list-style-type: none"> • Healthcare Information Systems 2nd edition Edited by Kevin Beaver 2019 • Wager, K. A., Lee, F. W., & Glaser, J. P. (2017). Health care information systems: A practical approach for health care management -4th Edition. By Jossey-Bass. • Trotter, F. and Uhlman, D. (2011). Hacking healthcare: A guide to standards, workflows, and meaningful use O'Reilly Media. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>By the completion of the course the students should be able to:</p> <ul style="list-style-type: none"> • Demonstrate knowledge of the development of the health information management profession and the evolutions in it to accommodate the changes in the healthcare environment. • Know the responsibilities of healthcare professionals. • Identify the roles and responsibilities of health information management professionals in the development and maintenance of health record systems. • Identify the typical functions performed by the health information management (HIM) department. • Do different operational techniques for managing traditional HIM functions. • Demonstrate knowledge of the interrelationship between the HIM department and other key departments within the healthcare organization. g. Demonstrate knowledge of several techniques used in the management of the HIM department, such as policy and procedure development and the budgeting process. • Identify the role of the health information management professional in creating and maintaining secondary records. • Do pursues the effective uses of biomedical data, information, and knowledge for scientific inquiry, problem solving, and decision making, driven by efforts to improve human health. • Understand biomedical informatics where information applied to, or studied in the context of biomedicine. • Giving the latest update about medical information. • Get better understanding users' needs and the context of information use.



Course Assessments	Midterm exam 20 % 10% Attendances 10% Activities. 60 % Final Exam practical. A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1-3 (Week 1-3)	INTRODUCTION TO COMPUTERS Introduction, electronic components of the CPU, Microprocessor chip, motherboard. Computer as a digital calculator, principle of digital computers, structure of the digital computers: arithmetic unit, central unit, memory unit, Input and output.
Session 4-6 (Week 4-6)	HISTORY AND DEVELOPMENT OF COMPUTERS Generations of computers; (I, II, III, IV and V), classifications of computers; analog computers, digital computers, mainframe, and mini-frame computers
Session 7-11 (Week 7-11)	<ul style="list-style-type: none"> • DATA INPUT OUTPUT, MEMORY AND COMPUTER CODING DATA INPUT OUTPUT: Punched card reader, paper tape reader, magnetic tape, floppy disk, magnetic disk, optical scanner, voice data, data entry terminal, teleprocessing monitor, visual display unit, modern input devices, Output devices; CRT, printer, plotter
Session 12-13 (Week 12-13)	<ul style="list-style-type: none"> • MEMORY: Primary memory or main memory; magnetic core memory, semi-conductor memory, RAM, ROM, PROM, EPROM, EEPROM. Secondary memory or auxiliary memory or storage devices; Hard disk, diskette, magnetic tape, ZIP disk devices, CD-ROM, DVD, virtual memory, cache memory. COMPUTER CODING: Number system, binary number system, decimal number system, binary to decimal inter conversion, octal number system, hexadecimal number system, fundamentals of logical concepts
Session 14(Week 14)	Midterm Exam
Session 15 (Week 15)	<ul style="list-style-type: none"> • LANGUAGES, FLOW CHARTS AND OPERATING SYSTEMS Machine level languages, assembly level languages, high level languages
Session 16 (Week 16-17)	<ul style="list-style-type: none"> • OPERATING SYSTEMS: DOS, windows, UNIX/LINUX, Mac OS. MODERN COMPUTING MACHINES: Workstations, parallel processing computers, HPC, supercomputers, zero client system. INTERNET AND
Session 17 (Week 17-18)	RELATED PROGRAMMES: History of Networking and internet, WWW, HTML, HTTP, telnet, FTP, computer domains, internet browsers, TCP/IP, LISTSERV
Session 18(Week 19-21)	<ul style="list-style-type: none"> • HEALTH SCIENCE INFORMATICS Introduction to information, scope, components of health care informatics; introduction, standardized languages in practice. Health IT architecture; information technology architecture models in health care organization, service oriented structures. Concept of bio-signal processing and medical imaging.
Session 19 (Week 22-25)	<ul style="list-style-type: none"> • Medical Data Storage and Automation: AUTOMATION modeling Techniques, Relational Hierarchical and network Approach,



	Normalization techniques for Data handling - Plug-in Data Acquisition and Control Boards – Data Acquisition using Serial Interface – Medical Data formats – Signal, Image and Video Formats –Medical Databases - Automation in clinical laboratories - Intelligent Laboratory Information System – PACS
Session 20 (Week 26-27)	Medical Expert Systems, Virtual reality applications in medicine, Radiation therapy and planning – Telemedicine – virtual Hospitals Smart Medical Homes – Personalized e-health services – Biometrics - GRID and Cloud Computing in Medicine.
Session 22(Week 28-29)	Revision and discussion
Session 23 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Hospital Engineering

1	Course name	Hospital Engineering
2	Course Code	DE406
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of the course and will provide students with an undergraduate education in the field of hospital engineering. This foundation degree aims to offer an enjoyable, intellectually demanding and stimulating programme of study and to create graduates who understand technology principles associated with Hospital Engineering.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Hospital engineering handbook Hardcover ISBN 10: 087258125X ISBN 13: 9780872581258 Publisher: American Hospital Association, 1974 • Technician's Handbook for Hospital Engineering by Neureiter, J Tschank, A 1989 • Management Engineering for Effective Healthcare Delivery: Principles and Applications Alexander Kolker and Pierce Story 2011 DOI: 10.4018/978-1-60960-872-9 • Clinical Engineering: A Handbook for Clinical and Biomedical Engineers. Edition: 1st Publisher: Elsevier Editor: A.F.G. Taktak, P. Ganney, D. Long and P. White 2013 • Clinical Engineering Handbook by Joseph Dyro 1st Edition - August 27, 2004 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion.
Course Objectives:	<p>Upon completion of this course, students will be prepared to:</p> <ul style="list-style-type: none"> • Lead healthcare technology implementation and improvement by working with clinicians and administrators • Identify technology needs and gaps • Assess existing technologies • Plan, negotiate and acquire medical equipment using life-cycle cost analysis techniques • Manage installations and integration of new systems



- Perform clinical staff assessment and training
- Ensure all safety standards and regulatory compliance are met
- Manage the technology during its useful life
- Plan and prioritize eventual replacement
- Investigate technology related incidents and accidents, coordinate with medical staff, risk managers, and manufacturers to identify high risk technologies, investigate root causes of incidents, remediate technical and procedural deficiencies using failure modes and effects analysis, identify process improvements to advance patient safety, and file reports with management, regulators, and other stakeholders.
- Evaluate and specify utility systems which connect to medical equipment, such as electrical power, medical gases, ventilation systems and illumination methods. Evaluate and measure environmental risks which are found in the healthcare setting such as electromagnetic interference, radiation safety, electrical safety in the patient environment, fire protection, indoor air quality and disaster planning.
- Design, analyze, and implement methods to interconnect medical devices to the hospital's computer network to transfer patient data to the electronic medical record. Understanding medical device security, patient information security, the role of middleware and clinical information systems.

Course Assessments	Midterm Exam 20% Activities 10% Attendances 10% Final Exam: 60% A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• sanatorium facilities
Session 2 (Week 2)	Hospital classification
Session 3 (Week 3)	Hospital department design considerations
Session 4 (Week 4)	• hospital items
Session 5 (Week 5)	• Hospital motion lines
Session 6 (Week 6)	• Architectural composition of the hospital
Session7-10(Week7-10)	• Definition and classification of the interior spaces of the patient wards
Session11-14(Week11-14)	• Space organization and health performance efficiency
Session 15 (Week 15)	Midterm Exam
Session 16 (Week 16)	Types of space organization for patient accommodation suites
Session 17-20(Week17-20)	Factors affecting the systems of collecting patient accommodation suites
Session 21-23(Week21-23)	Theoretical framework of the basic concepts to achieve the health performance efficiency of patient wards
Session 24-26(Week24-26)	Features of efficient space organization of patient accommodation wards.
Session 27 (Week 27)	Field visits
Session 28-29(Week28-29)	Revision and discussion

Session 30-32(Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Neural Networks

1	Course name	Neural Networks
2	Course Code	DE407
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Devices and Equipment Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of at least three abilities: acquire information, have a structure which is flexible enough to represent and integrate information, and have a mechanism to adapt itself to the environment using the acquired information
Textbooks required for this Course:	<ul style="list-style-type: none"> • https://www.inf.ed.ac.uk/teaching/courses/nlu/assets/reading/Gurney_et_al.pdf • An Introduction to Neural Networks 1st edition By Kevin Gurney 1997 • Neural Networks and Deep Learning: A Textbook by Charu C. Aggarwal January 2018, DOI: 10.1007/978-3-319-94463- • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours



Delivery	Lecture-based, Group interaction and discussion.
Course Objectives:	<p>Upon completion of the course, students should be prepared to:</p> <ul style="list-style-type: none"> • Comfortable with tools and techniques required in handling large amounts of datasets • Uncover various deep learning methods in NLP, Neural Networks etc • Use and illustrate several libraries and datasets publicly available • Developing skills required to gain experience of doing independent research and study • Know neuron models: McCulloch-Pitts model and the generalized one, distance or similarity based neuron model, radial basis function model, etc. • Understand the Basic neural network models: multilayer perceptron, distance or similarity based neural networks, associative memory and self-organizing feature map, radial basis function based multilayer perceptron, neural network decision trees, etc. • Learn basic algorithms: the delta learning rule, the back propagation algorithm, self-organization learning, the r4-rule, etc. • Use the applications: pattern recognition, function approximation, information visualization, etc.
Course Assessments	<p>Midterm Exam 20 % Activities 10 % Attendances 10% Final Exam:60 %</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> ▪ introduction ▪ history
Session 2 (Week 2)	<ul style="list-style-type: none"> • processing units • Hebbian learning • linear models (regression) • LMS algorithm
Session 3 (Week 3)	<ul style="list-style-type: none"> • Perceptrons (classification) • limitations of linear nets and perceptrons
Session 4 (Week 4)	<ul style="list-style-type: none"> ▪ activation functions ▪ error functions ▪ back propagation
Session 5-6 (Week 5-6)	<ul style="list-style-type: none"> ▪ Convolutional Neural Networks ▪ Motivation (Neuroscience) ▪ Convolutional layers ▪ Additional layers

	<ul style="list-style-type: none"> ▪ Residual Nets ▪ Examples
Session 7-8 (Week 7-8)	<ul style="list-style-type: none"> ▪ Recurrent Neural Networks ▪ Motivation (Neuroscience) ▪ Sequential Processing ▪ Stability ▪ Gated Nets (LSTM, GRU) ▪ Examples
Session 9 (Week 9)	<ul style="list-style-type: none"> ▪ bias-variance dilemma ▪ overfitting ▪ inductive bias
Session 10 (Week 10)	<ul style="list-style-type: none"> ▪ regularization ▪ drop out
Session11-13(Week11-13)	<ul style="list-style-type: none"> • Adversarial Approaches to ANN / Generative Adversarial Neural Networks <ul style="list-style-type: none"> ○ Adversaries ○ Generator-Discriminator ○ Stab
Session 14 (Week 14)	Midterm Exam
Session15 (Week15-18)	Reinforcement Learning / Unsupervised learning
Session16 (Week19-23)	<ul style="list-style-type: none"> • Training Neural Networks <ul style="list-style-type: none"> ○ Loss ○ Training/Validating/Testing ○ Gradient Descent ○ Stochastic Gradient Descent ○ ADAM
Session17(Week24-26)	<ul style="list-style-type: none"> • Topics in Constructing and Training Neural Networks <ul style="list-style-type: none"> ○ Operators ○ Drop out ○ Initialization ○ Normalization ○ Additional
Session18(Week27-28)	<p>Advanced Topics</p> <ul style="list-style-type: none"> • Optimization <ul style="list-style-type: none"> ○ Hyper-Parameter ○ Advanced Optimization • Prunin
Session 19 (Week 29)	Revision and Discussion
Session20 (Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.



Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ثامنا: المقررات الدراسية لقسم صحة المجتمع
أ - المقررات الدراسية للسنة الثانية قسم صحة المجتمع



Human Anatomy

1	Course name	Human Anatomy
2	Course Code	MT201
3	Course type: /general/specialty/optional	general
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022



Brief Description:	This course will serve as an introduction to the systems of the human body. Necessary life functions and survival needs will be examined, followed by an orientation of the language of anatomy. Students will learn the terminology, anatomy of each body system. Thorough analyses of tissue types, the integumentary system, skeletal tissue and the human skeleton, joints, muscle tissue and the muscular system, the fundamentals of nervous tissue, the nervous system, the study of blood, cardiovascular system including lymphatic system, immune system, respiratory system, digestive system, urinary system and male and female reproductive systems. Emphasis is placed on the integration of systems as they relate to normal health.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Essentials of Human Anatomy & Physiology by Elaine Marieb 10th Edition or later (recommended). • Human Anatomy & Physiology, Books a la Carte Edition 10th Edition by Elaine N. Marieb (Author), Katja N. Hoehn. • Introduction to the Human Body, 10th Edition • Gerard J. Tortora, Bryan H. Derrickson ISBN: 978-1-118-88413-3, 2014. • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability:</p> <ul style="list-style-type: none"> • Define the anatomic terms used to refer to the body in terms of directions and geometric planes and describe the structure and function of various human organs and systems;



- Describe the major cavities of the body and the organs they contain.
- Explain what a cell is? and explain how human organs and systems interact.
- Describe the major functions of the four types of human tissue.
- List the major systems of the body, the organs they contain and the functions of those systems.
- Define the terms anatomy and physiology.
- Define homeostasis.
- Describe the relationship between and processes related to nutrition and metabolism; and recognize the stages of growth and development

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	<ul style="list-style-type: none"> • Introduction to Anatomy • Levels of organization • Body regions, planes, and orientations and body cavities
Session 2 (Week 3-4)	<ul style="list-style-type: none"> • Skeletal system • Bone structure and types, cartilage, ligaments, tendons, and joints • Axial and appendicular skeletons • Scientific terminologies of the main body bones
Session 3 (Week 5-6)	<ul style="list-style-type: none"> • Muscular system • Types of muscles, Differences and their microscopic structure • Skeletal muscle structure and neuromuscular junction • Scientific terminologies of the main body Muscles
Session 4 (Week 7-9)	<ul style="list-style-type: none"> • Cardiovascular (Circulatory) system • Components of cardiovascular system and types of circulations • The heart, arteries, veins, capillaries, and lymphatic vessels • The blood components (plasma and blood cells) • Scientific terminologies of the main cardiovascular components
Session 5 (Week 10-11)	<ul style="list-style-type: none"> • Respiratory system • Upper respiratory system (nose, pharynx, larynx, and trachea) • Lower respiratory system (Lungs, thoracic cage, and pleura) • Bronchi, bronchioles, alveoli and respiratory membrane • Respiratory muscles and lung volumes and capacities • Scientific terminologies of the main respiratory system parts
Session 6 (Week 12-14)	<ul style="list-style-type: none"> • Digestive system • Upper digestive system (mouth, pharynx, and esophagus) • Lower digestive system (stomach, small intestine, and large intestine) • Structure of digestive system walls • Accessory parts of the digestive system (salivary gland, teeth, pancreas, liver, and gall bladder)

	<ul style="list-style-type: none"> • Scientific terminologies of the main Digestive system parts
Session 7 (Week 15)	Midterm Exam
Session 8(Week 16-17)	<ul style="list-style-type: none"> • Integumentary system • Skin structure and types • Skin layers and skin color • Receptors and glands • Skin burns and disorders • Scientific terminologies of the main skin structures
Session 9 (Week 18-19)	<ul style="list-style-type: none"> • Urinary system • The main parts of the urinary system • Kidney structure • Nephron and Glomerulus • Types of blood vessels in the kidney • Uterus, bladder and urethra • Scientific terminologies of the main urinary system parts
Session 10 (Week 20-22)	<ul style="list-style-type: none"> • Endocrine system • Endocrine glands names and locations • Structure, location, and hormones of hypothalamus and pituitary gland • Structure, location, and hormones of thyroid and parathyroid glands • Structure, location, and hormones of pineal and thymus glands • Structure, location, and hormones of pancreas and adrenal glands • Structure, location, and hormones of the ovaries and testicles gland • Structure, location, and hormones of other glandular structures • Scientific terminologies of the main endocrine glands
Session 11 (Week 23-24)	<ul style="list-style-type: none"> • Reproductive system • Reproductive systems of male and female • Structure and hormones of the ovaries and testes • Production of the sperms and ova • Scientific terminologies of the main parts of reproductive system parts
Session 12 (Week 25-26)	<ul style="list-style-type: none"> • Central Nervous system • brain, spinal cord, & peripheral nerves • Neurons (types and structure) • Neurotransmitters and synapses • Scientific terminologies of the main parts of the central nervous system parts
Session 13 (Week 27-28)	<ul style="list-style-type: none"> • Autonomic Nervous system • Sympathetic and parasympathetic autonomic nervous system • Preganglionic and postganglionic neurons • Neurotransmitters in the sympathetic and parasympathetic autonomic nervous system • Scientific terminologies of the main parts of the autonomic nervous system parts
Session 14 (Week 29)	Revision and discussion



Session 15 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Biochemistry



1	Course name	Biochemistry
2	Course Code	MT202
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course explores the basic principles of biochemistry and develops the student's appreciation and understanding of biological networks. including proteins, enzymes, carbohydrates, lipids and nucleic acids in relationship to biological and metabolic processes.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Lippincott's Illustrated Reviews: Biochemistry. ISBN-13: 978-1496344496 ISBN-10: 1496344499. • Harper's Illustrated Biochemistry. ISBN-13: 978-1259837937. ISBN-10: 1259837939. • Leininger Principles of Biochemistry. ISBN-13: 978-1429234146. ISBN-10: 1429234148. • Textbook of Medical Biochemistry. ISBN-13: 978-9350254844. ISBN-10: 9350254840.

	<ul style="list-style-type: none"> • Clinical Chemistry Techniques, Principles, Correlations. ISBN-13: 978-1496335586. ISBN-10: 9781496335586. • Additional textbooks and web links may be used in this course at the discretion of the instructor. • http://www.kume.edu/biochemistry/resource.html
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • The chemical nature of carbohydrate, lipid, protein, nucleotide and vitamin biomolecules; and the principles of bioenergetics and enzyme catalysis. • The metabolism and the metabolic control of dietary and endogenous carbohydrate, lipid, protein and nucleotides; and how the DNA in a genome is organized, replicated, and repaired and how the genetic information in the DNA is selectively expressed as functional proteins and RNA and how this expression is regulated. • The tools used in biochemistry, and their potential applications to medical technology science. • The commonly used measurements in clinical biochemistry and how these measurements can contribute to assessment of the health status of individuals. • Use correct terminology to discuss the chemistry, cell structure, and tissues of the human body. • Identify and explain the structure and functions of each body system.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction and definition of biochemistry
Session 2 (Week 2)	Biochemistry of the cell
Session 3 (Week 3&4)	• Body fluids of the cell
Session 4 (Week 5 & 6)	• biochemistry of the cell
Session 5(Week 7,8)	• Chemistry of Carbohydrate
Session6(Week 9)	• Nucleotide
Session 7(Week 10)	• Nucleic acid
Session 8(Week 11)	• Chemistry of Lipids
Session9(Week 12)	Midterm Exam
Session10(Week 13)	• Chemistry of Lipids
Session11(Week 14 & 15)	Midterm practical exam





Session12(Week 16)	•Enzymes
Session13(Week 17)	• Porphyrins
Session14(Week 18 & 19)	Hemoglobin
Session15(Week 20)	•Vitamins
Session16(Week 21)	Revision of lecture
Session17(Week22 & 23)	•Carbohydrate Metabolism
Session18(Week 24 & 25)	•Lipid metabolism
Session19(Week 26,27)	•Protein Chemistry and Metabolism
Session20(Week 28)	Revision of lecture
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



General Microbiology

1	Course name	General Microbiology
2	Course Code	MT203
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>The course enables students to know:</p> <ul style="list-style-type: none"> * The microorganism and definition of all branch of microbiology * The classification of Microorganisms and different between prokaryotic and eukaryotic cells. * Methods and types sterilization and disinfectant. * Culturing and cultivation of Microorganisms and basic way of their identifications
Textbooks required for this Course: 	<ul style="list-style-type: none"> • Text book of microbiology First Published in 2010 by Prem C. Bakliwal for Aavishkar Publishers ISBN 978-81-7910-306-7. • https://rlmc.edu.pk/themes/images/gallery/library/books/Microbiology/Text_Book_of_Microbiology.pdf • https://open.umn.edu/opentextbooks/textbooks/873 • https://www.britannica.com/science/microbiology • https://bio.libretexts.org/Bookshelves/Microbiology/Book%3A_Microbiology_(Boundless)/1%3A_Introduction_to_Microbiology • https://faculty.ksu.edu.sa/sites/default/files/140_mbio-final_notes.pdf • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor <p>Microbiology text book can be used,</p>
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of the structural similarities and differences among microbes and the unique structure/function relationships of prokaryotic cells. • Comprehend the fundamentals of molecular microbiology.

	<ul style="list-style-type: none"> • Appreciate the diversity of microorganisms and microbial communities and recognize how microorganisms solve the fundamental problems their environments present. • Recognize how the underlying principles of epidemiology of disease and pathogenicity of specific microbes affect human health. • Understand Microbial Cell Structure, Function and metabolism.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction, of microbiology
Session 2 (Week 2)	History of Microbiology
Session 2 (Week 3)	<ul style="list-style-type: none"> • Defining Microbes and Basic concepts and scope of microbiology
Session 3 (Week 4)	Pasteur and spontaneous Generation
Session 4 (Week 5 & 6)	Types of microorganisms
Session 5(Week 7,8)	Classification of microorganisms
Session6(Week 9)	Immunization, antiseptics and antibiotics
Session 7(Week 10)	Microscopy
Session 8(Week 11)	Bacteria : 1-Naming, Shape and arrangement, Classification, Size
Session9(Week 12)	Bacterial structure& composition
Session10(Week 13)	Bacterial Genetics
Session11(Week 14 & 15)	Microbial Growth (growth and metabolism of Bacteria): Requirement of Microbial Growth: physical and chemical requirements. Culture media
Session12(Week 16)	Midterm exam
Session13(Week 17)	Isolation and culturing of Bacteria
Session14(Week 18 & 19)	Microbial metabolism
Session15(Week 20)	Classification of bacteria
Session16(Week 21)	Dyes and staining (gram stain, acid fast staining, and other staining methods).
Session17(Week22 & 23)	Fungi: 1. what is mycology? 2. Classification and structure 3. Moulds, yeasts and dimorphic fungus. Fungal diseases Algae: 4. Characteristics, structure and division of algae
Session18(Week 24 & 25,26)	Viruses 1. Definition, Characteristics, symmetry and structure of viruses, 2. Classification and growth of Viruses. 3. Detection, multiplication of Viruses. 4. Laboratory methods used for viral detection
Session19(Week 27,28)	Parasites 1. Definition, Characteristics and structure of parasites,

	<p>2. Summary of Parasitic Classification (Protozoa and Helminths).</p> <p>3. Detection, multiplication of Protozoa and Helminths.</p> <p>4. Laboratory methods used for viral detection</p>
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Histology



1	Course name	Histology
2	Course Code	MT204
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>This course will provide students with a fundamental understanding of Histology and Know the different types of tissues of the body</p> <p>Recognize the function performed by each tissue</p> <p>Learn about common terms and definitions used in histology</p>
Textbooks required for this Course:	<ul style="list-style-type: none"> • DiFiore's atlas of histology with functional correlations. • Junqueira's Basic Histology. • Histology: An Essential Textbook by D. J. Lowrie Jr 2020 • Junqueira's Basic Histology: Text and Atlas, Sixteenth Edition by Anthony L. Mesche 2021 • Textbook of Histology by Leslie P. Gartner PhD 2021

	<ul style="list-style-type: none"> • Histology: A Text and Atlas 7th edition : With Correlated Cell and Molecular Biology by Ross, Michael H., M.D. Pawlina, Wojciech 2015 • Wheater's Functional Histology: A Text and Colour Atlas 3rd edition by William K. Ovalle Ph.D., Patrick C. Nahirney PhD 2020 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor <p>Microbiology text book can be used,</p>
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based. Group interaction and discussion. self-directed activities. active participation. Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Acquire a basic background in histology and comparative histology in different and to understand the properties of cells and their interactions with one another as components of tissues and organs. • Understand how structure and function correlate at the microscopic level and be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination. • Understand the changes that occur to tissues • Identify the different types of tissues • Recognize the types of tissues and the mechanisms of identifying them • understand the various diagnostic tools and medical equipment in the correct way to discover histological changes • Understand how to distinguish tissue and how it develops • deduce the causes of the changes that have occurred within the tissues
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to histology • histology and its mode of study
Session 2 (Week 2)	<ul style="list-style-type: none"> • The cell
Session 3 (Week 3)	<ul style="list-style-type: none"> • Epithelial Tissue
Session 4 (Week 4)	<ul style="list-style-type: none"> • Connective tissue
Session 5 (Week 5)	<ul style="list-style-type: none"> • Cartilage
Session 6 (Week 6)	<ul style="list-style-type: none"> • Bone
Session 7 (Week 7)	<ul style="list-style-type: none"> • Bone.
Session 8 (Week 8)	Muscle Tissue
Session 9 (Week 9)	Nerve Tissue



Session 10 (Week 10)	•Nervous System
Session 11 (Week 11)	The Immune System &
Session 12(Week 12)	Lymphoid Organs
Session 13(Week 13)	Blood and Hemopoiesis
Session 14 (Week 14)	Endocrine System
Session 15(Week 15)	Hormones
Session 16(Week 16)	The integumentary system
Session 17 (Week 17)	The Circulatory system
Session 18 (Week 18)	The Circulatory system
Session 19 (Week 19)	The Circulatory system
Session 20 (Week 20)	Respiratory system
Session 21 (Week 21)	Respiratory system
Session 22 (Week 22)	Respiratory system
Session 23 (Week 23)	Digestive system
Session 24 (Week 24)	The urinary system
Session 25 (Week 25)	The urinary system
Session26(Week26- 27)	Reproductive system
Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Ability to perform tasks in accordance with ethical and professional principles. The student should be able to write a report on the histological conditions. The student should be able to think critically to solve problems and make decisions.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.




Physiology

1	Course name	Physiology
2	Course Code	MT205
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Bachelor in Medical Technology Specializing in Medical Laboratories
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	Physiology is studying of biological function. medical physiology course will study human function at the level of whole organisms, tissues, cells and molecules (Study of human body function). Physiology is fundamental to medicine and studying function in both health and disease. (Content : Introduction, Autonomic nervous system, Blood, Nerve& muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)
Textbooks required for this Course:	<ul style="list-style-type: none"> • Textbook of medical physiology / Arthur C. Guyton, John E. Hall.—11th ed.ISBN 0-7216-0240-1 • Principles of anatomy and physiology//Arthur Gerard J., Bryan D. – 12th ed.ISBN 978-0-470-08471-7 • Human physiology / ArthurMAGDI SABRY, MD -5thed. ISBN 977. 203- 256-2 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
Course Duration	4 * 28 = 112 teaching hours
Delivery	Interactive Lecturer introduces of common clinical conditions and explains the underlying phenomena through questions, pictures and videos and students are actively involved in the learning process, and Students' take responsibilities of their own learning through selfstudy, sharing and discussing with peers, search information from Learning Resource Center of teachers and resource persons within and outside the college. Students can utilize the time within Laboratory hours.
Course Objectives:	<p>The primary objective of the course is to ensure that students understand how the body works and after completing this course student should be able to:</p> <ul style="list-style-type: none"> • Have sufficient basic knowledge in medical physiology. • Define homeostasis and explain how homeostatic mechanisms normally maintain a constant interior milieu. • State the functions of each organ system of the body, explain the mechanisms by which each functions, and



	<p>relate the functions and the anatomy and histology of each organ system.</p> <ul style="list-style-type: none"> • Understand and demonstrate the interrelations of the organ systems to each other. • Predict and explain the integrated responses of the organ systems of the body to physiological and pathological stresses. • Explain the pathophysiology of common diseases related to the organ systems of the body • The ability to understand, recognize different medical term and identify the normal function and diseases of human organ body. • Ability to use basic laboratory devices related to the subject and have the ability of measuring and evaluating vital variables (blood pressure, pulse, ECG, nerve conduction velocity, basic pulmonary function tests) of the normal functions of the body in the laboratory.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
 <p>Session 1 (Week 1)</p>	<p>Introduction, Autonomic nervous system, Blood, Nerve & muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)</p> <ul style="list-style-type: none"> ▪ Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year ▪ Inform students how student learning program of the year-wise has been organized Help students organize and manage their studies throughout the year ▪ Guide students on assessment methods, rules and regulations • Introduction (Total body water , cell membrane and cell transport)
Session 2 (Week 2)	<p>Autonomic Nervous System</p> <ul style="list-style-type: none"> • Types Autonomic Nervous System • Chemical neurotransmitters • Function of sympathetic & Parasympathetic <p>Assignment 2 handed out</p>
Session 3 (Week 3)	<p>The blood:</p> <ul style="list-style-type: none"> • Major components and function of the blood • Red & white blood cells • Plasma protein and function
Session 4 (Week 4)	<ul style="list-style-type: none"> • Blood groups & hemostasis <p>Blood clotting disorders</p>
Session 5 (Week 5)	<p>Nerve & Muscle</p> <ul style="list-style-type: none"> • Structure of nerve cell • Properties of neuron • Resting membrane potential
Session 6 (Week 6)	Nerve & Muscle

	<ul style="list-style-type: none"> • Action potential •Excitation- contraction coupling • Mechanism of muscle contraction & relaxation
Session7(Week 7)	Cardiovascular system <ul style="list-style-type: none"> • Anatomy of the heart • Functional properties of cardiac muscle •Action potential & Conducting System
Session 8(Week 8)	<ul style="list-style-type: none"> •Cardiac Cycle & Heart sound •Electrocardiograph
Session 9(Week 9)	<ul style="list-style-type: none"> • Blood pressure •Cardio dynamic •Arrhythmia & circulatory Shock
Session10(Week 10)	<ul style="list-style-type: none"> •Arrhythmia •circulatory Shock
Session11(Week 11)	Respiratory System <ul style="list-style-type: none"> • Structure of the respiratory system • Lung volume & Capacities
Session12(Week 12)	<ul style="list-style-type: none"> •Oxygen & Carbon Dioxide in blood •Dissociation oxygen curve shift
Session13(Week 13)	<ul style="list-style-type: none"> •Transport carbon dioxide •Regulation of respiratory • Hypoxia
Session14(Week 14)	Nervous System <ul style="list-style-type: none"> •Division of the nervous system •Units of Nervous system •Types of Receptors
Session15(Week 15)	Mid exam
Session15(Week 16)	Nervous System:•Properties of receptors, Synapse,Types of synapse, Mechanism of neurotransmitter
Session16(Week 17)	<ul style="list-style-type: none"> •Somatic sensation •TypesSomatic sensation • Pain sensation •Pathways
Session17(Week 18)	<ul style="list-style-type: none"> •Referred Pain •Pain Control System
Session18(Week19)	Special senses <ul style="list-style-type: none"> •Vision •Hearing
Session19(Week 20)	<ul style="list-style-type: none"> •Special senses •Gustation •Olfaction
Session20(Week 21)	Gastrointestinal tract <ul style="list-style-type: none"> •characteristics of gastrointestinal wall •Explain functional types of movements in GIT •Control of GIT
Session21(Week 22)	<ul style="list-style-type: none"> •GIT hormones and their role in digestive process •Describe GIT reflexes •Mastication and salivary secretions
Session22 (Week 23)	<ul style="list-style-type: none"> •Describe motor functions of stomach •Explain regulation of stomach emptying &the composition, function and •regulation of gastric secretions •Vomiting reflex



Session23 (Week 24)	<ul style="list-style-type: none"> •Gall bladder and biliary tract •intestinal motility •Defecation reflex
Session25 (Week 25,26)	Urinary system <ul style="list-style-type: none"> •The kidney •Urine formation •Micturition •Renal failure •Male reproductive •Female reproductive
Session26 (Week 27,28)	Endocrine System Pituitary gland Thyroid gland Parathyroid Adrenal gland Endocrine cell in other organs
Session27 (Week 29)	Final Exam
Attendance Expectations	Students must attend each of lecture, arriving on time, . Absences are permitted only for medical reasons and must be supported with a doctor's note. Because collage bylaw do not allow student to absences for more than 25%
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses. Numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised..



Medical Psychology & Teaching Methodology



1	Course name	Medical psychology & Teaching Methodology
2	Course Code	MT206
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022


Brief Description:	<p>Fisrt part of this course will provide students with a fundamental understanding of medical Psychology, a subfield of behavioral medicine, is the study of psychological factors important in the promotion and maintenance of health and the psychological factors contributing to illness and disease. It is designed to apply a scientific and research perspective to the study of health promoting and health damaging behaviors. Modification of health-related behaviors will be explored.</p> <p>Second part of the course will cover different teaching methods and techniques.</p>
Textbooks required for this Course:	<ul style="list-style-type: none"> • Textbook of Medical Psychology Hardcover – January 1, 1961 • https://bookauthority.org/books/best-medical-psychology-books • https://www.elsevier.com/books/medical-psychology/prokop/978-0-12-565960-4 • Anthony, Michael J. Introducing Christian Education: Foundations for the Twenty-first Century. Baker Academic, 2001. • Armstrong, Thomas. Multiple Intelligences in the Classroom: 2nd Edition. Association for Supervision and Curriculum Development, 2000. • Dawn, Marva J. Is It A Lost Cause? Having the Heart of God for the Church's Children. William B Eerdmans Publishing Company, 1997. • Unfettered Hope: A Call to Faithful Living in an Affluent Society. Westminster John Knox Press, 2003. • Durka, Gloria. The Teachers Calling: A Spirituality for Those Who Teach. Paulist Press, 2002.




	<ul style="list-style-type: none"> • Church Educational Ministries: More than Sunday School. Evangelical Training Association, 1985. • Teaching Techniques for Church Education. Evangelical Training Association, 1983. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Up on completion of this course students will be able to:</p> <ul style="list-style-type: none"> • Understand the principle domains of psychology that are most relevant to medicine. • Know the key areas of psychology that would provide the basis for viewing people not only as biological but also as psychological beings. • Be familiar with the application of psychology in the wider practice of medicine. • understand the interaction between psychological and medical principles in the development, assessment and diagnosis and in the treatment of medical illnesses. • Will be able to define and list the fruits of the spirit. • The student will be able to explain why the fruit of the spirit are important to believers. • The student will be able to assess which fruits are most and least evident in their own lives. • The student will develop a plan to practice more of the fruit of the spirit for the next week • Understand the basics of teaching methods • Know different techniques of teaching and questions preparations.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An introduction to Medical psychology
Session 2 (Week 2)	Psychology and Medicine <ul style="list-style-type: none"> • Explain what the field of Psychology studies. • Describe the different areas of Psychology. • Describe the way by which Psychology is linked to Medicine.
Session 3 (Week3-4)	Brain Mechanisms and Behaviour <ul style="list-style-type: none"> • Describe the basics of Neural Communication. • Explain the Basic Structure and function of the Nervous system. • Outline the link between biology and behavior.



Session 4 (Week 5)	<p>Senses and Integration on Senses</p> <ul style="list-style-type: none"> • Describe the role and the importance of the different types of senses. • Outline the main functional theories of vision. • Outline the main functional theories of audition. • Outline the main theories of somatosensation. • Outline the main theories of the functions of smell
Session5 (Week 6) 	<ul style="list-style-type: none"> • Perception, attention and Memory • Outline the role of the different types of perception. • Describe the main theories of visual perception. • Describe the main theories of auditory perception. • Outline the main types of attention. • Describe the main theories of attention. • Outline the main types of memory. • Describe the main theories of memory
Session 6 (Week 7)	<p>Child Development (from birth to adolescence)</p> <ul style="list-style-type: none"> • Describe the different stages of development from birth to adolescence. • Outline the main theories of child development. • Outline the main theories of early stages of language acquisition. • Describe the main theories of language development. • Outline the theories connecting language and cognition. • Language and the brain.
Session 7(Week 8) 	<p>Language, Motivation and Emotions</p> <p>Individual Differences in Intelligence and Personality</p> <ul style="list-style-type: none"> • Outline the area of Motivation. • Outline the way by which motivation is link with emotion. • Outline the main theories of Emotions. • Describe the biological theories of emotions. • Describe the psychological theories of emotions. • Outline the role of individual differences as observed in everyday activities and as measured by psychometric tools. • Outline the main Psychometric tools and their role in diagnosis. • Outline the main Personality tests and their value in clinical assessment.
Session 8 (Week 9)	<p>Adulthood and Sexual Behaviour</p> <ul style="list-style-type: none"> • Describe the characteristics of Adulthood. • Outline the interconnection between psychological and biological characteristics of this stage of human development.

	<ul style="list-style-type: none"> • Distinguish between Psychoanalytic and Psychological views on sexuality. • Describe the role of sex in human relationships • Describe the psychological factors contributing to our better understanding of sexual behaviour between sexes.
<p>Session 9 (Week 10)</p> 	<ul style="list-style-type: none"> • Sleep, Consciousness, Family Aging, Death and Bereavement <ul style="list-style-type: none"> • Explain the different stages of sleep as described by EEG studies <p>Outline the three theories of sleep.</p> <ul style="list-style-type: none"> • Explain the usefulness of sleep with reference to research studies on total and on selective sleep deprivation. • Describe the role of the family from a developmental perspective and its contributory role in the development of individuals as social and biological beings. • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family. • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family.
<p>Session 10 (Week 11)</p>	<p>Psychology and Medicine: Patients and Doctors</p> <ul style="list-style-type: none"> • Outline the role played by psychological factors such as emotions and stress in the development of illnesses and/or dysfunctions. • Outline the Biomedical and the Biopsychosocial Approaches to Medicine. • Identify the advantages and disadvantages of each approach in the development of modern medicine. • Outline the impact of psychological principles in doctor patient contact and communication.
<p>Session 11 (Week 12)</p>	<p>Psychosomatic Problems, Psychosocial Aspects of Hospitalization and Psychosocial Approaches Treatment</p> <ul style="list-style-type: none"> • Describe the different factors contributing to the impact that hospitalisation has on people. • Describe the potential psychological impact that hospitalisation may have on people. • Outline the role of psychosocial approaches in medical practice. • Outline the role of placebo effect in the treatment of both physical and psychological treatments.

	<ul style="list-style-type: none"> • Describe the role of psychological principles and psychoeducation in facilitating problem solving and diagnosis. • Outline the way by which psychological factors contribute to the development of somatic problems. • Describe different types of psychosomatic problems. • Outline possible ways of distinguishing between psychosomatic and physical problems.
Session 12 (Week 13) 	Coping with illness and Disability, Psychopathology and Mental illness and Rehabilitation <ul style="list-style-type: none"> • Outline the psychological factors contributing to coping with illness and disability. • Describe the different approaches and techniques employed for coping with these difficulties. • Outline the different areas of Psychopathology. • Outline the methods employed in the diagnosis of psychological and psychiatric disorders. • Outline the treatments often used in the treatment of psychiatric and psychological disorders. • Explain what is meant by chronic mental illness and the process of rehabilitation.
Session 14 (Week 14)	Midterm Exam
Session 16 (Week 16)	<ul style="list-style-type: none"> • Teaching Principles
Session 17 (Week 17)	<ul style="list-style-type: none"> • Student Centered vs. Teacher Centered Learning
Session 18 (Week 18)	<ul style="list-style-type: none"> • Learning Styles
Session 19 (Week 19)	<ul style="list-style-type: none"> • Creating a Lesson: Overview • Creating a Lesson: Goals • Creating a Lesson: Outcomes
Session 20 (Week 20)	<ul style="list-style-type: none"> • Creating a Lesson: Information Delivery
Session 21(Week 21-22)	<ul style="list-style-type: none"> • Teaching Methods
Session 22 (Week 23)	<ul style="list-style-type: none"> • Creating a Lesson: Activities
Session 23 (Week 24)	<ul style="list-style-type: none"> • Creating a Lesson: Measurement
Session 24 (Week 25)	<ul style="list-style-type: none"> • Creating a Lesson: Evaluation
Session 25 (Week 26)	<ul style="list-style-type: none"> • The Teacher's Responsibilities
Session26(Week27-28)	<ul style="list-style-type: none"> • Presentations
Session27(Week29)	Revision and discussion
Session28(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal

	communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Professional Ethics

1	Course name	Professional Ethics
2	Course Code	MT207
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	The content is designed to enable the student to be aware of the basic rules of medical ethics. The student will become familiar with the definitions and ethical behavior that is required by the healthcare professional.
Textbooks required for this Course:	<ul style="list-style-type: none"> • القيم الخلقية وتطبيقاتها العملية، د. عبد الباسط الأمير • مقدمة في زراعة الاعضاء، د. الهادي عصمان • WMA medical ethics manual 2015 • Principles of Biomedical Ethics, 5th edn. • https://www.elsevier.com/books/medical-ethics-and-law/wilkinson/978-0-7020-7596-4
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lectures, Problem based learning and Class discussion.
Course Objectives:	<p>The objective of the course is:</p> <ul style="list-style-type: none"> • To convey to students, the pivotal role ethics holds in medical practice. • It introduces the key underlying ethical principles required in medicine. • The application of these principles will be brought to life through case based learning (CBL). • Recognize ethical issues when they arise in their practice • Deal with these issues in a systematic manner




	<ul style="list-style-type: none"> • Understand the ethics of medical research • To create an awareness on medical Ethics and Human Values. • To instill Moral and Social Values and Loyalty • To appreciate the rights of others.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction and history of medical ethics
Session 2 (Week 2)	Principles of medical ethics
Session 3 (Week 3-5)	Physicians and patients, Physicians and society Physicians and colleagues
Session 4 (Week 6 -7)	Ethics of medical research
Session5 (Week 8 - 9)	Informed consent
Session6 (Week 10 - 11)	Ethics of gynecology and obstetrics Ethics of infertility
Session 7 (Week 12 -13)	Ethics of healthcare system
Session 8(Week 14)	Professionalism
Session 10(Week 15)	Review and general discussion
Session 11(Week 16)	Med term exam
Session 12(Week17-18)	Medical errors
Session13(Week 19-20)	Libya law of medical responsibility
Session 14 (Week 21-22)	Humanism in medicine and Ethics of end of life
Session 15 (Week 23)	Ethics of authorship and publication
Session 16 (Week 24-25)	Ethics of medical education
Session 17 (Week26-27)	Theories of ethics
Session18(Week28)	Revision and discussion
Session19(Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Health Management

1	Course name	Health management
2	Course Code	MT208
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>Health Care Management provides a framework for addressing management problems in health care organizations. By the end of the course you will have been exposed to many management ideas, theories and applications, students will be able to:</p> <p>Know the process of communication and its nature, and get to know the environment surrounding the hospital. Identify the forms and types of management, Getting to know the correct and nursing information collection system</p>
Textbooks required for this Course: 	<ul style="list-style-type: none"> Principles of Hospital Administration and Planning (First Edition: 1998, Second Edition: 2009 ISBN 978-81-8448-632-2). Buchbinder, S.B., & Shanks, N.H. (2012). Introduction to Health Care Management Jones & Bartlett, Publishers, 2nd Edition. Essential Textbook of Health Management 1. July 2019: Publisher: Samiksha Publication ISBN: 978-9937710-55-8. Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	A Lecture-based ppt and practical training B Group interaction and discussion
Course Objectives:	<p>Up on completion of the course the students will be able to:</p> <ul style="list-style-type: none"> Learn concepts and theories in health care management; Develop skills in using materials tools and/or technology central to health care mgt; Learn to understand perspectives and values of health care management;



- Develop the basic management skills and ability to work productively with others;
- Learn to select, use, and critically analyze current HCMN research and literature;
- Integrate health care management theory with real world situations
- Develop the ability to work productively with others in diverse teams.
- To have reliably demonstrated the ability to make decisions on sound grounds, and can understand the concept of the hospital, can arrange health services, structure the health facilities and develop administrative skills.


Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An Introduction to the Health management
Session 2 (Week 2)	The historical role of medical and nursing health services
Session 3 (Week 3)	Hospital Operation Management Epidemiological basis for healthcare management. Management development-towards development of professional management of the Health system>
Session 6(Week 6)	Hospital concept and classification hospital environment
Session 7 (Week 7)	Hospital health planning
Session 8 (Week 8)	The organizational structure of the hospital
Session 9(Week 9)	Hospital Operational Management Management of Quality Assured services of professional service units of hospitals. Quality control mechanisms.
Session 10(Week 10)	Outpatient & In Patient Services in the Following Fields (Basic knowledge only): Radiotherapy, Nuclear medicine, surgical units, and OT Medical units, G & Obs. units & LR. Pediatric, neonatal units, Critical care units, Rehabilitation. Skin, Eye, ENT, Neurology, Dental, Gastroenterology, Endoscopy, Pulmonology, Cardiology, Cath lab, Nephrology & Dialysis, Urology, Orthopedics, Transplant units, Burn Unit
Session 11(Week 11)	Medical Record Science Definition and types of medical record, Importance of medical record, Flow chart of function, Statutory requirements of maintenance, coding, indexing and filing, Computerization of record, Report and returns by the record department, Statistical information and ICD
Session 12(Week 12)	Leadership and management An overview of healthcare management and leadership
Session 13(Week 13)	Management and motivation
Session 14(Week 14)	Midterm Exam
Session 15(Week 15)	Organizational Behavior (OB) and Management Thinking
Session 16(Week 16)	Quality Improvement
Session 17(Week 17)	Health care information Technology


	Health and Nursing Information Collection System
Session 18(Week 18)	Healthcare Financing, Cost and revenue management
Session 19(Week 19-20)	Health Care Professionals Management Health personnel management The Strategic Management of Human Resources
Session 20(Week 21)	Addressing Health Disparities: Cultural Proficiency, Ethics and Law.
Session 21(Week22)	Fraud and abuse
Session 22(Week 23)	Communication, health administration
Session 23(Week 24)	Administrative Support in Healthcare Organizations
Session 24(Week 25)	Clinical Care in Healthcare Organizations
Session 25(Week 27)	Medical Laboratories Management
Session 26(Week 28)	Revision and discussion
Session 27(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.




Fundamentals of Nursing

1	Course name	Fundamentals of Nursing
2	Course Code	PH202
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	<p>This course introduces classic nursing principles that underpin future clinical practice. Principles include such things as comfort measures, assistance with daily living activities, environmental concerns, positioning and transporting, asepsis and sterile technique, medication administration, intrusive therapies and use of the nursing process with particular emphasis on the intervention component. The majority of the theoretical information is provided through an online environment. Concepts related to nursing fundamentals and nursing care is integrated throughout the course. The campus laboratory and clinical settings will afford practical experience in application of the principles and skills taught in the theory portion of this class. Students will be expected to demonstrate beginning competency in application of the nursing process.</p>
Textbooks required for this Course: 	<ul style="list-style-type: none"> • Fundamentals of Nursing 4th edition by Sue C. DeLaune, MN, RN 2010 • file:///C:/Users/BMI/Downloads/fundamentals_of_nursing_.pdf • Standards & Practice Berman, A., & Snyder, S. (2015). Kozier and Erb's fundamentals of nursing (10th Ed.). New Jersey: Pearson. (ISBN:978-0133974362). • Carpenito, Lynda (2017) Handbook of Nursing Diagnosis (15th Ed.). Philadelphia: Lippincott Williams & Wilkins (ISBN: 978-1496338396). • Chabner, D.E. (2015). Medical terminology-a short course (with access code). (7th ed.) Maryland Heights, MO: Saunders. ISBN: 978-1455772674. • Hogan, M. (2013). Nursing Fundamentals : Reviews and Rationales (3rd Ed.). Boston: Pearson. (ISBN: 978-0133083590) • Kee, J. L. (2014). Laboratory and diagnostic tests with nursing implications (9th. Ed.). Upper Saddle River, NJ: Pearson. (ISBN: 9780133139051). • Skidmore-Roth, L. (Consultant) Mosby's drug guide for nurses (most recent edition) • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion.
Course Objectives:	<p>Upon completion of this course, the student will have reliably to:</p> <ul style="list-style-type: none"> • Analyze the nature of the human using concepts and theories through the study of the arts, sciences, humanities and nursing to provide professional nursing care.

	<ul style="list-style-type: none"> • Integrate caring and cultural competence through the practice of professional nursing • Use critical thinking to make independent judgments in applying the nursing process in the delivery of healthcare to individuals, families, groups, organizations, communities and global populations • Use evidence-based nursing and health-related research findings in professional nursing practice. • Accept responsibility and accountability for personal and professional growth and development, and value the commitment of lifelong learning. • Utilize a full range of information technology skills and display a mature computer literacy to support and communicate the planning and provision of client care in a variety of settings. • Provide evidence- based clinically competent patient-centered care which represents the patients’ preferences, values, and needs within the context of their families, communities and the health care delivery system. • Recognize threats to safety and develop strategies to minimize risk of harm to individuals and community • Apply organizational, leadership, and management concepts in the provision of high quality nursing care.
Course Assessments	Midterm Exam 20% Attendances 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction to nursing
Session 2 (Week 2)	Diversity in nursing
Session 3 (Week 3)	Health and illness
Session 4 (Week 4)	• Vital signs and its importance
Session 5 (Week 5)	• Health of individual, family and community
Session 6 (Week 6)	• Nursing theories, research and evidence based practice
Session 7 (Week 7)	• Healthcare delivery systems
Session 8 (Week 8)	Midterm Exam
Session 9 (Week 9)	• Home healthcare
Session 10 (Week 10)	Nursing process(assessment, diagnosing, planning, implementing and evaluating)
Session 11 (Week 11)	Prioritizing patient care (Maslow’s hierarchy)
Session 12 (Week 12)	Basic role of nursing care

Session 13 (Week 13)	vital signs in adults
Session 14 (Week 14)	vital signs in young's
Session 15 (Week 15)	Venipuncture
Session 16 (Week 16)	Cannulation
Session 17 (Week 17)	intramuscular vaccine
Session 18 (Week 18)	subcutaneous vaccine
Session 19 (Week 19)	gynecology and obstetrics nursing
Session 20 (Week 20)	Review of nursing fundamentals module
Session 21 (Week 21)	Practical lecture 1
Session 22 (Week 22)	Practical lecture 2
Session 23 (Week 23)	Practical lecture 3
Session 24 (Week 24)	Practical lecture 4
Session 25 (Week 25)	Practical lecture 5
Session 26 (Week 26)	Review of practical lectures
Session 27 (Week 27)	Revision and discussion
Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills 	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

ب. المقررات الدراسية للسنة الثالثة قسم صحة المجتمع



Research Methodology


1	Course name	Research Methodology
2	Course Code	MT301
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the research Methodology and offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Includes computer applications for research.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Tuckman, B. W. & Harper, B. E. (2012). Conducting educational research (6th ed.). Lanham, MD: Rowan & Littlefield Publishers (ISBN: 978-1-4422-0964-0). • Cohen, L. Lawrence, M., & Morrison, K. (2005). Research Methods in Education (5th edition). Oxford: Oxford University Press. • Denscombes, M. (2010). The Good Research Guide: For small-scale social research projects. Maiden-Read: Open University Press. • Dornyei, Z. (2007). Research Methods in Applied Linguistics. Oxford: Oxford University Press. • Hoadjli, A.C. (2015). The Washback Effect of an Alternative Testing Model on Teaching and Learning: An exploratory study on EFL secondary classes in Biskra. Unpublished Doctoral Thesis, University of Mohamed Kheider, Biskra. • Kothari, C. R. (1980). Research Methodology: Research and techniques, New Delhi: New Age International Publishers. • Kumar, R. (2011). Research Methodology: a step-by-step guide for beginners (3rd edition). London, UK: TJ International Ltd, Padstow, Cornwall • Leedy, P. D. (1980). Practical Research: Planning and design. Washington: Mc Millan Publishing Co., Inc. • Singh, Y. K. (2006). Fundamental of Research Methodology and Statistics. New Delhi. New International (P) Limited, Publishers. • Wallinman, N. (2006). Your Research Project: A step-by-step guide for the first-time researcher. London: Sage Publications. • http://www.pitt.edu/~super7/43011-44001/43911.ppt



	<ul style="list-style-type: none"> • http://web.tamu-commerce.edu/academics/graduateSchool/ • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 8 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completing this course, each student will be able to:</p> <ul style="list-style-type: none"> • Understand some basic concepts of research and its methodologies and identify appropriate research topics. • Demonstrate knowledge of research processes (reading, evaluating, and developing). • Perform literature reviews using print and online databases. • Understand the formats for citations of print and electronic materials. • Identify, explain, compare, and prepare the key elements of a research proposal/report. • Compare and contrast quantitative and qualitative research paradigms, and explain the use of each of them. • Describe, compare, and contrast descriptive and inferential statistics, and provide examples of their use in research. • Describe sampling methods, measurement scales and instruments, and appropriate uses of each. • Explain the rationale for research ethics and importance • select and define appropriate research problem and parameters • prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner • Write a research report, thesis and research proposal. <ul style="list-style-type: none"> • Make Critical Appraisal of the Literature
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<p>Introduction to research methodology</p> <ul style="list-style-type: none"> • Meaning of Research • Definitions of Research • Objectives of Research
Session 2 (Week 2)	<p>Introduction to research methodology</p> <ul style="list-style-type: none"> • Motivation in Research • General Characteristics of Research • Criteria of Good Research
Session 3 (Week 3)	<p>The Research Problem</p> <ul style="list-style-type: none"> • Scientific Thinking • What is a Research Problem? • Selecting the Problem • Sources of the Problem • Defining a Problem • Statement of a Problem • Delimiting a Problem • Evaluation of a Problem <p>Assignment 1 handed out</p>



Session 4 (Week 4)	<ul style="list-style-type: none"> •The Review of Literature <ul style="list-style-type: none"> • Meaning of Review of Literature • Need of Review of Literature • Objectives of Review of Literature • Sources of Literature • The Functions of Literature • How to Conduct the Review of Literature • Some Hints for the Review of Literature • Precautions in Library Use • Reporting the Review of Literature
Session 5 (Week 5)	Practice on how to find a literature <ul style="list-style-type: none"> • Selecting a topic • Highlighting the electronic websites that help to better search of literature
Session 6 (Week 6)	 The Research Hypotheses <ul style="list-style-type: none"> • Meaning of Hypothesis • Definitions of Hypothesis • Nature of Hypothesis • Functions of Hypothesis • Importance of Hypothesis • Kinds of Hypothesis • Characteristics of a Good Hypothesis • Variables in a Hypothesis • Formulating a Hypothesis • Testing the Hypothesis Assignment 2 handed out
Session 7 (Week 7)	The Research Approach <ul style="list-style-type: none"> • The Philosophical Background • The Qualitative Approach • The Quantitative Approach • The Mixed-Methods Approach
Session 8 (Week 8)	Criteria for Selecting a Research Approach
Session 9 (Week 9)	The Research Designs <ul style="list-style-type: none"> • Meaning of research design • Need for research design • features of a good design
Session 10 (Week 10)	Review
Session 11 (Week 11)	Assignment of research paper <ul style="list-style-type: none"> • selecting paper • guidelines of reading research paper
Session 12 (Week 12)	Assignment of research paper <ul style="list-style-type: none"> • Review before submitting the assignment
Session 13 (Week 13)	Cross-sectional study
Session 14 (Week 14)	Case-control study
Session 15 (Week 15)	Cohort study
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Experimental study
Session 18 (Week 18)	Criteria for Selecting a Research design
Session 19 (Week 19)	Sampling <ul style="list-style-type: none"> • Meaning and Definition of Sampling • Functions of Population and Sampling

	<ul style="list-style-type: none"> • Methods of Sampling • Characteristics of a Good Sample • Size of a Sample
Session 20 (Week 20)	Data Collection Methods <ul style="list-style-type: none"> • Questionnaires • Interviews • Focus Groups • Observation
Session 21 (Week 21)	Interviewing techniques <ul style="list-style-type: none"> • Face-to-face interview • Telephone interview • Computer based interview
Session 22 (Week 22)	Data management and analysis <ul style="list-style-type: none"> • Descriptive statistics • inferential statistics
Session 23 (Week 23)	Writing research proposal
Session 24 (Week 24)	Writing research report
Session 25 (Week 25)	Critical Appraisal of the Literature
Session 26 (Week 26)	Guidelines for submitting graduation project
Session 27 (Week 27)	Review of research methodology
Session 28 (Week 28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Pathology

1	Course name	Pathology
2	Course Code	MT305
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	ENGLISH
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of the disease, including its causes, growth patterns, and consequences, plus investigation of those pathological mechanisms common to all tissue-cell pathology. Attention is paid to the processes of cellular adaptation, inflammation, repair, immunology, cellular accumulation, and neoplasia.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Robbins & Cotran Pathologic Basis of Disease 10th Edition - May 18, 2020 • Robbins & Cotran Pathologic Basis of Disease (Robbins Pathology) 10th Edition by Vinay Kumar MBBS MD FRCPath Abul K. Abbas MBBS, Jon C. Aster MD PhD 2020 • Human Diseases: Systemic Approach - Text Only - 8th edition 2015 ISBN: 9780133424744. • Textbook of pathology by Harsh Mohan 6th edition, ISBN: 978-81-8448-702-2, 2010. • https://morfopatologie.usmf.md/wpcontent/blogs.dir/78/files/sites/78/2016/09/Harsh-Mohan-Textbook-of-Pathology-6th-Edition.pdf • Additional Resources, Handouts and sheets, also some web links may be used in this course provided after any lecture by instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based. Group interaction and discussion. self-directed activities. active participation. Laboratory experiments.
Course Objectives:	Upon completion of this course, the student will have reliably demonstrated the ability to: <ul style="list-style-type: none"> • Understand the common terms and definitions used in pathology • Identify of the nature of the disease, including its causes, growth patterns, and consequences • Recognize the biological characteristics that distinguish each disease from the other.



	<ul style="list-style-type: none"> • The ability to distinguish the origin of the disease and how it develops <p>The ability to distinguish the origin of the disease and how it develops</p> <ul style="list-style-type: none"> • That the student distinguishes between the causes of disease, its mechanisms, and the method of treatment • The student will infer the causes of disease and its growth patterns • The student determines the appropriate diagnostic tools and mechanisms to detect the disease
Course Assessments	<p>Activities 10% Midterm exam 20 %</p> <p>Attendances 10% Final Exam 60%</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to pathology • Pathology gives explanations of a disease by studying the following four aspects of the disease <ol style="list-style-type: none"> 1. Aetiology 2. Pathogenesis 3. Morphologic changes 4. Functional derangements and clinical significance • The causes of disease <ul style="list-style-type: none"> Environmental factors Genetic Factors
Session 2 (Week 2)	<p>Cell injury.</p> <ul style="list-style-type: none"> - Homeostasis & Cellular adaptation. - Cellular injury and its etiology & pathogenesis. - Hypoxic cell injury (Reversible & Irreversible cell injury).
Session 3 (Week 3)	<p>Cell injury.</p> <ul style="list-style-type: none"> - Free radicals (sources, effects & destruction of FR). - Cell injury by chemicals and Cell injury by viruses.
Session 4(Week 4)	<p>Cell injury.</p> <ul style="list-style-type: none"> - Cell Aging. - Necrosis, Apoptosis & Gangrene. - Calcification, Pigmentation & Intracellular Accumulations.
Session 5 (Week 5)	<ul style="list-style-type: none"> • Inflammation . a. Acute inflammation & its types.
Session 6 (Week 6)	b. Chronic inflammation, Granuloma & its types.
Session 7 (Week 7)	<ul style="list-style-type: none"> • Repair and healing.
Session 8 (Week 8)	<ul style="list-style-type: none"> • Infectious diseases. a. Bacterial, Viral, Fungal and Parasitic infection - a general outline b. Granulomatous diseases: Tuberculosis, Syphilis, Leprosy, Actinomycosis, Bilhaziasis, typhoid, Amebiasis & Hydatid disease.
Session 9 (Week 9)	<ul style="list-style-type: none"> • Immunopathology. 1. Immune mechanism of tissue injury: <ol style="list-style-type: none"> a. Type I hypersensitivity. b. Type II hypersensitivity. c. Type III hypersensitivity. d. Type IV hypersensitivity. e. Tissue transplantation.
Session 10 (Week 10)	2. Autoimmune diseases:

	<ul style="list-style-type: none"> a. Systemic Lupus Erythematosus. b. Rheumatoid arthritis. c. Sjogron's Syndrome. d. Systemic Sclerosis (Scleroderma) and Psoriasis.
Session 11(Week 11)	3. Immunodeficiency I.D: Congenital "primary I.D, Acquired "secondary I.D, AIDS Amyloidosis
Session 12(Week 12)	<ul style="list-style-type: none"> • Nutrition disorder. Malnutrition, Obesity and Vitamin deficiency disorders.
Session 13 (Week 13)	<ul style="list-style-type: none"> • Ionizing radiation. <ul style="list-style-type: none"> a. Sources of radiation. b. Mechanisms of radiation injury. c. Effects of ionizing radiation on cells and tissues.
Session 14(Week 14)	<ul style="list-style-type: none"> • Hemodynamic disorders Edema, Hyperemia, Congestion, Hemorrhage
Session 15Week 15)	, embolism, thrombosis & Infarction & Shock.
Session 16Week 16)	GENETIC DISORDERS
Session 17Week 17	<ul style="list-style-type: none"> a. Single - Gene Defect "Mendelian Disorders" b. Disorders with Multifactorial Inheritance
Session 18(Week18)	<ul style="list-style-type: none"> c. Cytogenic Disorders "Chromosomal Aberations"
Session19(Week19 - 22)	<ul style="list-style-type: none"> • Neoplasia. - Tumours, Aetiology & spread, common tumours.
Session20(Week23 - 27)	Respiratory diseases. Pneumonias, Bronchiectasis Emphysema, Chronic bronchitis,Asthma.
Session 21(Week28)	Cardiovascular diseases . - Blood, anemia, Heart and blood Vessels, common congenital anomalies, Rheumatic & Coronary heart diseases
Session 22(Week29 - 30)	Revision and discussion
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition. The student should be able to think critically to solve problems and make decisions
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Principles of Epidemiology

1	Course name	Principles of Epidemiology
2	Course Code	PH303
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		In this introductory course, students will learn and apply basic concepts of epidemiology to multiple domains of public health. We will illustrate and practice using epidemiology to better understand, characterize, and promote health at a population level. The class will engage the students in active and collaborative learning through team activities, individual projects, case studies, group discussion, and individual projects.
Textbooks required for this Course:		<ul style="list-style-type: none"> Principles of Epidemiology A Self-Teaching Guide 1st Edition - January 1, 1982 ISBN: 9781483276342. Epidemiology: Principles and Practical Guidelines 2013 ISBN : 978-94-007-5988-6 Resources located on the course Sakai website: ERIC Notebooks (epidemiology methods periodical) Additional handouts and readings Links to journal articles or other readings on the Internet. Instructions for case studies, individual assignments, and team project Rothman KJ. Epidemiology: An Introduction. New York, NY. Gordis L. Epidemiology, 3rd Ed. Philadelphia, PA. Elsevier Saunders: 2004 Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		Upon completion of this course, the student will have reliably demonstrated the ability to:



Understand where the disease is coming from, and who it is most likely to impact.

Discover patterns and trends in health problems.

Predict the number of cases of a disease and its distribution in the population.

Explain the etiology of disease.

Study the course of a disease quantitatively from onset to outcome.

Assess preventive measures and treatment options.

Course Assessments	Activities 10% Midterm exam 20 % Attendances 10% Final Exam 60% A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Basic principles of epidemiology
Session 2 (Week 2)	Basic principles of epidemiology 2
Session 3 (Week 3)	General Health and Population Indicators
Session 4 (Week 4)	Tools of Epidemiology: measuring disease Frequency (Prevalence, incidence, morbidity rates, attack rates, etc.).
Session 5 (Week 5)	• Measures of morbidity
Session 6 (Week 6)	• Measures of morbidity 2
Session 7 (Week 7)	• Review of the previous lectures
Session 8 (Week 8)	• Measures of mortality
Session 9 (Week 9)	Measures of mortality 2
Session 10 (Week 10)	Direct age adjustment
Session 11 (Week 11)	Indirect age adjustment
Session 12 (Week 12)	Principles of prevention
Session 13 (Week 13)	Principles of control
Session 14(Week 14)	Midterm Exam
Session 15 (Week 15)	Principles of surveillance
Session 16 (Week 16)	Screening
Session 17 (Week 17)	Epidemic management
Session 18 (Week 18)	International classification of diseases
Session 19 (Week 19)	Communicable diseases

Session 20 (Week 20)	Non-communicable diseases
Session 21 (Week 21)	Overview of study designs
Session 22 (Week 22)	Qualitative studies
Session 23 (Week 23)	Quantitative study
Session 24 (Week 24)	How to select the suitable study design?
Session 25 (Week 25)	Errors in epidemiological studies
Session 26 (Week 26)	Epidemiology and Biostatistics
Session 27 (Week 27)	Review
Session 28 (Week 28)	Discussion and revision
Session 29(Week29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.



Family Health

1	Course name	Family Health
2	Course Code	PH304
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course is designed to further develop the concepts within the three domains of the individual, healthcare, and nursing. Emphasis is placed on the concepts of oxygenation, sexuality, reproduction, grief/loss, mood/affect, behaviors, development, family, health-wellness/illness, communication, caring interventions, managing care, safety, and advocacy.
Textbooks required for this Course:	<ul style="list-style-type: none"> • McWhinney's Textbook of Family Medicine, 4th Edition January 2016 Edition: Fourth edition Publisher: Oxford University Press ISBN: 978-0-19-937068-9 • The Johns Hopkins Family Health Book: The Essential Home Medical Reference to Help You and Your Family Promote Good Health and Manage Illness Hardcover – December 30, 1998. • https://bookauthority.org/books/best-family-health-books • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Develop an understanding of the foundational pillars of family and community health nursing in Canada. • Outline and analyze the implications of societal trends and social determinants of health on the health of individuals, families, groups, and communities. • Demonstrate an appreciation of the diversity, trends, and evolving nature of families, groups, and communities. • Develop a beginning understanding of supportive and empowering strategies to build individual and community capacity for self-advocacy. • Recognize healthy public policies and public health policies and services that promotes and protects the health of individuals, families, and communities in the context of health and social inequities. • Understand the research process and evidence informed practice and to use literacy skills as they apply to community and family nursing.
Course Assessments	Midterm Exam 20% Attendances 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to family health



Session 2 (Week 2)	Factors affecting health of families
Session 3 (Week 3)	Millennium developmental goals
Session 4 (Week 4)	Millennium developmental goals (2)
Session 5 (Week 5)	Millennium developmental goals (3)
Session 6 (Week 6)	Gender issue in health
Session 7 (Week 7)	Empowerment of women
Session 8 (Week 8)	Population dynamics and its effect on family health
Session 9 (Week 9)	Health informatics in family health
Session 10 (Week 10)	Safe motherhood
Session 11 (Week 11)	Early childhood development
Session 12 (Week 12)	Violence
Session 13 (Week 13)	Child survival and development strategies
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	Improving of family health
Session 16 (Week 16)	quality of life in elderly
Session 17 (Week 17)	Adolescent health
Session 18 (Week 18)	Persons with special needs
Session 19 (Week 19- 20)	Community nutrition and nutritional needs throughout the life cycle
Session 20 (Week 21)	Nutrition of school children
Session 21 (Week 22)	Role of public health specialists
Session 22 (Week 23)	Health counselling
Session 23 (Week 24)	Health education
Session 24 (Week 25)	Health promotion
Session 25 (Week 26)	Student presentations (assignment)
Session 26 (Week 27)	Student presentations (assignment)
Session 27 (Week 28)	Revision and discussion
Session 29 (Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.




Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

School Health

1	Course name	School Health
2	Course Code	PH305
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of health education focusing on what they can do to promote good health and well-being, making clear connections to their immediate environment and health information, concepts, skills, and behaviors and how they can assume more responsibility for their health, develop positive health behaviors, and prevent negative, unhealthy behaviors.
Textbooks required for this Course:	<ul style="list-style-type: none"> • https://www.textbooks.com/Catalog/PEP/Health-Education.php • Essentials of School Health and Educational Medicine: A Manual for School Health and Primary Health Care Workers Paperback – December 27, 2011 by Mostafa Abolfotouh. • Comprehensive Health Skills for Middle School, Workbook by Mary McCarley 1st edition 2018



	<ul style="list-style-type: none"> • https://jamanetwork.com/journals/jama/article-abstract/305222 • School Health Policy & Practice 7th Edition by Rani S. Gereige, MD, MPH, FAAP; Elisa A. Zenni, MD, FAAP 2016, DOI: https://doi.org/10.1542/9781581108453 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Achieve health literacy • Acquire valid reliable scientific health knowledge • use that knowledge in a health promoting manner • Demonstrate a mastery of content knowledge and skills through written assessments, journal writing, and projects. • Access health information and services in order to make health promoting choices. • Engage in self management/behavior management to prepare for college. • Analyze influences on our health and well and identify health risk behaviors and interventions • Involved with interpersonal communications with health advocates as well as medical professionals. • Develop the skills necessary to weigh options to make responsible decisions and to develop behaviors that promote healthy lifestyles. • Encouraged to assess their attitudes and behavior patterns and understand the impact their health choices have on their communities and their own well-being • Recognizing the child as a change agent in the family.
Course Assessments	Midterm Exam 20% Attendances 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Health What is Health? and Health Triangle

Session 2 (Week 2)	Introduction to Health: Health education and Family Medical History
Session 3 (Week 3)	School health program: Components of school health program and the goals of school health program
Session 4 (Week 4)	Counseling: Health education and Health promotion
Session 5 (Week 5)	Counseling: School Health counseling and Family involvement
Session 6 (Week 6)	School health screening: What is screening, Importance of screening, Oral screening and Vision screening.
Session 7 (Week 7)	School health screening: Hearing screening, Physical examination, Body mass index screening, Substance use prevention screening and Postural screening
Session 8 (Week 8)	Vaccination: Definition of vaccine and vaccination and Importance of vaccination
Session 9 (Week 9)	Vaccination: Routine Immunizations in Libya, recommended vaccines, Additional recommendations and Vaccines recommended for pupils.
Session 10 (Week 10)	Healthy environment: Characteristics of healthy school environment, Water, sanitation and hygiene
Session 11 (Week 11)	Healthy environment: Importance of healthy school environment and Safety of school environment
Session 12 (Week 12)	Physical Health education: Assessing Physical Health and Physical health importance
Session 13 (Week 13)	Physical Health education: Improving Physical Health and Personal Goal Based Fitness Plans
Session 14 (Week 14)	Nutrition of school pupils: Vegan Diet and Basic 5 Food Groups
Session 15 (Week 15)	Midterm Exam
Session 16 (Week 16)	Nutrition of school pupils: Vitamins and Minerals, Calorie Intake and Meal Plan on a Budget
Session 17 (Week 17)	Tobacco, Alcohol and Other Drugs: Impact on the Body and Mind and Refusing Through Peer Pressure
Session 18 (Week 18)	Tobacco, Alcohol and Other Drugs: How to avoid?
Session 19 (Week 19)	Mental/Emotional Health: Mental Health Conditions
Session 20 (Week 20)	Mental/Emotional Health: Healthy Outlets and Suicide Prevention
Session 21 (Week 21)	Sexual and reproductive health education: Birth Controls and Communicable Diseases




Session 22 (Week22-23)	Sexual and reproductive health education: Birth Controls and Communicable Diseases
Session 23 (Week 24)	Disease prevention: non communicable diseases
Session 24 (Week 25)	Prevention of substance abuse.
Session 25 (Week 26)	Violence prevention
Session 26 (Week 27)	Counselling and advising
Session 27 (Week 28)	Revision and discussion
Session28(Week29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Public Health Laws

1	Course name	Public Health Laws
2	Course Code	PH306
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of Law as an essential tool for furthering the public's health. Central to public health law are government attempts to address the health needs of communities. This interdisciplinary course explores the tension between the needs of the community and the rights of the individual, a dynamic present in most major law-based public health interventions, from water fluoridation to vaccination mandates to quarantine and isolation. In this course, students will examine law and policy applied to public health. Students will learn about the government's authority to address public health problems and legal protections from government action.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Farnsworth A. An Introduction to the Legal System of the United States. New York, NY: Oxford, 2010, p. 163-172. • Fielding JE, Teutsch S, Breslow L. A Framework for Public Health in the United States. Public Health Rev. 2010; 32(1): 174-189. • Silverman RD. No more kidding around: restructuring non-medical childhood immunization exemptions to ensure public health protection, Ann Health L. 2003 Sum.; 12(2): 277-94. • Mello MM, Studdert DM, Parmet WE. Shifting vaccination politics – the end of personal-belief exemptions in California. N Engl J Med 2015 Jul. 22; (epub). • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		One academic year
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.



<p>Course Objectives:</p> 	<p>Upon completion of this course, the student should have reliably to:</p> <ul style="list-style-type: none"> • Understand the fundamental principles of law, ethics, and the legal system as they frame public health practice • Understand the role of government in creating the conditions for people to be healthy, • Know the principles of International Public Law and Human Rights Law • Understand how global (and regional) institutions in the health area are organized and operate: WTO, WHO, EU, NGOs/civil society • Interface between national and global law, human rights, trade/competition and health • Interpret and understand basic national and international law the health care sector • Understand the concept of global health governance • Analyze the relationship between international law and national health systems
<p>Course Assessments</p>	<p>Midterm Exam 20% Attendances 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
<p>Content Breakdown</p>	<p>Topics Coverage</p>
<p>Session 1 (Week 1)</p>	<p>Introduction to public health law</p>
<p>Session 2 (Week 2)</p>	<p>Fundamentals of public health and law</p>
<p>Session 3 (Week 3)</p>	<p>Exercising public health powers</p>
<p>Session 4 (Week 4)</p>	<p>Exercising public health powers: public health legal authority & police powers</p>
<p>Session 5 (Week 5)</p>	<p>Exercising public health powers: federalism & preemption</p>
<p>Session 6 (Week 6)</p>	<p>Exercising public health powers: autonomy & bodily integrity (immunizations)</p>
<p>Session 7 (Week 7)</p>	<p>Exercising public health powers: privacy (patient privacy and public health)</p>
<p>Session 8 (Week 8)</p>	<p>Exercising public health powers: freedom of expression</p>
<p>Session 9 (Week 9)</p>	<p>Exercising public health powers: criminalizing behaviors that undermine the public's health (HIV exposure)</p>
<p>Session 10 (Week 10)</p>	<p>Exercising public health powers: public health emergencies</p>
<p>Session 11 (Week 11)</p>	<p>Legal tools and policy considerations</p>

Session 12 (Week 12)	Regulation
Session 13 (Week 13)	Regulation case study: food safety
Session 14 (Week 14)	Exercising public health powers: freedom of expression
Session 15 (Week 15)	Legislation
Session 16(Week 16)	Midterm Exam
Session 17 (Week 17)	Legislation case study: gun control
Session 18 (Week 18)	Litigation case study: tobacco
Session 19 (Week 19)	Public health policy
Session 20 (Week 20)	The role of evidence: community water fluoridation and oral health
Session 21 (Week 21)	Public health policy guest panel
Session 22 (Week 22)	New directions in public health law
Session 23 (Week 23)	Infrastructural laws: agency organization & duties
Session 24 (Week 24)	Interventional laws: obesity prevention
Session 25 (Week 25)	Incidental laws: improving conditions in which we live, learn, work, & play
Session 26 (Week 26)	Prevention and health reform
Session 27 (Week 27)	Health Policy
Session 28(Week 28)	Revision and discussion
Session 29(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Primary Health Care

1	Course name	Primary Health Care
2	Course Code	PH307
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of contemporary primary health care service delivery. Students will explore the emerging directions of primary health models of care from an international and national perspective. This will include universally evolving changes in burden of disease, national health reforms to meet challenges of evidenced based care, interaction between communities and their social and physical environment, influence of social and cultural determinants on health behavior and clinical governance
Textbooks required for this Course:		<ul style="list-style-type: none"> • An Introduction to Community and Primary Health Care 3rd Edition: ISBN: 9781108797832 • Guzys, D, Brown, R, Holcomb, E & Whitehead, D 2017, An introduction to Community and Primary Health Care, 2nd edn, Cambridge University Press, Cambridge, UK. • McMurray, A & Clendon, J 2018, Community Health and Wellness: Primary Health Care in Practice, 6th edn, Elsevier Health Sciences, Chatswood. (electronic version available from UTAS library) • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Understand the primary health care philosophies which underpin practice,



- Understand the socio-political environments in which care is delivered
- Develop transferable management and communication skills.
- Analyse, synthesise and critically evaluate the relationship and importance of the international and national public policy reforms for securing healthier communities, through Health Literacy and Health Promotion.
- Demonstrate an advanced understanding of person- centred contemporary models of care that integrate public health with primary care, organised around people’s needs and expectations to empower them in making appropriate health care decisions
- Critically analyse the interaction between communities and their social and physical environment and the ways in which these factors may impact on a person’s clinical presentation, access to health care and ability to comply to with a health plan within rural and remote areas
- Apply established theories to research, critically analyse and synthesise information to discuss the role of epidemiology in understanding public health issues, risk factor management of National Health Priority conditions and emerging trends in Primary Health Care
- Communicate and engage through consultation with Aboriginal and Torres Strait Islander populations to strengthen skills to achieve and maintain good health

Course Assessments	Midterm Exam 20% Attendances 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to primary health care: Definition of Primary Health Care (PHC), Goal, Principles, and Strategies.
Session 2 (Week 2)	Introduction to primary health care: History of Primary Health Care and objectives of Primary Health Care
Session 3 (Week 3)	Levels of Health Care: Primary care level
Session 4 (Week 4)	Levels of health care: Secondary care level
Session 5 (Week 5)	Levels of Health Care: Tertiary care level
Session 6 (Week 6)	Principles of Primary Health Care: Social equity, nation-wide coverage/wider coverage and Self- reliance
Session 7 (Week 7)	Principles of Primary Health Care: Inter-sectoral coordination and People’s involvement (in planning and implementation of programs)
Session 8 (Week 8)	What are the Pillars of PHC?: Community Participation and Inter-sectoral Coordination

Session 9 (Week 9)	What are the Pillars of PHC?: Appropriate Technology and Support Mechanism Made Available
Session 10 (Week 10)	Elements/components of PHC
Session 11 (Week 11)	Extended Elements of PHC in 21st Century
Session 12 (Week 12)	Importance and benefits of Primary Health Care
Session 13 (Week 13)	The Challenges for Implementation of PHC
Session 14 (Week 14)	How to overcome the challenges for Implementation of PHC
Session 15 (Week 15)	Midterm exam
Session 16 (Week 16)	The Mitigation Measures for Ensuring Effective PHC
Session 17 (Week 17)	MDGs 1: Eradicate extreme poverty and hunger.
Session 18 (Week 18)	MDGs 2: Achieve universal primary education
Session 19 (Week 19)	MDGs 3: Promote gender equality and empower women.
Session 20 (Week 20)	MDGs 4: Reduce child mortality.
Session 21 (Week 21)	MDGs 5: Improve maternal health.
Session 22 (Week 22)	MDGs 6: Combat HIV/AIDS, malaria, and other diseases.
Session 23 (Week 23)	MDGs 7: Ensure environmental sustainability.
Session 24 (Week 24)	MDGs 8: Develop a global partnership for development.
Session 25 (Week 25)	Primary Health Care; Global Targets and Causes of Failure
Session 26 (Week 26)	Primary Health Care institute in Libya
Session 27 (Week 27)	Revision and discussion
Session 28(Week29 - 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of



changes to students as soon as possible. Timetable may also be revised.

Pharmacology

1	Course name	Pharmacology
2	Course Code	MT306
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide how a drug affects a biological system and how the body responds to the drug. The discipline encompasses the sources, chemical properties, biological effects and therapeutic uses of drugs.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Essential of general pharmacology book. Lippincott's Illustrated Reviews: pharmacology book. Pharmacology and drug administration for imaging technology book. • Basic Pharmacology Understanding Drug Actions and Reactions By Maria A. Hernandez, Appu Rathinavelu, 1st edition 2006. • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor. • A Textbook of Clinical Pharmacology and Therapeutics, 5th By James Ritter, Lionel Lewis, Timothy Mant, Albert Ferro 2008 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based. Group interaction and discussion. self-directed activities. Active participation.



	<ul style="list-style-type: none"> • Antihypertensive & antishock drugs. • Cardiac glycosides and congestive heart failure. • Antiarrhythmic drugs. • Drugs used in angina pectoris.
Session 11 (Week 11)	<p>Topics to be covered in the session (week12)</p> <p>F. Blood:</p> <ol style="list-style-type: none"> 1. Coagulants, anticoagulants, fibrinolytics & antiplatelets. 2. Drugs used in treatment of anemia. 3. Drugs used in treatment of hyperlipidemia.
Session 12(Week 12)	<p>G. Chemotherapy:</p> <ul style="list-style-type: none"> • Sulphonamides & quinolones. • B-lactum antibiotics (penicilins, cephalosporins).
Session 13 (Week 13)	<p>G. Chemotherapy:</p> <ul style="list-style-type: none"> • Chloramphenicol & tetracyclines. • Aminoglucoisides antibiotics. • Antifungal drugs
Session 14 (Week 14)	Midterm Exam
Session 15 (Week 15)	<p>G. Chemotherapy:</p> <p>Antiviral drugs, Antituberculus, Antimalarial drugs & antiprotozal.</p>
Session 16 (Week 16)	<p>H. Endocrine drugs:</p> <p>Antidiabetics drugs and Antithyroid drugs.</p>
Session17 (Week 17)	<p>H. Endocrine drugs:</p> <ul style="list-style-type: none"> • Drug affecting bone mineral homeostasis (pth, vit.D, calcitonin).
Session 18 (Week 18)	<p>H. Endocrine drugs:</p> <ul style="list-style-type: none"> • Corticosteroids. • Sex hormones, contraceptives drugs.
Session 19 (Week 19)	<p>I. Respiratory system:</p> <ul style="list-style-type: none"> • Drugs used in treatment of bronchial asthma.
Session 20 (Week 20)	<p>I. Respiratory system:</p> <ul style="list-style-type: none"> • Cough therapy. * Gas therapy
Session 21(Week 21)	<p>J. GIT:</p> <ul style="list-style-type: none"> • Drugs used in treatment of peptic ulcer • Antiemetic drugs.
Session22(Week22-23)	<p>J. GIT:</p> <ul style="list-style-type: none"> • Drugs used in treatment of constipation and diarrhea. • Antispasmodics.
Session23(Week23-28)	<p>K. Urinary tract: 1. Diuretics. 2. Urinary tract infection.</p>
Session24(Week29)	Revision and discussion
Session25(Week 30)	Final exam
Attendance Expectations	<p>Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.</p>
Generic Skills	<p>Knowledge of basic clinical skills required to meet the skills objective including interviewing, physical diagnosis, communication and clinical reasoning processes.</p>
Course Change	<p>Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing</p>



needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Practical Training I

1	Course name	Practical Training- I
2	Course Code	PH307
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	6 hours per week
6	Pre-requisite requirements	-----
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students and helps them to understand the practical part of the subjects they have studied and how to link between the theoretical part and practical application on the ground in their filed at laboratories and health institutions
Textbooks required for this Course:	<ul style="list-style-type: none"> This course depnd up on practicl training at primary care units, hospitals, primary care clinics and family health centries and other health centres, and vaccination units as well as branches of national centre of deases contron and preventions. Students will be supervised and guided by profetionals Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor, writing report about the lab work.
Course Duration	6 * 28 = 168 teaching hours
Delivery	Practical training, Group interaction and discussion, self-directed activities, Active participation, Laboratory experiments, report writing
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> Laboratory procedures and practical application of the material they study during the year. Principles of diasese control and prevention practically Work in a team Write a proffectional report.



	<ul style="list-style-type: none"> Under stand and can work at national vaccinations program.
Course Assessments	Weekly Report 20% Attendance and participations 20% Final Assessment and report: 60% A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> Introduction
Session 2 (Week 2)	Guidance lecture (adherence to all instructions)
Session 3 (Week 3)	Encourage students to fieldwork
Session 4 (Week 4)	<ul style="list-style-type: none"> Vital Signs
Session 5 (Week 5)	<ul style="list-style-type: none"> Vital signs (young's)
Session 6 (Week 6)	<ul style="list-style-type: none"> Vital Signs (adults)
Session 7 (Week 7)	<ul style="list-style-type: none"> Vaccination
Session 8 (Week 8)	Vaccination
Session 9 (Week 9)	<ul style="list-style-type: none"> Vaccination
Session 10 (Week 10)	Vaccination
Session 11 (Week 11)	Vaccination
Session 12 (Week 12)	Writing reports
Session 13 (Week 13)	Revision
Session 14 (Week 14)	Midterm exam
Session 15 (Week 15)	Visit to healthcare unit and writing report on work field
Session 16 (Week 16)	Visit to environmental health unit (if applicable)
Session 17 (Week 17)	Visit to mother and child healthcare units
Session 18 (Week 18)	Discussion of reports
Session 19 (Week 19)	Involving student in research
Session 20 (Week 20)	Strengthening language skills by giving seminars and workshop reports
Session 21 (Week 21)	Seminars
Session 22 (Week 22)	Seminars
Session 23 (Week 23)	Seminars
Session 24 (Week 24)	Revision and discussion

Session 25(Week 25 - 27)	Case report, presentations
Session 26(Week 28)	Revision and discussion
Session 27 (Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Medical Parasitology

1	Course name	Medical Parasitology
2	Course Code	ML304
3	Course type:	Specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	General Microbiology
7	Program offered the course	Public health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:



This course is intended to introduce fundamental and important aspects of the morphology and life cycles of protozoa and helminths causing human disease, in addition to pathological processes caused by these parasites. Special attention is given to life cycle and methods used in collection and examination of specimens used for the diagnosis of parasitic diseases.

and to to equip medical technology (mainly laboratories department) students with the basic concepts of medical Parasitology and general laboratory diagnosis of parasitic diseases of human importance; to provide the students with basic knowledge and understanding of the

	medically important protozoa and their detection and identification in different clinical specimens.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Heelan J.S, Ingersoll F.W. Essential of Human Parasitology. Delmar 2002. 2. Cheesbrough M. District Laboratory Practice in Tropical Countries. Part 1, Cambridge 2013. • Debu University. Parasitology for Health Science Students, lecture note series; 2004. • Beaver P.C, et al. Clinical Parasitology. K.M Varghese Company; 12th edition, 2010. • Markell et al. Medical Parasitology. W.B Saunders Company 6th edition 1986. • Brown H. Basic Clinical Parasitology. ACC Norwalk; 5th edition, 1983. • Chiodini P.L. et al. Atlas of Medical Helminthology and Protozoology. Churchill Livingstone, 6th edition; 2008. • Additional Resources, Handouts and sheets, also some web links may be used in this course provided after any lecture by instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, active participation, Laboratory experiments, hospital training.
Course Objectives:	<p>By the end of this course the students should be knowledgeable of:</p> <ul style="list-style-type: none"> • Basic morphology and life cycles of parasites causing human disease. • Specimens to be collected and the methods used for their examination in the diagnosis of parasitic diseases. 3. An understanding of the clinical diseases caused by these parasites • Understand the classification, clinical features, pathogenesis, laboratory diagnosis and prevention and control measures of protozoa. • Basic practical skills of laboratory techniques (specimen collection, processing, examination and reporting) and apply quality assurance in medical parasitology laboratory. • Discuss the concepts of parasitism, the relationships between parasites and host, between parasites and environment and the cultural and socioeconomic factors affecting the transmission of parasites. • Explain the general epidemiological aspects of parasites that affect human • Illustrate the life cycle of specific parasites. • Explain laboratory quality control in parasitology. • List characteristics used to identify protozoa parasites involved in human infections. • Classify parasites having medical significance for human classification of protozoa. • List the most common medically important protozoa. • Describe the prevention and control measures of protozoa. • Compare and contrast the different techniques of protozoa. • Explain laboratory quality control in parasitology.
Course Assessments	<p>Activities 10% Midterm exam 20 % Attendances 10% Final Exam 60% A 60% is required for a pass in this course.</p>




Content Breakdown	Topics Covering
Session 1 (Week 1)	1. Introduction to Medical Parasitology 1.1 Definition of terms 1.2 Features of parasites 1.3 Source of infection 1.4 Mode of transmission 1.4.1 Direct mode of transmission 1.4.2 Indirect mode of transmission 1.5 Routes of transmission 1.6 Host parasite inter-relationship 1.7 Effect of parasites on the host
Session 2 (Week 2)	1.8 Host susceptibility factors. 1.9 Escape mechanisms of parasites from the immune system 1.10 General life cycle of parasites 1.10.1 Direct life cycle 1.10.2 Indirect life cycle
Session 3 (Week 3)	2. Taxonomy of protozoa 2.1 Quality control of stool examination 3. Different types of amoebae
Session 4 (week4)	3.1. Entamoeba histolytica Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control 3.2. Entamoeba Hertmanni Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control 3.3. Entamoeba coli Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control Assignment 1 handed out 3.4 Entamoeba gingivalis Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control 3.5 Iodamoeba butschili Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control 3.6 Entamoeba polecki Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention & control
Session 5 (Week 5)	4. General laboratory diagnosis of parasites 4.1 Types of specimens (urine, blood, stool, sputum, skin.) Assessment • Quiz 1
Session 6 (week 6)	4.2 Collection and preparation of specimen used for parasitological examination 4.3 Preservation of parasites Tutorial for an hour
Session 7 (week7)	4. The Oro-intestinal and Urogenital Flagellates



	<p>4.1 General Characteristics of Intestinal flagellates</p> <p>4.1.1 <i>Dientamoeba fragilis</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>
Session 8 (week 8)	<p>4.1.2 <i>Chilomastix mesnili</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>4.1.3 <i>Giardia lamblia</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>4.1.4 <i>Trichomonas hominis</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis</p> <p>4.1.5 <i>Trichomonas vaginalis</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>4.1.6 <i>Trichomonas tenax</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>
Session 9(week 9)	<p>5. Introduction of blood and Tissue Flagellates</p> <p>5.1 General Characteristics Assignment 2 handed out</p> <p>5.1.1 Leishmaniasis</p> <p>5.1.2 <i>Leishmania tropica minor</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>5.1.3 <i>Leishmania tropicam major</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>5.1.4 <i>Leishmania aethiopia</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>
Session 10(week10)	<p>5.1.4 <i>Leishmania donovani</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>5.1.5 <i>Leishmania Mexican complex</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p> <p>5.1.6 <i>Leishmania braziliensis complex</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>



<p>Session 11(week 11)</p>	<p>6. Trypanosomiasis 6.1. <i>Trypanosoma gambiense</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 6.2. <i>Trypanosoma rhodesiense</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 6.3. <i>Trypanosoma cruzi</i> Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>
<p>Session 12(week12)</p>	<p style="text-align: center;">Midterm Exam</p>
<p>Session 13 (week13)</p>	<p>7. Plasmodium spp Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 8. Toxoplasma and Toxoplasmosis Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 9. coccidian (Sporozoa) and ciliated parasites of man Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control. Lab • Examination of persevered specimens and slides and identification of different parasites.</p>
<p>Session 14 (week 14)</p> 	<p>10. Family Culicidae- Mosquitoes Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 11. Family Psychodidae – Sand fly Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control 12. Family Muscidae – House fly, Family Glossinidae Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control Assessment • Quiz 2</p>
<p>Session 15 (week 15)</p>	<p>• Nematodes : Enterobius, Ascaris, Trichuris, Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>
<p>Session 16 (week 16)</p>	<p>Trichinella, Strongyloides, Hookworms Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control</p>

Session 17 (week 17)	Blood and tissue nematodes : Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control
Session 18 (week 18)	Microfilaria, Tapeworms : T. solium, T. saginatum. D. latum Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control
Session 19 (week 19)	Tapeworm : E. granulosus Cysticercosis Hymenolepis nana Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control
Session20 (week20&21)	Trematodes : Schistosoma, Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control
Session21(week22&23)	Trematodes : Gastrointestinal and pulmonary flukes Epidemiology, Morphology, Transmission and life cycle Clinical features, Laboratory diagnosis Treatment, Prevention& control
Session 22 (week 24)	Assessment • Presentation I Tutorial for an hour
Session 23 (week 25)	Direct Wet mount (Saline, blood, Iodine) &Examination and identification of intestinal parasites.
Session 24 (week 26)	General introduction of Laboratory techniques Collection &Preservation of samples.
Session 25 (week 27)	Stool examination, Concentration Techniques, Sedimentation, Flotation
Session 26 (week 28)	Special Techniques, how to write a report,
Session 27(week 29)	Revision (questions answering and discussion).
Session 28(week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition The student should be able to think critically to solve problems and make decisions
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.




ج. المقررات الدراسية للسنة الرابعة قسم صحة المجتمع



General Epidemiology

1	Course name	General Epidemiology
2	Course Code	PH401
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Principle of Epidemiology
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of Epidemiological research and provides information that can be used to specify the priority for investigation and action and to identify the importance of a given health problem. And help the students how to identify high-risk groups on which we should focus prevention or apply an appropriate solution. Understanding the natural history of the disease in quantitative terms is important for comparing the effects of possible treatment options or interventions.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Any textbook of Epidemiology can be used. • David Celentano, Moyses Szklo. Gordis Epidemiology. 6 edition. Elsevier; 2018 • Aschengrau A, Seage GR. Essentials of Epidemiology in Public Health. 4 edition. Burlington, MA: Jones & Bartlett Learning; 2018 • Friis RH, Sellers T. Epidemiology for Public Health Practice. 5 edition. Burlington, Mass: Jones & Bartlett Learning; 2013 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion.
Course Objectives:		Upon completion of this course, the student will have reliably demonstrated the ability to:


	<p>Understand where the disease is coming from, and who it is most likely to impact.</p> <p>Discover patterns and trends in health problems.</p> <p>Predict the number of cases of a disease and its distribution in the population.</p> <p>Explain the etiology of disease.</p> <p>Study the course of a disease quantitatively from onset to outcome.</p> <p>Assess preventive measures and treatment options.</p> <p>Distinguish the different epidemiological studies.</p>
<p>Course Assessments</p> 	<p>Activities 10% Midterm exam 20 %</p> <p>Attendances 10% Final Exam 60%</p> <p>A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
<p>Content Breakdown</p>	<p>Topics Coverage</p>
<p>Session 1 (Week 1)</p>	<p>Revision of principles of epidemiology (Taken in the third year)</p>
<p>Session 2 (Week 2)</p>	<p>An overview of measurements in Epidemiology</p>
<p>Session 3 (Week 3)</p>	<p>Study designs</p>
<p>Session 4 (Week 4)</p>	<p>Cross-sectional study</p>
<p>Session 5 (Week 5)</p>	<p>Cohort study</p>
<p>Session 6 (Week 6)</p>	<p>Case control study</p>
<p>Session 7 (Week 7)</p>	<p>Training lecture of how to recognize between different study designs. Examples of cross sectional study, cohort and case control study designs.</p>
<p>Session 8 (Week 8)</p>	<p>Experimental studies</p>
<p>Session 9 (Week 9)</p>	<p>Qualitative research</p> <p>Mixed designs</p> <p>Ecological Studies</p>
<p>Session 10 (Week 10)</p>	<p>Qualitative research</p> <p>Space time cluster studies</p>


	Familial aggregation studies
Session 11 (Week 11)	Bias Selection and Information Bias
Session 12 (Week 12)	Confounding
Session 13 (Week 13)	Effect Modification
Session 14 (Week 14)	Causal interference
Session 15 (Week 15)	Midterm Exam
Session 16 (Week 16)	Measurement of risks
Session 17 (Week 17)	Causation & association
Session 18 (Week 18)	Outbreak investigations
Session 19 (Week 19)	Fundamentals of research methodology The measurement loop and the Critical Appraisal cube Defining the question/posing the problem Selecting the study design
Session 20 (Week 20)	Fundamentals of research methodology Sample selection Sample size Events, outcome measures, dropouts Analysis and reporting Ethics
Session 21 (Week 21) up to Session 26 (Week 27)	Student presentations (assignments)
Session 27 (Week 28)	Revision and Discussion
Session 28 (Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal

	communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.


Maternal and child health

1	Course name	Maternal and child health
2	Course Code	PH402
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Family Health
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course focuses on the study of women during different cycles of their lives including childbearing, child rearing, and menopausal periods. Knowledge of reproductive health, safe motherhood and gynecological aspects are essential for the planning and implementation of care during preconception, conception, antenatal, and postnatal periods. Knowledge from biophysical sciences, humanities and growth and development are essential for the provision of holistic care for women and their families within hospital and community settings. Content also include nonproductive health problems facing women such as family violence, gender issues, and cultural aspects relevant to health of women.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Kotch's Maternal and Child Health: Problems, Programs, and Policy in Public Health 4th Edition by Russell S. Kirby • Maternal and Child Health: Global Challenges, Programs, and Policies 2009th Edition by John Ehiri • Health organization letters to the House and Senate authors of H.R. 1551/S.1960, the Quality Care for Moms and Babies Act, in support of their introduction of this

	<p>important legislation to address the nation's maternal mortality crisis and the rising number of preterm births</p> <ul style="list-style-type: none"> • Mattson, S (2010) "Millennium Development Goals and Global Women's and Infants' Health," Journal of Obstetrics, Gynecology and Neonatal Nursing, 39: 573-579 • World Health Organization. Maternal Mortality Fact Sheet.http://www.who.int/mediacentre/factsheets/fs348/en/. • Ahmed, S., Li, Q., Liu, L., Tsui, A. 2012. Maternal Deaths averted by contraceptive use: an analysis of 172 countries. Lancet 380:111-125. • United Nations International Conference on Population and Development. Reproductive rights and reproductive health. Programme of action of the United Nations ICPD. 1994. http://www.unfpa.org/publications/international-conference-population-and-development-programme-action. • United Nations Department of Economic and Social Affairs. 2015. Trends in Contraceptive Use Worldwide. http://www.un.org/en/development/desa/population/publications/pdf/family/trendsContraceptiveUse2015Report.pdf. • Marston, C. 2004. The effects of contraception on obstetric outcome. Geneva: World Health Organization. http://apps.who.int/iris/bitstream/10665/42949/1/9241592257.pdf. • Adapted from http://www.usaid.gov/our_work/global_health/pop/index.html. • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
<p>Course Objectives:</p> 	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <p>Define legal, cultural, ethical, economic, historical, and political factors which impact the delivery of family centered health care.</p> <p>Describe normal and abnormal physiological and psychological changes that occur during each period of the childbearing cycle and newborn period.</p>


	<p>Discuss the role of the nurse that reflects an understanding of the legal and ethical issues that impact the childbearing family.</p> <p>Use relevant evidence based practice for decision making in relation to childbearing families and the newborn.</p> <p>Synthesize theories and concepts from liberal education to build an understanding of the human experience.</p> <p>Discuss the role of the nurse and the use of nursing standards to monitor patient/family care.</p> <p>Prepare a teaching plan based on principles of teaching/learning.</p> <p>Discuss caring in relation to nursing the childbearing family and newborn.</p> <p>Demonstrate responsibility for growth and development as a learner and a professional.</p> <p>Apply theory related to computer-human interfaces, ethics, confidentiality and privacy, ergonomics and nursing informatics to nursing practice.</p>
<p>Course Assessments</p> 	<p>Midterm exam 20% Activities 10%</p> <p>Attendances 10% Final Exam 60%</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome..</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction to Women and child health Introduction to Maternal and Child Health Why is maternal and child health important to the field of public health?
Session 2 (Week 2)	Women's life course. The Life Course Perspective/Socio-Economic Determinants of Health
Session 3 (Week 3)	Women's life course, Nutritional needs throughout life
Session 4 (Week 4)	Women's life course, Health needs throughout life
Session 5 (Week 5)	<ul style="list-style-type: none"> • Reproductive health <p>Reproductive health and health promotion/WHO guidelines</p>
Session 6 (Week 6)	<ul style="list-style-type: none"> • Infertility and family planning principles
Session 7 (Week 7)	<ul style="list-style-type: none"> • Maternal mortality <p>Understand Burden of Maternal Mortality</p>

	Causes of Maternal Mortality Understand the "3 delays"
Session 8 (Week 8)	Student-led Class Discussion
Session 9 (Week 9)	Conception, fertilization, implantation Embryonic and fetal development, Fetal and Newborn circulation.
Session 10 (Week 10)	Maternal and fetal assessment techniques Physiological and psychological changes in the first, second, and third trimester of pregnancy.
Session 11 (Week 11)	Promoting fetal and maternal health – Maternal and fetal nutrition during pregnancy
Session 12 (Week 12)	Child health Epidemiology of child health globally Interventions to reduce child mortality, promote healthy development, and foster equitable outcomes – historically and today
Session 13 (Week 13)	Screening in child
Session 14 (Week 14)	Health and services for children in school setting
Session 15 (Week 15)	Health and services for children in school setting
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Barker's hypothesis
Session 18 (Week 18)	Adolescent health Dealing with adolescents
Session 19 (Week 19)	Men's health
Session 20 (Week 20)	Determinants of mental health
Session 21 (Week 21-26)	Palliative care in elderly
Session 22(Week 27)	Student presentations (assignments)
Session 23 (Week 28)	Revision and discussion
Session 24 (Week29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all

	aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change 	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.


Environmental Health

1	Course name	Environmental Health
2	Course Code	PH403
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Bachelor in Medical Technology Specializing in Public Health
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course covers environmental health topics of importance to the health promotion practitioner. Environment is approached as one of the determinants of health for individuals and human populations.
Textbooks required for this Course: 	<ul style="list-style-type: none"> • Morgan, M.T. (2003). Environmental Health. (3rd ed.). Belmont, CA: Wadsworth/Thomason. • Frumkin, H. ed. Environmental Health from Global to Local, 3rd Edition, Josey Bass (2016) • Handbook of Environmental Health, Two Volume Set • By Herman Koren, Michael S. Bisesi, 4th Edition. • Environmental Health 2nd Edition - February 28, 1980 P. PurdomeBook ISBN: 9780080925318 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <p>Discuss the history and definition of environmental health.</p> <p>Discuss the association between population growth and dissemination of environmental pollutants.</p> <p>Describe methods used in epidemiology and toxicology to assess environmental exposures and hazards.</p> <p>Describe policies that have been developed to manage health risks associated with exposures to environmental hazards.</p> <p>Identify chemical, physical, and microbial agents that originate in the environment and can impact human health.</p> <p>Describe specific applications of environmental health concepts to fields such as water quality control, food safety, and occupational health.</p>
Course Assessments	Midterm exam 20% Activities 10% Attendances 10% Final Exam 60% A 60 % is required for a pass in this course.

Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction to environmental health
Session 2 (Week 2)	Nature of environmental hazards
Session 3 (Week 3)	Risk assessment and risk management
Session 4 (Week 4)	• Chronic and Communicable Diseases
Session 5 (Week 5)	• Water Supplies Public and private supplies
Session 6 (Week 6)	• Environmental Health in Recreational Areas
Session 7 (Week 7)	• Wastewater Management
Session 8 (Week 8)	Solids & Hazardous Waste
Session 9 (Week 9)	Solids & Hazardous Waste Management
Session10(Week10)	Vectors & pest Control
Session11(Week11)	Radiological Health
Session12(Week12)	Air Quality
Session13(Week13)	Food and agriculture
Session14(Week14)	Environmental pollution and control
Session15(Week15)	Environmental disasters and management
Session16(Week16)	Midterm Exam
Session17(Week17)	Environmental pollution and control
Session18(Week18)	Human settlement
Session19(Week19)	Student presentations
Session20(Week20)	Review
Session21(Week 21-26)	Human settlement
Session22(Week27)	Student presentations
Session23(Week28)	Review
Session24(Week29)	Final Revision, questions answering and discussion.
Session25(Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.



Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Occupational Health

1	Course name	Occupational health
2	Course Code	PH404
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:	This course is an introduction into the challenging and evolving field of occupational health and safety, and will enable student to gain an understanding of the ethical, legislative, technical, and management aspects of health and safety practice in human resources.	
Textbooks required for this Course:	<ul style="list-style-type: none"> • https://www.pdfdrive.com/occupational-health-and-safety-books.html 	



- Fundamentals of occupational safety and health / Mark A. Friend and James P.Kohn.—4th ed.p. cm.ISBN-13: 978-0-86587-171-7 (pbk. : alk. paper)
- Definitions,Conversions,and Calculations for Occupational Safety and Health Professionals Third edition.
- <https://www.pdfdrive.com/definitions-conversions-and-calculations-for-occupational-safety-and-health-professionals-third-edition-definitions-conversions-calculations-for-occupational-safety-health-professionals-e161089440.html>
- Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.

Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <p>Understand the historical, moral, economical and legislative importance of a well-managed health and safety system.</p> <p>Explain technical aspects of safety management including hazard recognition, assessment and control.</p> <p>Understand the fundamental theories of worker protection and how these are applied in the workplace.</p> <p>Discuss how to effectively manage an occupational health and safety program in the workplace.</p>
Course Assessments	<p>Midterm exam 20% Activities 10%</p> <p>Attendances 10% Final Exam 60%</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction and course overview
Session 2 (Week 2)	Hazard Categories and their affects. Hazard Recognition, Assessment and Control.
Session 3 (Week 3)	Physical Hazards.
Session 4 (Week 4)	Chemical, Biological and Ergonomic Hazards.

Session 5 (Week 5)	• Psychosocial Hazards, Workplace Violence & Harassment and Safety Hazards
Session 6 (Week 6)	• occupational toxicology
Session 7 (Week 7)	• Occupational lung disease
Session 8 (Week 8)	• Occupational skin disease
Session 9 (Week 9)	Auditory disorders
Session 10 (Week 10)	Hematology and infection diseases
Session 11 (Week 11)	Mental and neurological disorder
Session 12 (Week 12)	Cardiovascular disorder
Session 13 (Week 13)	Musculoskeletal disease
Session 14 (Week 14)	Reproductive health
Session 15 (Week 15)	Gastrointestinal disorders including liver diseases
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Renal disorder
Session 18 (Week 18)	Occupational cancers
Session 19 (Week 19)	Occupational injuries
Session 20 (Week 20)	Safety Behavior and Organizational Safety Culture.
Session 21 (Week 21-26)	Student presentations and paper work
Session 22 (Week 27)	Gastrointestinal disorders including liver diseases
Session 23 (Week 28)	Review
Session 24 (Week 29)	Revision and discussion
Session 25 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing



	basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.
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Nutrition and Public Health

1	Course name	Nutrition and Public Health
2	Course Code	PH405
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide an introduction to Public Health Nutrition and the role of the Public Health Nutrition professional. Emphasis will be on definition, identification and prevention of nutrition related disease, as well as improving health of a population by improving nutrition. Malnutrition will be discussed on a societal, economic, and environmental level. It will include the basics of nutritional biochemistry as it relates to malnutrition of a community and targeted intervention. Finally, it will review existing programs and policies, including strengths, weaknesses and areas for modification or new interventions
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Textbooks required for this Course:	<ul style="list-style-type: none"> • https://infolearners.com/ebooks/download-public-health-nutrition-textbook-pdf/ • https://fwtrc.gov.in/sites/default/files/Public_Health_Nutrition_2021.pdf • Egan M. Public health nutrition: a historical perspective. J Am Diet Assoc. 1994;94(3):298–304.doi:10.1016/0002-8223(94)90372-7 • Winslow CEA. The Evolution and Significance of the Modern Public Health Campaign. New Haven, CT:Yale University Press; 1923. • Centers for Disease Control and Prevention. The Public Health System. 2018, June. https://www.cdc.gov/publichealthgateway/publichealthservices/essentialhealthservices.html
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	<ul style="list-style-type: none"> • Institute of Medicine. The Future of Public Health. Washington, DC: National Academies Press; 1988. https://www.ncbi.nlm.nih.gov/books/NBK218224 • Michael J, Goldstein M. Reviving the White House Conference on Children. Children's Voice. 2008;17(1). https://www.cwla.org/reviving-the-white-house-conference-on-children • Association of Graduate Programs in Public Health Nutrition. Directory. 2019, October. https://agpphn.org/directory • White House Conference on Food, Nutrition, and Health, 1970. https://academic.oup.com/nutrition-reviews/article/27/9/247/1875780 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <p>Identify the determinants for dietary habits and relate these to individual, social, cultural and economic factors</p> <p>Describe the most important public health nutrition problems in high- income and low-income countries respectively, and discuss long term and short term countermeasures</p> <p>Identify and discuss the role and impact of different policy documents, international agreements and regulations of importance for public health nutrition activities on a national and international level</p> <p>Search and compile scientific material in the field of nutritional epidemiology</p>
Course Assessments 	<p>Midterm exam 20% Activities 10%</p> <p>Attendances 10% Final Exam 60%</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to public health nutrition
Session 2 (Week 2)	Factors influencing food selection


Session 3 (Week 3)	Nutrition Policy and Programs
Session 4 (Week 4)	• Dietary Guidelines
Session 5 (Week 5)	Assessment of Nutrition in Individuals and Populations Nutritional Epidemiology Community Needs Assessment
Session 6 (Week 6)	Assessment of Nutrition in Individuals and Populations Dietary Assessment Clinical Assessment Nutrition in Primary Care
Session 7 (Week 7)	Review
Session 8 (Week 8)	Food Availability, Food Safety and food hygiene
Session 9 (Week 9)	Preventive Nutrition
Session 10 (Week 10)	Nutritional needs at community level Children, Special needs, Elderly and Chronic diseases
Session 11 (Week 11)	Community Nutrition and the Lifecycle Nutrition in infancy
Session 12 (Week 12)	Community Nutrition and the Lifecycle Nutrition in childhood
Session 13 (Week 13)	Community Nutrition and the Lifecycle Nutrition in adolescence
Session 14 (Week 14)	Nutrition in Adulthood and Aging Maternal nutrition
Session 15 (Week 15)	Midterm exam
Session 16 (Week 16)	Nutrition in Adulthood and Aging Nutrition in Aging
Session 17 (Week 17)	Community Nutrition and Disease
Session 18 (Week 18)	Addressing the obesity pandemic
Session 19 (Week 19)	Community programs in nutrition
Session 20 (Week 20)	Nutrition Intervention
Session 21 (Week 21)	Current issues in nutrition and health (Trans-fat, genetically modified food, nutraceuticals, etc.)


Session 22 (Week 22-25)	Student presentations
Session 23 (Week 27)	Review
Session 24 (Week 28)	Revision and discussion
Session 25 (Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Health Economics

1	Course name	Health Economics
2	Course Code	PH406
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of economic theory related to health and health care; this course include: historical trends

	<p>in health care expenditures, an introduction to cost-benefit and cost-effectiveness analysis, economic analysis of the Affordable Care Act, determinants of the demand for medical care, health insurance, and problems in health insurance markets</p>
<p>Textbooks required for this Course:</p>	<ul style="list-style-type: none"> • Culyer J.A. & J.P. Newhouse (2000) Eds, Handbook of Health Economics: Vols 1A & 1B, Elsevier, North-Holland. • Donaldson Cam and Karen Gerard (1993) Economics of Health Care Financing: The Visible Hand. Macmillan Press Ltd. London. • Folland S., A. Goodman & M. Stano (2010) The Economics of Health & Health Care, Sixth Edition, Prentice Hall, New Jersey. • Jacobs, P. (1991) The Economics of Health and Medical Care Maryland: Aspen Pub Inc. Jack, Williams (1964) Principles of Health Economics for Developing Countries. WBI Development Studies. • The World Bank, Washington D. C. Jones Andrew (2007) Applied Econometrics for Health Economists: A Practical Guide, 2nd Edition • OHE Phelps Charles E. (1992) Health Economics, New York: Harper Collins Pub Inc. • Santerre E. & S.P. Neun (1996) Health Economics: Theories, Insights & Industry Studies, Irwin, Chicago. • Zweifel P., F. Breyer & M. Kifmann (2009) Health Economics, Second Edition, Springer Verlag Heidelberg. • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
<p>Course Duration</p>	<p>4 * 28 = 112 teaching hours</p>
<p>Delivery</p>	<p>Lecture-based, Group interaction and discussion, self-directed activities, active participation.</p>
<p>Course Objectives:</p> 	<p>Upon completion of this course, the student should have ability to:</p> <ul style="list-style-type: none"> • Understand the meaning and purpose of health economics. • Know basic instruments of economic analysis of the health sector. • Deal with health as one of the social sectors with economic implication. • Specific nature of the health care service. • Know importance of economics to resource allocation, planning and management of the health sector.

	<ul style="list-style-type: none"> • Understand the implications of economic development to the health care services and economics of health care financing • Know the importance of health care insurance • Apply economic concepts and techniques to analyze issues in health and health care; • Understand the principles and techniques of economic evaluation of health interventions using the basic principles of epidemiology; • Analyze health systems and health policy issues within the African context;
<p>Course Assessments</p> 	<p>Midterm exam 20% Activities 10% Attendances 10% Final Exam 60% A 60 % is required for a pass in this course. . Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<p>Introduction to Health Economics</p> <p>The economic way of thinking about health</p>
Session 2 (Week 2)	<p>Introduction to Health Economics</p> <p>Health measurement, determinants and long run trends</p>
Session 3 (Week 3)	<p>Introduction to Health Economics</p> <p>Health care spending – some facts</p>
Session 4 (Week 4)	<p>Microeconomics in healthcare</p> <p>Basic microeconomic tools</p>
Session 5 (Week 5)	<p>Health care as a commodity</p>
Session 6 (Week 6)	<p>Demand for Health and health care</p> <p>-Demand for health - Demand for health care</p>
Session 7 (Week 7)	<p>Demand for Health and health care</p> <p>-The Grossman model, Socioeconomic disparities in health</p>
Session 8 (Week 8)	<p>Structure and supply of the health care market</p> <p>How providers (physicians, hospitals, medical practices, nursing homes) supply health care services.</p>
Session 9 (Week 9)	<p>Topics to be covered in the session (week)</p>

	<p>Markets and Market Failure in Health and Health Care</p> <p>Goals of health care markets</p> <p>How countries have organized the supply of health care</p>
Session 10 (Week 10)	Markets and Market Failure in Health and Health Care
Session 11 (Week 11)	Different models (Beveridge, Bismark), the role of government, challenges of an aging population.
Session 12 (Week 12)	Health Insurance: Introduction and Moral Hazard
Session 13 (Week 13)	Health Insurance: Adverse Selection in Health Insurance
Session 14 (Week 14)	Health Insurance ,Market for health insurance and managed care
Session 15 (Week 15)	Measurement of health benefits
Session 16 (Week 16)	Economic Evaluation in health
Session 17 (Week 17)	defining and measuring the value of innovations and the value of medical spending.
Session 18 (Week 18)	Midterm Exam
Session 19 (Week 19)	Disease and facility based on cost analysis
Session 20 (Week 20)	Equality, equity and social justice
Session 21 (Week 21)	Financing of health care
Session 22 (Week 22)	Health Policy and Reforms
Session 23 (Week 23)	The Role of Government in Health Care
Session 24(Week 24-26)	Student presentations
Session 25(Week 27-28)	Review ,Revision and discussion
Session 26(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.



Course Change

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Health Promotion

1	Course name	Health Promotion
2	Course Code	PH407
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Public Health Proog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding and provide them with knowledge and skills in health promotion work and ability to be able to contribute to a sustainable development by working health promotion and preventive on individual group and community level in the different arenas man is in
Textbooks required for this Course:		<ul style="list-style-type: none"> • Foundations for Health Promotion, 4th Edition by Jane Wills & Jennie Naidoo 2016 https://www.mea.elsevierhealth.com/foundations-for-health-promotion-9780702054426.html?nosto=nosto-page-category1 • Foundations for Health Promotion, 5th Edition by Jane Wills 2022 https://www.mea.elsevierhealth.com/foundations-for-health-promotion-9780702085062.html?nosto=nosto-page-category1 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours



Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>On completion of the course, the student should be:</p> <ul style="list-style-type: none"> • Able to reflect on health and the unequal distribution of the health in a population perspective independently as well as be able to describe the importance of the structure of the society/organization for the condition and distribution of the health • Independently be able to reflect on important concepts and strategies for a health promotion work and evidence-based work directed to individuals/groups/populations and be able to state possibilities and limitations of different strategies are observed there inter alia health economics considerations • Able to explain the relationships between working environment independently physical activity, stress/well-being and different aspects on health from a group and population perspective • Independently based on a needs analysis be able to apply and use evidence-based methods, recommendations and guidelines with respect to working environment, physical activity and stress/well-being for different groups in society • Able to apply independently measure and evaluation methods at health promotion work above all methods with a focus on working environment, physical activity and stress/well-being • In groups structured be able to develop a plan for a thought health promotion projects and be able to justify and debate choice of target group, planning, implementation and evaluation of the project independently • knowledgeable about various health promotion programs while learning how to plan, implement, and evaluate them. Retain a meaningful understanding of health promotion programs. • Develop, implement, and evaluate several programs during the semester. • Be familiar with various methods of teaching and implementing different health promotion programs.





	<ul style="list-style-type: none"> • Identify premiere health promotion programs in the students' communities and nationwide. • Identify specific periodicals and resource books specifically related to developing health promotion programs. • Identify resources available related to health promotion.
Course Assessments	Final Exam 60 % Midterm Exam 20 % Activities 20 % Attendances 10% A 60 % is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Course Overview
Session 2 (Week 2)	Concepts of Health, Health Promotion, and Illness Prevention Epidemiology
Session 3 (Week 3)	Complementary, Alternative & Integrative Health
Session 4 (Week 4)	History of Health Promotion
Session 5 (Week 5)	Health Promotion Theories
Session 6 (Week 6)	Health risk assessment
Session 7 (Week 7)	Revision
Session 8 (Week 8)	Strategies for Health Promotion
Session 9 (Week 9)	Validity & Reliability of Diagnostic & Screening Tests
Session 10 (Week 10)	Natural History of Disease
Session 11 (Week 11)	Genetic & Social Determinants of Health
Session 12 (Week 12)	Health Literacy
Session 13 (Week 13)	Health Promotion in Diverse Populations
Session 14 (Week 14)	Evaluation, Research & Measurement in Health Promotion
Session 15 (Week 15)	Health Promotion Policy
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Rural Health Promotion
Session 18 (Week 18)	The Ottawa Charter
Session 19 (Week 19)	Educational and Community-Based Programs for health promotion
Session 20 (Week 20)	Health promotion and community engagement
Session 21 (Week 21)	Health promotion examples and Health promotion in schools
Session 22 (Week 22)	Health promotion examples Health promotion among adolescents

Session23(Week23-26)	Students' activities and presentations
Session24(Week27-28)	Review, revision and discussion
Session25(Week29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Practical Training II


1	Course name	Practical Training- II
2	Course Code	PH408
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	6 Hours per week
6	Pre-requisite requirements	Practical Training- I
7	Program offered the course	Public Health Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		The Course is continuity to Training Practical I. The course is designed to provide opportunities by which the students develop a level of integration between theoretical knowledge and practical skills and techniques of actual patients within the hospital department and other health institutions .

Textbooks required for this Course:	This course is a training and practical application under the supervision of teaching assistants in the department and specialists in hospitals and health centers to help students to be will trained and able to integrate between theoretical knowledge and practical skills and techniques.
Course Duration	6 * 28 = 168 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Refine the practical skills of students through clinical training in the hospital. • Develop technical skills in his filed. • Acquire patient care skills and methods of protection from the dangers. • Begin applying the acquired knowledge and skills clinically. • Do Practical Demonstrations in different public hesth aerias. • Collaborate and work effectively with a team. • Make a dicision and solove problems properly.
Course Assessments	Practice Assessment 70 % Practice Record Book 20% Activities 5 % Attendances 5 %
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Knowledge and Understanding
Session 2 (Week 2)	Qualify the student to participate in the inspection teams and health control and assist in laboratory investigation of the samples checked and their conformity with medical conditions
Session 3 (Week 3)	Enable the student to medical devices used and cared for and machines used in diagnosis and treatment
Session 4 (Week 4)	Enable the student to work in the field of occupational health and safety
Session 5 (Week 5)	Enable the student to learn and participate in special surveys teams transitional diseases and how to control it.
Session 6 (Week 6)	Health awareness campaigns
Session 7 (Week 7)	Enable the student to learn how to implement primary health care programs
Session 8 (Week 8)	Enable the student to assist the doctor in nursing and therapeutic and diagnostic procedures during implementation of health programmers



Session 9 (Week 9)	Discussion of reports
Session 10 (Week 10)	Subject-specific skills
Session 11 (Week 11)	Enable the student to carry out primary health care programs
Session 12 (Week 12)	Enable the student to work in teams of special surveys with infectious diseases and how to control it
Session 13 (Week 13)	Enable the student to participate in occupational safety and health field
Session 14 (Week 14)	Midterm exam
Session 15 (Week 15)	Thinking skills
Session 16 (Week 16)	Analysis of some health institutions by leveraging data for diseases
Session 17 (Week 17)	Implementation of primary health care programmers
Session 18 (Week 18)	Eligibility to work in the inspection teams and health control and assist in laboratory investigation of the samples checked and their conformity with medical conditions
Session 19 (Week 19)	Participate in special surveys teams transitional diseases and how to control it
Session 20 (Week 20)	General and Transferable Skills (other skills relevant to employability and personal development)
Session 21(Week 21 - 22)	Student participation with governmental institutions/hospitals and health centers
Session 23 (Week 23)	Train students to do field research projects
Session 24 (Week 24)	Conducting seminars and and invite students to attend
Session 25 (Week 25)	Student conferences
Session 26 (Week 26 - 27)	Reports discussion
Session 27(Week 28)	Revision and discussion
Session 28 (Week 29- 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	Faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal



	communications, and critical thinking skills will be embedded in all courses.
Course Change 	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

تاسعا: قسم تقنية الأغذية

أ. المقررات الدراسية للسنة الثانية قسم تقنية الأغذية



Food Chemistry

1	Course name	Food Chemistry
2	Course Code	NT201
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3 units
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with a fundamental understanding of the nature of food chemistry. Content: Description of chemical and biochemical properties and function of components in food: Carbohydrates, proteins, lipids, water, colors, aroma compounds, vitamins and minerals. Chemical composition, structure, biochemistry and quality of important foods
Textbooks required for this Course:		<ul style="list-style-type: none"> • Food Chemistry textbook, by Hans-Dieter Belitz, Werner Grosch and Peter Schieberle 4th Edition 2009 • Food Chemistry, Third Edition (Food Science and Technology Series , No 76) 3rd Edition by Owen R. Fennema 1996 • Introduction to Food Chemistry by Richard Owusu-Apenten 1st edition 2004 • The Chemistry of Food by Jan Velisek 2nd edition 2013 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Explain properties and reactions of carbohydrates, lipids and proteins during storage and processing of food and how these influence the quality and properties of the food.




Explain the importance of water for stability and quality of foods.

- Give an overview of the main classes of compounds influencing colour and flavor of food and have knowledge on important sources of vitamins and minerals in food and how these affect other quality aspects of food.
- Give an account of necessary growth conditions for important pathogens in food and precautions to avoid food infections and food poisoning.
- Give an account of sources of important classes of undesirables in food and the HACCP term.
- Be able to explain processes taking place during storage of muscle tissue and how these affect qualities. Have knowledge on different methods in sensory analysis and understand possibilities and limitation of the different methods.
- Have knowledge on and be able to use food regulations.
- Can read and understand relevant literature on a selected topic and present it in the form of a poster.
- Can present and explain results achieved in the lab.
- Can work independently and in groups

Course Assessments


Final Exam 60 % Midterm Exam 20 % Activities 20 %
 Attendances 10% A 60 % is required for a pass in this course.
 Homework & Assignments Students will be required to read chapters in their textbook, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.


Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to Food Chemistry
Session 2 (Week 2-3)	Water: Definition of water in food, Structure of water and ice, Types
Session 3 (Week 4- 7)	Lipids: Classification of lipids, Physical and chemical properties
Session 4 (Week 8 - 11)	Proteins: Protein classification and structure and Functional properties.
Session 5 (Week 12 - 15)	Carbohydrates: Classification , changes during cooking and processing
Session 6 (Week 16)	Midterm Exam
Session 7 (Week 17- 20)	Food pigments and vitamins and minerals
Session 8 (Week 21 - 24)	Flavors: Definition and basic taste
Session 9 (Week 25 - 26)	Food additives : classification
Session 10 (Week 27 - 28)	introduction to Food laboratory devices

Session 11 (Week 29)	Revisions and discussion
Session 12(Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills 	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.


Analytical Chemistry


1	Course name	Analytical Chemistry
2	Course Code	MT302
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		Get an introduction to analytical chemistry and its applications in clinical settings. Students will learn basic principles of analytical chemistry and will explore a wide range of common techniques and methods used in modern analytical laboratories, including HPLC, mass spectrometry, spectroscopic and immunochemical techniques. Other topics include interpretation of analytical data and evaluation of error and uncertainty in measurements. The final part of this course focuses on applications of analytical chemistry in clinical and laboratory settings.

Textbooks required for this Course:	<ul style="list-style-type: none"> • Modern Analytical Chemistry by David Harvey 2009 • Textbook of Analytical Chemistry by Harsh Malhotra 2011 ISBN-13978-8184113143 • Analytical Chemistry, 7th Edition by Gary D. Christian, Purnendu K. Dasgupta, Kevin A. Schug ISBN: 978-1-118-80516-9, 2013 • Christian, Gary D., Analytical Chemistry, 5th ed., John Wiley & Sons, New York, 1994. • Day, R. A. and Arthur L. Underwood, Quantitative Analysis, 6th ed., Prentice Hall, Upper Saddle River, NJ, 1991. • Ewing, Galen Wood, Ed., Analytical Instrumentation Handbook, 2nd ed, Marcel Dekker, New York, 1997. • Gill, Robin, Ed., Modern Analytical Geochemistry: An Introduction to Quantitative Chemical Analysis Techniques for Earth, Environmental and Materials Scientists, Addison Wesley, Harlow, U.K., 1997. • Harris, Daniel C., Quantitative Chemical Analysis, 5th ed., W. H. Freeman & Co., New York, 1998. • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor <p>أساسيات الكيمياء التحليلية د. عاطف نصار</p>										
Course Duration	4 * 28 = 112 teaching hours										
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.										
Course Objectives: 	Upon completion of this course, the student will have reliably demonstrated the ability to: <ul style="list-style-type: none"> • Understand basic principles of analytical chemistry and various analytical techniques • Explore a range of instrumental methods of analysis, including mass spectrometry, as well as spectroscopic, chromatographic, and immunochemical methods • Be able to interpret analytical data and evaluate error and uncertainty in measurements • Understand the analyst's role and analytical chemistry applications in the clinical setting 										
Course Assessments	<table border="0"> <tr> <td>Midterm exam</td> <td>20 %</td> <td>Activity</td> <td>10 %</td> <td>Attendance</td> </tr> <tr> <td></td> <td>10 %</td> <td>Final Exam</td> <td>60 %</td> <td></td> </tr> </table> <p>A 60% is required for a pass in this course.</p>	Midterm exam	20 %	Activity	10 %	Attendance		10 %	Final Exam	60 %	
Midterm exam	20 %	Activity	10 %	Attendance							
	10 %	Final Exam	60 %								
Content Breakdown	Topics Coverage										
Session 1 (Week 1&2)	<ul style="list-style-type: none"> • Introduction to analytical chemistry 										
Session 2 (Week 3&4)	<ul style="list-style-type: none"> • Basic tools of analytical chemistry 										
Session 3 (Week 5)	<ul style="list-style-type: none"> • Concentration expression 										
Session 4 (Week 6&7)	Weight percentage and volume percentage										
Session 5 (Week 8&9)	<ul style="list-style-type: none"> • Molality and mole fraction 										
Session 6 (Week 10)	<ul style="list-style-type: none"> • Molarity and Normality concentration 										
Session 7 (Week 11&12)	<ul style="list-style-type: none"> • Methods of expression substance quantity 										
Session 8 (Week 13)	Midterm Exam										
Session 9 (Week 14)	<ul style="list-style-type: none"> • Equivalent weight of compounds 										
Session 10 (Week 15)	<ul style="list-style-type: none"> • Stoichiometric calculations 										
Session 11 (Week 16)	<ul style="list-style-type: none"> • Parts per thousand (ppt) 										
Session 12 (Week 17)	<ul style="list-style-type: none"> • Parts per million (ppm) 										

Session 13 (Week 18)	• Parts per billion (ppb)
Session 14 (Week 19&20)	• Dilution calculation of solution
Session 15 (Week 21&22)	• Measure of acidity (pH)
Session 16(Week 23&24)	• Collecting and Preparing Samples
Session 17(Week 25)	• Gravimetric Methods
Session 18(Week 26)	• Titrimetric methods
Session 19(Week 27&28)	• Equilibrium chemistry
Session 20 (week 29)	Revision and discussion
Session 20 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills 	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Principles of Food Safety and Quality

1	Course name	Principles of Food Safety and Quality
2	Course Code	NT204
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description: 		<p>This course will introduce the biological and chemical hazard in food that result from improper processing, packaging, handling and storage; cleaning of food plant equipment and facilities including characteristics of soil on equipment surfaces, cleaning compounds, clean in place, clean out of place, sanitizers and their characteristics, GMPs, HACCP, food composition of certain hazardous food, commodities storing , food quality and deterioration, food intoxication, food poisoning and all food borne illness.</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> • Encyclopedia of Food Safety by Yasmine Motarjemi (2013) • Food Quality Assurance Principles and Practices By Inteaz Alli 1st Edition 2003, eBook ISBN 9780429204739 • SETHI, M. 2008. Institutional Food Management. New Age Publishers. New Delhi. • https://www.taylorfrancis.com/books/mono/10.1201/9780203484883/food-quality-assurance-inteaz-alli • https://ncert.nic.in/textbook/pdf/lehe106.pdf?lehe106.pdf=false • Principles of Food Sanitation 5th edition 2006 DOI https://doi.org/10.1007/b106753 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.


<p>Course Objectives:</p> 	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Explain various types of food contamination and factors that contribute to foodborne illness • Identify the characteristics of potentially hazardous foods • Describe the dangers of foodborne illness • Identify the high risk population • Demonstrate the ability to explore and apply proper food handling techniques that will eliminate possible foodborne illness. • Demonstrate correct procedures for receiving, preparing, serving and storing food products • Identify food handler health problems that are a possible threat to food safety • Demonstrate proper personal hygiene procedures with regard to food handling • Demonstrate the ability to discuss the importance of food safety training in the workplace. • Now how to conduct ISO, GMP, HACCP and other mentoring system and quality control.
<p>Course Assessments</p>	<p>Activities 10% Midterm exam 20% Attendances 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
<p>Content Breakdown</p>	<p>Topics Coverage</p>
<p>Session 1 (Week 1 - 2)</p>	<p>Introduction to Food Safety</p>
<p>Session 2 (Week 3 - 9)</p>	<p>Food Safety Hazards</p>
<p>Session 3 (Week 10 - 17)</p>	<p>General Principles of Food Hygiene</p>
<p>Session 4 (Week 18)</p>	<p>Midterm Exam</p>
<p>Session 4 (Week 19 to 23)</p>	<p>Hazard Analysis and Critical Control Point (HACCP)</p>
<p>Session 5 (Week 24 - 25)</p>	<p>Practical Activities</p>
<p>Session 6 (Week 27-27)</p>	<p>Students presentations</p>
<p>Session 6 (Week 28)</p>	<p>Revision and discussion</p>
<p>Session 7 (Week 29-32)</p>	<p>Final Exam</p>
<p>Attendance Expectations</p>	<p>Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until</p>


	class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Human Anatomy

1	Course name	Human Anatomy
2	Course Code	MT201
3	Course type: /general/specialty/optional	general
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology prog.
8	Instruction Language	English
9	Date of course approval	2022
	Brief Description:	This course will serve as an introduction to the systems of the human body. Necessary life functions and survival needs will be examined, followed by an orientation of the language of anatomy. Students will learn the terminology, anatomy of each body system. Thorough analyses of tissue types, the integumentary system, skeletal tissue and the human skeleton, joints, muscle tissue and the muscular system, the fundamentals of nervous tissue, the nervous system, the study of blood, cardiovascular system including lymphatic system, immune system, respiratory system, digestive system, urinary system and male and female reproductive systems. Emphasis is placed on the integration of systems as they relate to normal health.
	Textbooks required for this Course:	<ul style="list-style-type: none"> Essentials of Human Anatomy & Physiology by Elaine Marieb 10th Edition or later (recommended).

	<ul style="list-style-type: none"> • Human Anatomy & Physiology, Books a la Carte Edition 10th Edition by Elaine N. Marieb (Author), Katja N. Hoehn. • Introduction to the Human Body, 10th Edition • Gerard J. Tortora, Bryan H. Derrickson ISBN: 978-1-118-88413-3, 2014. • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives: 	<p>Upon completion of this course, the student will have reliably demonstrated the ability:</p> <ul style="list-style-type: none"> • Define the anatomic terms used to refer to the body in terms of directions and geometric planes and describe the structure and function of various human organs and systems; • Describe the major cavities of the body and the organs they contain. • Explain what a cell is? and explain how human organs and systems interact. • Describe the major functions of the four types of human tissue. • List the major systems of the body, the organs they contain and the functions of those systems. • Define the terms anatomy and physiology. • Define homeostasis. • Describe the relationship between and processes related to nutrition and metabolism; and recognize the stages of growth and development
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	<ul style="list-style-type: none"> • Introduction to Anatomy • Levels of organization • Body regions, planes, and orientations and body cavities
Session 2 (Week 3-4)	<ul style="list-style-type: none"> • Skeletal system • Bone structure and types, cartilage, ligaments, tendons, and joints • Axial and appendicular skeletons • Scientific terminologies of the main body bones
Session 3 (Week 5-6)	<ul style="list-style-type: none"> • Muscular system • Types of muscles, Differences and their microscopic structure • Skeletal muscle structure and neuromuscular junction • Scientific terminologies of the main body Muscles
Session 4 (Week 7-9)	<ul style="list-style-type: none"> • Cardiovascular (Circulatory) system • Components of cardiovascular system and types of circulations • The heart, arteries, veins, capillaries, and lymphatic vessels • The blood components (plasma and blood cells) • Scientific terminologies of the main cardiovascular components
Session 5 (Week 10-11)	<ul style="list-style-type: none"> • Respiratory system

	<ul style="list-style-type: none"> • Upper respiratory system (nose, pharynx, larynx, and trachea) • Lower respiratory system (Lungs, thoracic cage, and pleura) • Bronchi, bronchioles, alveoli and respiratory membrane • Respiratory muscles and lung volumes and capacities • Scientific terminologies of the main respiratory system parts
Session 6 (Week 12-14) 	<ul style="list-style-type: none"> • Digestive system • Upper digestive system (mouth, pharynx, and esophagus) • Lower digestive system (stomach, small intestine, and large intestine) • Structure of digestive system walls • Accessory parts of the digestive system (salivary gland, teeth, pancreas, liver, and gall bladder) • Scientific terminologies of the main Digestive system parts
Session 7 (Week 15)	Midterm Exam
Session 8 (Week 16-17)	<ul style="list-style-type: none"> • Integumentary system • Skin structure and types • Skin layers and skin color • Receptors and glands • Skin burns and disorders • Scientific terminologies of the main skin structures
Session 9 (Week 18-19)	<ul style="list-style-type: none"> • Urinary system • The main parts of the urinary system • Kidney structure • Nephron and Glomerulus • Types of blood vessels in the kidney • Uterus, bladder and urethra • Scientific terminologies of the main urinary system parts
Session 10 (Week 20-22)	<ul style="list-style-type: none"> • Endocrine system • Endocrine glands names and locations • Structure, location, and hormones of hypothalamus and pituitary gland • Structure, location, and hormones of thyroid and parathyroid glands • Structure, location, and hormones of pineal and thymus glands • Structure, location, and hormones of pancreas and adrenal glands • Structure, location, and hormones of the ovaries and testicles gland • Structure, location, and hormones of other glandular structures • Scientific terminologies of the main endocrine glands
Session 11 (Week 23-24)	<ul style="list-style-type: none"> • Reproductive system • Reproductive systems of male and female • Structure and hormones of the ovaries and testes • Production of the sperms and ova • Scientific terminologies of the main parts of reproductive system parts
Session 12 (Week 25-26)	<ul style="list-style-type: none"> • Central Nervous system • brain, spinal cord, & peripheral nerves • Neurons (types and structure) • Neurotransmitters and synapses • Scientific terminologies of the main parts of the central nervous system parts

Session 13 (Week 27-28)	<ul style="list-style-type: none"> • Autonomic Nervous system • Sympathetic and parasympathetic autonomic nervous system • Preganglionic and postganglionic neurons • Neurotransmitters in the sympathetic and parasympathetic autonomic nervous system • Scientific terminologies of the main parts of the autonomic nervous system parts
Session 14 (Week 29)	Revision and discussion
Session 15 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Biochemistry

1	Course name	Biochemistry
2	Course Code	MT202
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Chemistry
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course explores the basic principles of biochemistry and develops the student's appreciation and understanding of biological networks. including proteins, enzymes, carbohydrates, lipids and nucleic acids in relationship to biological and metabolic processes.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Lippincott's Illustrated Reviews: Biochemistry. ISBN-13: 978-1496344496 ISBN-10: 1496344499. • Harper's Illustrated Biochemistry. ISBN-13: 978-1259837937. ISBN-10: 1259837939. • Leininger Principles of Biochemistry. ISBN-13: 978-1429234146. ISBN-10: 1429234148. • Textbook of Medical Biochemistry. ISBN-13: 978-9350254844. ISBN-10: 9350254840. • Clinical Chemistry Techniques, Principles, Correlations. ISBN-13: 978-1496335586. ISBN-10: 9781496335586. • Additional textbooks and web links may be used in this course at the discretion of the instructor. • http://www.kume.edu/biochemistry/resource.html
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • The chemical nature of carbohydrate, lipid, protein, nucleotide and vitamin biomolecules; and the principles of bioenergetics and enzyme catalysis. • The metabolism and the metabolic control of dietary and endogenous carbohydrate, lipid, protein and nucleotides; and how the DNA in a genome is organized, replicated, and repaired and how the genetic information in the DNA is selectively expressed as functional proteins and RNA and how this expression is regulated. • The tools used in biochemistry, and their potential applications to medical technology science.






- The commonly used measurements in clinical biochemistry and how these measurements can contribute to assessment of the health status of individuals.
- Use correct terminology to discuss the chemistry, cell structure, and tissues of the human body.
- Identify and explain the structure and functions of each body system.

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction and definition of biochemistry
Session 2 (Week 2)	Biochemistry of the cell
Session 3 (Week 3&4)	• Body fluids of the cell
Session 4 (Week 5 & 6)	• biochemistry of the cell
Session 5(Week 7,8)	• Chemistry of Carbohydrate
Session6(Week 9)	• Nucleotide
Session 7(Week 10)	• Nucleic acid
Session 8(Week 11)	• Chemistry of Lipids
Session9(Week 12)	Midterm Exam
Session10(Week 13)	• Chemistry of Lipids
Session11(Week 14 & 15)	Midterm practical exam
Session12(Week 16)	• Enzymes
Session13(Week 17)	• Porphyrins
Session14(Week 18 & 19)	Hemoglobin
Session15(Week 20)	• Vitamins
Session16(Week 21)	Revision of lecture
Session17(Week22 & 23)	• Carbohydrate Metabolism
Session18(Week 24 & 25)	• Lipid metabolism
Session19(Week 26,27)	• Protein Chemistry and Metabolism
Session20(Week 28)	Revision of lecture
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

General Microbiology

1	Course name	General Microbiology
2	Course Code	MT203
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>The course enables students to know:</p> <ul style="list-style-type: none"> * The microorganism and definition of all branch of microbiology * The classification of Microorganisms and different between prokaryotic and eukaryotic cells. * Methods and types sterilization and disinfectant. * Culturing and cultivation of Microorganisms and basic way of their identifications
Textbooks required for this Course:		<ul style="list-style-type: none"> • Text book of microbiology First Published in 2010 by Prem C. Bakliwal for Aavishkar Publishers ISBN 978-81-7910-306-7. • https://rlmc.edu.pk/themes/images/gallery/library/books/Microbiology/Text Book of Microbiology.pdf • https://open.umn.edu/opentextbooks/textbooks/873 • https://www.britannica.com/science/microbiology • https://bio.libretexts.org/Bookshelves/Microbiology/Book%3AMicrobiology_(Boundless)/1%3A_Introduction_to_Microbiology • https://faculty.ksu.edu.sa/sites/default/files/140_mbio-final_notes.pdf • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
		
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:		<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Demonstrate an understanding of the structural similarities and differences among microbes and the unique structure/function relationships of prokaryotic cells. • Comprehend the fundamentals of molecular microbiology. • Appreciate the diversity of microorganisms and microbial communities and recognize how microorganisms solve the fundamental problems their environments present.



	<ul style="list-style-type: none"> Recognize how the underlying principles of epidemiology of disease and pathogenicity of specific microbes affect human health. Understand Microbial Cell Structure, Function and metabolism.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	• Introduction, of microbiology
Session 2 (Week 2)	History of Microbiology
Session 2 (Week 3)	Defining Microbes and Basic concepts and scope of microbiology
Session 3 (Week 4)	Pasteur and spontaneous Generation
Session 4 (Week 5 & 6)	Types of microorganisms
Session 5(Week 7,8)	Classification of microorganisms
Session6(Week 9)	Immunization, antiseptics and antibiotics
Session 7(Week 10)	Microscopy
Session 8(Week 11)	Bacteria : 1-Naming, Shape and arrangement, Classification, Size
Session9(Week 12)	Bacterial structure& composition
Session10(Week 13)	Bacterial Genetics
Session11(Week 14 & 15)	Microbial Growth (growth and metabolism of Bacteria): Requirement of Microbial Growth: physical and chemical requirements. Culture media
Session12(Week 16)	Midterm exam
Session13(Week 17)	Isolation and culturing of Bacteria
Session14(Week 18 & 19)	Microbial metabolism
Session15(Week 20)	Classification of bacteria
Session16(Week 21)	Dyes and staining (gram stain, acid fast staining, and other staining methods).
Session17(Week22 & 23)	Fungi: 1. what is mycology? 2. Classification and structure 3. Moulds, yeasts and dimorphic fungus. Fungal diseases Algae: 4. Characteristics, structure and division of algae
Session18(Week 24 & 25,26)	Viruses 1. Definition, Characteristics, symmetry and structure of viruses, 2. Classification and growth of Viruses. 3. Detection, multiplication of Viruses. 4. Laboratory methods used for viral detection
Session19(Week 27,28)	Parasites 1. Definition, Characteristics and structure of parasites, 2. Summary of Parasitic Classification (Protozoa and Helminths). 3. Detection, multiplication of Protozoa and Helminths. 4. Laboratory methods used for viral detection
Session21 (Week 29)	Final practical Exam
Session22 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.

	Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Histology

1	Course name	Histology
2	Course Code	MT204
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Medical Laboratories Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of Histology and Know the different types of tissues of the body Recognize the function performed by each tissue Learn about common terms and definitions used in histology
Textbooks required for this Course:	<ul style="list-style-type: none"> • DiFiore's atlas of histology with functional correlations. Junqueira's Basic Histology. • Histology: An Essential Textbook by D. J. Lowrie Jr 2020 • Junqueira's Basic Histology: Text and Atlas, Sixteenth Edition by Anthony L. Mesche 2021 • Textbook of Histology by Leslie P. Gartner PhD 2021 • Histology: A Text and Atlas 7th edition : With Correlated Cell and Molecular Biology by Ross, Michael H., M.D. Pawlina, Wojciech 2015 • Wheater's Functional Histology: A Text and Colour Atlas 3rd edition by William K. Ovalle Ph.D., Patrick C. Nahirney PhD 2020 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based. Group interaction and discussion.



	self-directed activities. active participation. Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Acquire a basic background in histology and comparative histology in different and to understand the properties of cells and their interactions with one another as components of tissues and organs. • Understand how structure and function correlate at the microscopic level and be able to describe the normal structure and function of various cell types, tissues, and organs, and to differentiate their histological structures from each other through examination. • Understand the changes that occur to tissues • Identify the different types of tissues • Recognize the types of tissues and the mechanisms of identifying them • understand the various diagnostic tools and medical equipment in the correct way to discover histological changes • Understand how to distinguish tissue and how it develops • deduce the causes of the changes that have occurred within the tissues
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p> <p>A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to histology histology and its mode of study
Session 2 (Week 2)	The cell
Session 3 (Week 3)	Epithelial Tissue
Session 4 (Week 4)	Connective tissue
Session 5 (Week 5)	Cartilage
Session 6 (Week 6)	Bone
Session 7 (Week 7)	Bone.
Session 8 (Week 8)	Muscle Tissue
Session 9 (Week 9)	Nerve Tissue
Session 10 (Week 10)	Nervous System
Session 11 (Week 11)	The Immune System &
Session 12 (Week 12)	Lymphoid Organs
Session 13 (Week 13)	Blood and Hemopoiesis
Session 14 (Week 14)	Endocrine System
Session 15 (Week 15)	Hormones
Session 16 (Week 16)	The integumentary system
Session 17 (Week 17)	The Circulatory system
Session 18 (Week 18)	The Circulatory system
Session 19 (Week 19)	The Circulatory system
Session 20 (Week 20)	• Respiratory system
Session 21 (Week 21)	Respiratory system
Session 22 (Week 22)	Respiratory system
Session 23 (Week 23)	Digestive system

Session 24 (Week 24)	The urinary system
Session 25 (Week 25)	The urinary system
Session26(Week26- 27)	Reproductive system
Session 28 (Week 28)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The student should be able to work in a team Ability to perform tasks in accordance with ethical and professional principles. The student should be able to write a report on the histological conditions. The student should be able to think critically to solve problems and make decisions.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Physiology

1	Course name	Physiology
2	Course Code	MT205
3	Course type: /general/specialty/optional	General
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	non
7	Program offered the course	Bachelor in Medical Technology Specializing in Medical Laboratories
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	Physiology is studying of biological function. medical physiology course will study human function at the level of whole organisms, tissues, cells and molecules (Study of human body function). Physiology is fundamental to medicine and studying function in both health and disease. (Content : Introduction, Autonomic nervous system, Blood, Nerve& muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)
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Textbooks required for this Course:	<ul style="list-style-type: none"> • Textbook of medical physiology / Arthur C. Guyton, John E. Hall.—11th ed.ISBN 0-7216-0240-1 • Principles of anatomy and physiology/ArthurGerard J., Bryan D. – 12th ed.ISBN 978-0-470-08471-7 • Human physiology / ArthurMAGDI SABRY, MD -5thed. JSBN 977. 203- 256-2 • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor Microbiology text book can be used,
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Course Duration	4 * 28 = 112 teaching hours
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Delivery	Interactive Lecturer introduces of common clinical conditions and explains the underlying phenomena through questions, pictures and videos and students are actively involved in the learning process, and Students' take responsibilities of their own learning through selfstudy, sharing and discussing with peers, search information from Learning Resource Center of teachers and resource persons within and outside the college. Students can utilize the time within Laboratory hours.
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Course Objectives:	<p>The primary objective of the course is to ensure that students understand how the body works and after completing this course student should be able to:</p> <ul style="list-style-type: none"> • Have sufficient basic knowledge in medical physiology. • Define homeostasis and explain how homeostatic mechanisms normally maintain a constant interior milieu. • State the functions of each organ system of the body, explain the mechanisms by which each functions, and
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	<p>relate the functions and the anatomy and histology of each organ system.</p> <ul style="list-style-type: none"> • Understand and demonstrate the interrelations of the organ systems to each other. • Predict and explain the integrated responses of the organ systems of the body to physiological and pathological stresses. • Explain the pathophysiology of common diseases related to the organ systems of the body • The ability to understand, recognize different medical term and identify the normal function and diseases of human organ body. • Ability to use basic laboratory devices related to the subject and have the ability of measuring and evaluating vital variables (blood pressure, pulse, ECG, nerve conduction velocity, basic pulmonary function tests) of the normal functions of the body in the laboratory.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1) 	<p>Introduction, Autonomic nervous system, Blood, Nerve & muscle, Cardiovascular system, Respiratory system, Gastrointestinal tract, Renal system, Central Nervous system, Special senses, Reproductive system and Endocrine)</p> <ul style="list-style-type: none"> • Inform students how student learning program of the year-wise has been organized • Help students organize and manage their studies throughout the year • Inform students how student learning program of the year-wise has been organized • Help students organize and manage their studies throughout the year • Guide students on assessment methods, rules and regulations • Introduction (Total body water , cell membrane and cell transport)
Session 2 (Week 2)	<p>Autonomic Nervous System</p> <ul style="list-style-type: none"> • Types Autonomic Nervous System • Chemical neurotransmitters • Function of sympathetic & Parasympathetic <p>Assignment 2 handed out</p>
Session 3 (Week 3)	<p>The blood:</p> <ul style="list-style-type: none"> • Major components and function of the blood • Red & white blood cells • Plasma protein and function
Session 4 (Week 4)	<ul style="list-style-type: none"> • Blood groups & hemostasis <p>Blood clotting disorders</p>
Session 5 (Week 5)	<p>Nerve & Muscle</p> <ul style="list-style-type: none"> • Structure of nerve cell • Properties of neuron • Resting membrane potential
Session 6 (Week 6)	Nerve & Muscle



	<ul style="list-style-type: none"> • Action potential •Excitation- contraction coupling • Mechanism of muscle contraction & relaxation
Session7(Week 7)	Cardiovascular system <ul style="list-style-type: none"> • Anatomy of the heart • Functional properties of cardiac muscle •Action potential & Conducting System
Session 8(Week 8)	<ul style="list-style-type: none"> •Cardiac Cycle & Heart sound •Electrocardiograph
Session 9(Week 9)	<ul style="list-style-type: none"> • Blood pressure •Cardio dynamic •Arrhythmia & circulatory Shock
Session10(Week 10)	<ul style="list-style-type: none"> •Arrhythmia •circulatory Shock
Session11(Week 11)	Respiratory System <ul style="list-style-type: none"> • Structure of the respiratory system • Lung volume & Capacities
Session12(Week 12)	<ul style="list-style-type: none"> •Oxygen & Carbon Dioxide in blood •Dissociation oxygen curve shift
Session13(Week 13)	<ul style="list-style-type: none"> •Transport carbon dioxide •Regulation of respiratory • Hypoxia
Session14(Week 14)	Nervous System <ul style="list-style-type: none"> •Division of the nervous system •Units of Nervous system •Types of Receptors
Session15(Week 15)	Mid exam
Session15(Week 16)	Nervous System: <ul style="list-style-type: none"> •Properties of receptors, Synapse,Types of synapse, Mechanism of neurotransmitter
Session16(Week 17)	<ul style="list-style-type: none"> •Somatic sensation •TypesSomatic sensation <ul style="list-style-type: none"> • Pain sensation •Pathways
Session17(Week 18)	<ul style="list-style-type: none"> •Referred Pain •Pain Control System
Session18(Week19)	Special senses <ul style="list-style-type: none"> •Vision •Hearing
Session19(Week 20)	<ul style="list-style-type: none"> •Special senses •Gustation •Olfaction
Session20(Week 21)	Gastrointestinal tract <ul style="list-style-type: none"> •characteristics of gastrointestinal wall •Explain functional types of movements in GIT •Control of GIT
Session21(Week 22)	<ul style="list-style-type: none"> •GIT hormones and their role in digestive process •Describe GIT reflexes •Mastication and salivary secretions
Session22 (Week 23)	<ul style="list-style-type: none"> •Describe motor functions of stomach •Explain regulation of stomach emptying &the composition, function and •regulation of gastric secretions •Vomiting reflex


Session23 (Week 24)	<ul style="list-style-type: none"> •Gall bladder and biliary tract •intestinal motility •Defecation reflex
Session25 (Week 25,26)	Urinary system <ul style="list-style-type: none"> •The kidney •Urine formation •Micturition •Renal failure •Male reproductive •Female reproductive
Session26 (Week 27,28)	Endocrine System Pituitary gland Thyroid gland Parathyroid Adrenal gland Endocrine cell in other organs
Session27 (Week 29)	Final Exam
Attendance Expectations	Students must attend each of lecture, arriving on time, . Absences are permitted only for medical reasons and must be supported with a doctor's note. Because college bylaw do not allow student to absences for more than 25%
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses. Numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised..



Medical Psychology & Teaching Methodology


1	Course name	Medical psychology& Teaching Methodology
2	Course Code	MT206
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022


Brief Description:	<p>Fisrt part of this course will provide students with a fundamental understanding of medical Psychology, a subfield of behavioral medicine, is the study of psychological factors important in the promotion and maintenance of health and the psychological factors contributing to illness and disease. It is designed to apply a scientific and research perspective to the study of health promoting and health damaging behaviors. Modification of health-related behaviors will be explored.</p> <p>Second part of the course will cover different teaching methods and techniques.</p>
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<p>Textbooks required for this Course:</p> 	<ul style="list-style-type: none"> • Textbook of Medical Psychology Hardcover – January 1, 1961 • https://bookauthority.org/books/best-medical-psychology-books • https://www.elsevier.com/books/medical-psychology/prokop/978-0-12-565960-4 • Anthony, Michael J. Introducing Christian Education: Foundations for the Twenty-first Century. Baker Academic, 2001. • Armstrong, Thomas. Multiple Intelligences in the Classroom: 2nd Edition. Association for Supervision and Curriculum Development, 2000. • Dawn, Marva J. Is It A Lost Cause? Having the Heart of God for the Church's Children. William B Eerdmans Publishing Company, 1997. • Unfettered Hope: A Call to Faithful Living in an Affluent Society. Westminster John Knox Press, 2003. • Durka, Gloria. The Teachers Calling: A Spirituality for Those Who Teach. Paulist Press, 2002. • Church Educational Ministries: More than Sunday School. Evangelical Training Association, 1985.
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	<ul style="list-style-type: none"> Teaching Techniques for Church Education. Evangelical Training Association, 1983. Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Up on completion of this course students will be able to:</p> <ul style="list-style-type: none"> Understand the principle domains of psychology that are most relevant to medicine. Know the key areas of psychology that would provide the basis for viewing people not only as biological but also as psychological beings. Be familiar with the application of psychology in the wider practice of medicine. understand the interaction between psychological and medical principles in the development, assessment and diagnosis and in the treatment of medical illnesses. Will be able to define and list the fruits of the spirit. The student will be able to explain why the fruit of the spirit are important to believers. The student will be able to assess which fruits are most and least evident in their own lives. The student will develop a plan to practice more of the fruit of the spirit for the next week Understand the basics of the teaching methods Know different techniques of teaching and questions preparations.
Course Assessments	<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	An introduction to Medical psychology
Session 2 (Week 2)	<p>Psychology and Medicine</p> <ul style="list-style-type: none"> Explain what the field of Psychology studies. Describe the different areas of Psychology. Describe the way by which Psychology is linked to Medicine.
Session 3 (Week3-4)	<p>Brain Mechanisms and Behaviour</p> <ul style="list-style-type: none"> Describe the basics of Neural Communication. Explain the Basic Structure and function of the Nervous system. Outline the link between biology and behavior.
Session 4 (Week 5)	<p>Senses and Integration on Senses</p> <ul style="list-style-type: none"> Describe the role and the importance of the different types of senses. Outline the main functional theories of vision. Outline the main functional theories of audition. Outline the main theories of somatosensation. Outline the main theories of the functions of smell



Session5 (Week 6)	<ul style="list-style-type: none"> • Perception, attention and Memory • Outline the role of the different types of perception. • Describe the main theories of visual perception. • Describe the main theories of auditory perception. • Outline the main types of attention. • Describe the main theories of attention. • Outline the main types of memory. • Describe the main theories of memory
Session 6 (Week 7)	<p>Child Development (from birth to adolescence)</p> <ul style="list-style-type: none"> • Describe the different stages of development from birth to adolescence. • Outline the main theories of child development. • Outline the main theories of early stages of language acquisition. • Describe the main theories of language development. • Outline the theories connecting language and cognition. • Language and the brain.
Session 7(Week 8)	<p>Language, Motivation and Emotions</p> <p>Individual Differences in Intelligence and Personality</p> <ul style="list-style-type: none"> • Outline the area of Motivation. • Outline the way by which motivation is link with emotion. • Outline the main theories of Emotions. • Describe the biological theories of emotions. • Describe the psychological theories of emotions. • Outline the role of individual differences as observed in everyday activities and as measured by psychometric tools. • Outline the main Psychometric tools and their role in diagnosis. • Outline the main Personality tests and their value in clinical assessment.
Session 8 (Week 9)	<p>Adulthood and Sexual Behaviour</p> <ul style="list-style-type: none"> • Describe the characteristics of Adulthood. • Outline the interconnection between psychological and biological characteristics of this stage of human development. • Distinguish between Psychoanalytic and Psychological views on sexuality. • Describe the role of sex in human relationships • Describe the psychological factors contributing to our better understanding of sexual behaviour between sexes.
Session 9 (Week 10) 	<ul style="list-style-type: none"> • Sleep, Consciousness, Family Aging, Death and Bereavement • Explain the different stages of sleep as described by EEG studies <p>Outline the three theories of sleep.</p> <ul style="list-style-type: none"> • Explain the usefulness of sleep with reference to research studies on total and on selective sleep deprivation. • Describe the role of the family from a developmental perspective and its contributory role in the development of individuals as social and biological beings.

	<ul style="list-style-type: none"> • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family. • Describe the conclusion of the human life cycle and the way by which psychology and biology are interconnected. • Outline the impact of death on both the dying person and the family.
Session 10 (Week 11)	<p>Psychology and Medicine: Patients and Doctors</p> <ul style="list-style-type: none"> • Outline the role played by psychological factors such as emotions and stress in the development of illnesses and/or dysfunctions. • Outline the Biomedical and the Biopsychosocial Approaches to Medicine. • Identify the advantages and disadvantages of each approach in the development of modern medicine. • Outline the impact of psychological principles in doctor patient contact and communication.
Session 11 (Week 12)	<p>Psychosomatic Problems, Psychosocial Aspects of Hospitalization and Psychosocial Approaches Treatment</p> <ul style="list-style-type: none"> • Describe the different factors contributing to the impact that hospitalisation has on people. • Describe the potential psychological impact that hospitalisation may have on people. • Outline the role of psychosocial approaches in medical practice. • Outline the role of placebo effect in the treatment of both physical and psychological treatments. • Describe the role of psychological principles and psychoeducation in facilitating problem solving and diagnosis. • Outline the way by which psychological factors contribute to the development of somatic problems. • Describe different types of psychosomatic problems. • Outline possible ways of distinguishing between psychosomatic and physical problems.
Session 12 (Week 13) 	<p>Coping with illness and Disability, Psychopathology and Mental illness and Rehabilitation</p> <ul style="list-style-type: none"> • Outline the psychological factors contributing to coping with illness and disability. • Describe the different approaches and techniques employed for coping with these difficulties. • Outline the different areas of Psychopathology. • Outline the methods employed in the diagnosis of psychological and psychiatric disorders. • Outline the treatments often used in the treatment of psychiatric and psychological disorders. • Explain what is meant by chronic mental illness and the process of rehabilitation.
Session 14 (Week 14)	Midterm Exam

Session 16 (Week 16)	<ul style="list-style-type: none"> • Teaching Principles
Session 17 (Week 17)	<ul style="list-style-type: none"> • Student Centered vs. Teacher Centered Learning
Session 18 (Week 18)	<ul style="list-style-type: none"> • Learning Styles
Session 19 (Week 19)	<ul style="list-style-type: none"> • Creating a Lesson: Overview • Creating a Lesson: Goals • Creating a Lesson: Outcomes
Session 20 (Week 20)	<ul style="list-style-type: none"> • Creating a Lesson: Information Delivery
Session 21(Week 21-22)	<ul style="list-style-type: none"> • Teaching Methods
Session 22 (Week 23)	<ul style="list-style-type: none"> • Creating a Lesson: Activities
Session 23 (Week 24)	<ul style="list-style-type: none"> • Creating a Lesson: Measurement
Session 24 (Week 25)	<ul style="list-style-type: none"> • Creating a Lesson: Evaluation
Session 25 (Week 26)	<ul style="list-style-type: none"> • The Teacher's Responsibilities
Session26(Week27-28)	<ul style="list-style-type: none"> • Presentations
Session27(Week29)	Revision and discussion
Session28(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Professional Ethics

1	Course name	Professional Ethics
2	Course Code	MT207
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		The content is designed to enable the student to be aware of the basic rules of medical ethics. The student will become familiar with the definitions and ethical behavior that is required by the healthcare professional.
Textbooks required for this Course:		<ul style="list-style-type: none"> • القيم الخلقية وتطبيقاتها العملية، د. عبد الباسط الأمير • مقدمة في زراعه الاعضاء، د. الهادي عصمان • WMA medical ethics manual 2015 • Principles of Biomedical Ethics, 5th edn. • https://www.elsevier.com/books/medical-ethics-and-law/wilkinson/978-0-7020-7596-4
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lectures, Problem based learning and Class discussion.
Course Objectives:		<p>This course introduces medical technology students to the field of medical ethics. The objective of the course is:</p> <ul style="list-style-type: none"> • To convey to students, the pivotal role ethics holds in medical practice. • It introduces the key underlying ethical principles required in medicine. • The application of these principles will be brought to life through case based learning (CBL). • Recognize ethical issues when they arise in their practice • Deal with these issues in a systematic manner • Understand the ethics of medical research • To create an awareness on medical Ethics and Human Values. • To instill Moral and Social Values and Loyalty • To appreciate the rights of others.
Course Assessments		<p>Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 %</p>




	A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction and history of medical ethics
Session 2 (Week 2)	Principles of medical ethics
Session 3 (Week 3-5)	Physicians and patients, Physicians and society Physicians and colleagues
Session 4 (Week 6 -7)	Ethics of medical research
Session5 (Week 8 - 9)	Informed consent
Session6 (Week 10 - 11)	Ethics of gynecology and obstetrics Ethics of infertility
Session 7 (Week 12 -13)	Ethics of healthcare system
Session 8(Week 14)	Professionalism
Session 10(Week 15)	Review and general discussion
Session 11(Week 16)	Med term exam
Session 12(Week17-18)	Medical errors
Session13(Week 19-20)	Libya law of medical responsibility
Session 14 (Week 21-22)	Humanism in medicine and Ethics of end of life
Session 15 (Week 23)	Ethics of authorship and publication
Session 16 (Week 24-25)	Ethics of medical education
Session 17 (Week26-27)	Theories of ethics
Session18(Week28)	Revision and discussion
Session19(Week 29-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Health Management

1	Course name	Health management
2	Course Code	MT208
3	Course type: /general/specialty/optional	General
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		<p>Health Care Management provides a framework for addressing management problems in health care organizations. By the end of the course you will have been exposed to many management ideas, theories and applications, students will be able to:</p> <p>Know the process of communication and its nature, and get to know the environment surrounding the hospital. Identify the forms and types of management, Getting to know the correct and nursing information collection system</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> Principles of Hospital Administration and Planning (First Edition: 1998, Second Edition: 2009 ISBN 978-81-8448-632-2). Buchbinder, S.B., & Shanks, N.H. (2012). Introduction to Health Care Management Jones & Bartlett, Publishers, 2nd Edition. Essential Textbook of Health Management 2. July 2019: Publisher: Samiksha Publication ISBN: 978-9937710-55-8. Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		One academic year
Delivery		A Lecture-based ppt and practical training B Group interaction and discussion
Course Objectives:		<p>Up on completion of the course the students will be able to:</p> <ul style="list-style-type: none"> Learn concepts and theories in health care management; Develop skills in using materials tools and/or technology central to health care mgt; Learn to understand perspectives and values of health care management; Develop the basic management skills and ability to work productively with others;

	<ul style="list-style-type: none"> • Learn to select, use, and critically analyze current HCMN research and literature; • Integrate health care management theory with real world situations • Develop the ability to work productively with others in diverse teams. • To have reliably demonstrated the ability to make decisions on sound grounds, and can understand the concept of the hospital, can arrange health services, structure the health facilities and develop administrative skills.
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown Topical Coverage	Content Breakdown Topical Coverage
Session 1 (Week 1)	An Introduction to the Health management
Session 2 (Week 2)	The historical role of medical and nursing health services
Session 3 (Week 3)	Hospital Operation Management Epidemiological basis for healthcare management. Management development-towards development of professional management of the Health system>
Session 6(Week 6)	Hospital concept and classification hospital environment
Session 7 (Week 7)	Hospital health planning
Session 8 (Week 8)	The organizational structure of the hospital
Session 9(Week 9)	Hospital Operational Management Management of Quality Assured services of professional service units of hospitals. Quality control mechanisms.
Session 10(Week 10)	Outpatient & In Patient Services in the Following Fields (Basic knowledge only): Radiotherapy, Nuclear medicine, surgical units, and OT Medical units, G & Obs. units & LR. Pediatric, neonatal units, Critical care units, Rehabilitation. Skin, Eye, ENT, Neurology, Dental, Gastroenterology, Endoscopy, Pulmonology, Cardiology, Cath lab, Nephrology & Dialysis, Urology, Orthopedics, Transplant units, Burn Unit
Session 11(Week 11)	Medical Record Science Definition and types of medical record, Importance of medical record, Flow chart of function, Statutory requirements of maintenance, coding, indexing and filing, Computerization of record, Report and returns by the record department, Statistical information and ICD
Session 12(Week 12)	Leadership and management An overview of healthcare management and leadership
Session 13(Week 13)	Management and motivation
Session 14(Week 14)	Midterm Exam
Session 15(Week 15)	Organizational Behavior (OB) and Management Thinking
Session 16(Week 16)	Quality Improvement
Session 17(Week 17)	Health care information Technology Health and Nursing Information Collection System
Session 18(Week 18)	Healthcare Financing, Cost and revenue management

Session 19(Week 19-20)	Health Care Professionals Management Health personnel management The Strategic Management of Human Resources
Session 20(Week 21)	Addressing Health Disparities: Cultural Proficiency, Ethics and Law.
Session 21(Week22)	Fraud and abuse
Session 22(Week 23)	Communication, health administration
Session 23(Week 24)	Administrative Support in Healthcare Organizations
Session 24(Week 25)	Clinical Care in Healthcare Organizations
Session 25(Week 27)	Medical Laboratories Management
Session 26(Week 28)	Revision and discussion
Session 27(Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



ب. المقررات الدراسية للسنة الثالثة قسم تقنية التغذية



Food Analysis

1	Course name	Food Analysis
2	Course Code	NT301
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Food chemistry
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with this course student will undertake and compare various food analysis techniques, followed by analysis, interpretation and presentation of the results. Upon completion of this course, students will have the knowledge and skills to apply and assess the principles and practices required for the analysis of foods.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Food Analysis Laboratory Manual by S. Suzanne Nielsen second edition, 2010, DOI https://doi.org/10.1007/978-1-4419-1463-7 • Methods in Food Analysis Edited By Rui M. S. da Cruz, Igor Khmelinskii, Margarida Vieira 1st edition 2014 • Chemical Analysis of Food Techniques and Applications by Yolanda Pico 2nd Edition - June 16, 2020 • Food analysis – textbook 5th edition by Reinhard Matissek, Gabriele Steiner, Markus Fischer 2014 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture, group interaction and discussion, self-directed actives.
Course Objectives:		Upon completion of this course, the student will have reliably demonstrated the ability to:



- Apply valid sampling techniques to food materials having widely diverse properties and volumes;
- Select appropriate analytical techniques for specific food components;
- Compare advanced and conventional techniques and instruments to analyses chemical and physical properties of foods;
- Apply a range of chemical analyses of food components;
- Analyze, interpret and report on results obtained in a scientific format.

Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1-2 (Week 1-2)	Safety and security in the food analysis laboratory
Session 3-5 (Week 3-5)	The importance of standard specifications (local and international)
Session 6 (Week 6)	Introduction to food analysis
Session 7 (Week 7)	Sampling, Population.....ect
Session 8-12 (Week 8-12)	Physical methods of food analysis
Session 13(Week 13)	Midterm Exam
Session 14 (Week 14-20)	Analysis of food moisture, ash, total carbohydrates, fat and proteins.
Session 15 (Week 21-23)	Analysis of vitamins
Session 16 (Week 24-26)	Natural, chemical and organoleptic properties of honey
Session 17 (Week 27-28)	Analysis of minerals
Session 18 (Week 29)	Revision and discussion
Session 19 (Week 30-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates

	have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Nutrition Through Lifespan

1	Course name	Nutrition Through Lifespan
2	Course Code	NT302
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Biology
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will explore and provides students with understanding how nutrient needs vary during the lifespan, from nutrition during preconception, pregnancy and lactation, infant nutrition, childhood and adolescent nutrition.
Textbooks required for this Course:	<ul style="list-style-type: none"> • https://nutritionguide.pcrm.org/nutritionguide/view/Nutrition Guide for Clinicians/1342043/all/Nutritional Requirements throughout the Life Cycle • https://med.libretexts.org/Bookshelves/Nutrition/Book%3A A Nutrition Science and Everyday Application (Callahan Leonard and Powell)/11%3A A Nutrition Throughout the Lifespan • https://www.betterhealth.vic.gov.au/health/healthyliving/food-and-your-life-stages • Krause's Food & Nutrition Therapy 12th Edition by L. Kathleen Mahan MS RD CDE , Sylvia Escott-Stump MA RD LDN 2007



	<ul style="list-style-type: none"> • Nutrition Through the life cycle-7th-Edition by Judith E. Brown 2019 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture and discussion, self-directed activities, active participation.
Course Objectives:	<p>By the end of this chapter you will be able to:</p> <ul style="list-style-type: none"> • Understand the physiological change at different stages of life. • Identify food groups and nutrients. • Recognize effect of growth and development on nutritional need • Appreciation of the nutritional needs for each age group. • Understand the most important nutritional health problems. • Describe the physiological basis for nutrient requirements from pregnancy through the toddler years. • Describe the physiological basis for nutrient requirements for the elderly
Course Assessments	<p>Activities 10% Midterm exam 20% Attendances 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction
Session 2 (Week 2-3)	Elements of nutrients and human beings
Session 3 (Week 4-5)	Food groups.
Session 4 (Week 6-7)	Nutrients (macro. & micro).
Session 5 (Week 8)	Simple definition for each stage of life
Session 6 (Week 9-10)	pregnancy & physiological change
Session 7 (Week 11)	RDA for pregnant
Session 8 (Week 12-13)	Lactation and nutrients need
Session 9 (Week 14)	Weaning & recommendation
Session 10 (Week 15-16)	Nutritional recommendation for toddler
Session 11 (Week 17)	Midterm Exam



Session 12 (Week 18)	Eating disorders during toddlers
Session 13 (Week 19-20)	The major growth & development during childhood
Session 14 (Week 21-22)	RDA for preschool age & school age group
Session 15 (Week 23-24)	The physiological ,emotional & nutritional change during puberty
Session 16 (Week 25-26)	Stages of adolescent & RDI
Session 17 (Week 27)	Pregnant adolescent & nutritional needs
Session 18 (Week 28)	Nutritional need during adults & nutritional problems Old age (hormonal change & eating disorders)
Session 20 (Week 29)	Revision and discussion
Session 21 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed.
Generic Skills	Interpersonal communications and critical thinking skills will be embedded in all courses.
Course Change	Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs.



Nutritional Epidemics and Toxicology

1	Course name	Nutritional Epidemics and Toxicology
2	Course Code	NT303
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		In this introductory course, students will learn and apply basic concepts of nutritional epidemiology and toxicology. The course will review methodological issues involved in the design, conduct, analysis

	and interpretation of studies investigating the relationship between diet and disease. In addition, this course aims at increasing students understanding of the possible toxic and non-toxic effects of food intake.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Willett WC, et al. Reproducibility and validity of a semi-quantitative food frequency questionnaire. Am J Epidemiol. 1985 Jul;122(1):51-65. http://aje.oxfordjournals.org.ezp-prod1.hul.harvard.edu/content/122/1/51.full.pdf+html • Textbook: Willett, Nutritional Epidemiology, 3rd edition .(Also available online: https://tinyurl.com/300-W19-HSPH-ID-214-1) • Nutritional Epidemiology by Walter Willett (3rd edition, Oxford University Press, 2013). Available at University Bookstore. • Intuitive Biostatistics by Harvey Motulsky (Oxford University Press, 1995) • Epidemiology. An Introduction. by Kenneth Rothman, (Oxford University Press, 2002) • Design Concepts in Nutritional Epidemiology by Barrie Margetts and Michale Nelson (2nd edition, Oxford University Press, 1997) • Nutritional health : Strategies for disease prevention, edited by Norman J. Temple, Ted Wilson, David R. Jacobs, (Humana Press, 2006) Principles of Nutritional Assessment, Second Edition by Rosalind S.Gibson (Oxford University Press, 2005) • Principles of Epidemiology A Self-Teaching Guide 1st Edition - January 1, 1982 ISBN: 9781483276342. • Willett W. Nutritional Epidemiology. Chapters 4 and 5: 24-hour Recall and Food Record Methods and Food Frequency Methods • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<ul style="list-style-type: none"> • Upon completion of this course, the student should have the ability to: • Understand where the disease is coming from, and who it is most likely to impact. Discover patterns and trends in health problems. • Predict the number of cases of a disease and its distribution in the population. • Explain the etiology of disease. • Study the course of a disease quantitatively from onset to outcome. • Assess preventive measures and treatment options.



	<ul style="list-style-type: none"> • Define basic scientific terminology and describe core concepts in toxicology as they apply to nutrition and the food supply. • Distinguish between different types of research study designs and explain some advantages and disadvantages of specific methodological approaches. • Identify and describe different sources of toxicity in the food supply and discuss their potential effects on health. • Critically evaluate findings from the scientific literature on a specific, potentially toxic substance found in the food supply.
Course Assessments	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Basic principles of epidemiology
Session 2 (Week 2-3)	Introduction to the study of nutritional epidemiology Role of this science in evaluating diet and disease relationships; overview of role of diet in disease causation.
Session 3 (Week 3)	Research designs: observational epidemiology and clinical trials
Session 4 (Week 4)	How strong is diet's influence on disease?: statistical tools used to describe and interpret epidemiologic data
Session 5 (Week 5)	Lifestyle and other confounding factors that may explain or alter relationships of diet to disease and how to control for them; physical activity and energy adjustment
Session 6 (Week 6)	Analytic strategies to evaluate genetic and other factors modifying diet and disease relationships: <ul style="list-style-type: none"> • resources for genetic data in epidemiological studies
Session 7 (Week 7-9)	Measurement of nutritional exposures <ul style="list-style-type: none"> • overview of techniques; overview of dietary exposures; assessing diet exposure with biological markers, assessing diet: introduction and variation in diet • Analysis of dietary data-daily and food frequency methods; nutrient composition and supplement databases • Discussion of diet assessment project: the estimation of and effects of measurement error; calibration and validation studies
Session 8 (Week 10)	Diet assessment results discussion



Session 9 (Week 11)	A broader look at nutrition- dietary patterns. tools to study them and to evaluate their relation to health and disease Examine major dietary patterns which reflect: adherence to us dietary guidelines, mediterranean diet patterns, dash diet patterns
Session 10 (Week 12)	Nutrition monitoring in the Libya
Session 11 (Week 13)	Interpreting the epidemiologic literature
Session 12 (Week 14)	Students presentations and discussion
Session 14(Week 15)	Midterm Exam
Session 16 (Week 16)	Introduction to Nutritional Toxicology
Session 17 (Week 17-18)	Natural Toxins and Toxicants
Session 18 (Week 19-20)	Toxicity tests and toxicogenomic in nutrition
Session 19 (Week 21)	Dietary Reference Intakes for Toxicity
Session 20 (Week 22)	Gut Microbiome and Toxicity
Session 21 (Week 23-24)	Excess of nutrients and toxicology
Session 22 (Week 25-26)	Gene-food toxicant interactions
Session 23 (Week 27)	Food Safety and regulations
Session 24 (Week 28)	Students presentations
Session 25 (Week 29)	Discussion and revision
Session 26(Week30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of




	changes to students as soon as possible. Timetable may also be revised.
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Management & Quality Control of Foods Services in Hospital

1	Course name	Management & Quality Control of Foods Services in Hospital
2	Course Code	NT304
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Principle of Food safety & Quality
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with Fundamentals of quality control and their application through physical, chemical, microbiological, statistical and sensory methods will be studied. Statistical process control (SPC) will be mainly covered; required background knowledge of statistics will be reviewed briefly.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Food Quality Assurance: Principles and Practices by Alli, I. 2004. • https://ncert.nic.in/textbook/pdf/lehe104.pdf • https://psu.pb.unizin.org/hmd329/chapter/ch1/ • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture, group interaction and discussion, self-directed actives.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Describe the background and current requirement for quality control and quality management systems. • Explain what has led to the current quality management systems <p>Outline the main requirements of a quality control system</p>



	<ul style="list-style-type: none"> • Recognize the requirements necessary to ensure safe, quality food. <p>Identify conditions for inactivation of important pathogens commonly found in foods</p> <ul style="list-style-type: none"> • Apply appropriate evaluation tools needed to produce a safe food. • Evaluate sanitary practices and environmental factors (i.e., Aw, pH, temperature) that control growth and response of microorganisms. • Describe techniques, including sensory evaluation, for determination of product quality. • Identify food quality specifications • Recognize the source and variability of raw food material and impact on food quality • Prioritize attributes/problems specification in raw and processed material based on production data • Illustrate how processing techniques can affect product quality. • Predict quality of selected products. • Ensure government regulations are reflected in the specifications provided • Apply appropriate sampling plans for a given attribute and product. • Use statistical methods to select appropriate sample plan • Develop sampling plan for a given data set • Construct and interpret an operating characteristics curve to effectively evaluate consumer and producer risks • Construct an operating characteristic curve based on statistical probabilities for a given data set. • Interpret the significance of a given point on the operating characteristic curve. • Compare different operating characteristic curves. • Create control charts for attributes, a vital segment of statistical process control (SPC), to record and report QC data.
<p>Course Assessments</p>	<p>Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their</p>

	textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome.
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	Introduction of food safety
Session 2 (Week 3-5)	Potentially hazardous foods
Session 3 (Week 6-8)	Employee Practices
Session 4(Week 9-11)	Food Flow And Food Protection
Session 5(Week 12-14)	Hazard Analysis Critical Control Points
Session 6 (Week 15)	Midterm Exam
Session 7(Week 16-18)	Equipment And Facilities
Session 8(Week 19-20)	Pest Control
Session9 (Week 21-23)	Mobile Food Service Units And Temporary Food Service Establishments
Session 10(Week 24-26)	Health Department Procedures, Policies, Permits, And Compliance
Session 11(Week 27-28)	Requests and Permits
Session 12 (Week 29)	Review and discussion
Session 13 (Week 30-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Therapeutic Nutrition I

1	Course name	Therapeutic Nutrition I
2	Course Code	NT305
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		Therapeutic nutrition or medical nutrition therapy explores the role played by therapeutic diets in the treatment of chronic disease and other nutritional disorders. The course introduces the principles of the nutrition care process and will give knowledge and experience in nutrition assessment techniques and intervention strategies as applied to chronic disease and other nutritional disorders, this course will focus on the care of clients with pathologies caused by or causing nutritional impairments. General topics include nutrient delivery via oral, enteral, and parenteral routes, and interactions among foods, nutrients, medications, and supplements
Textbooks required for this Course:		<ul style="list-style-type: none"> • A Comprehensive Textbook of Nutrition and Therapeutic Diets for BSc Nursing Students by Darshan Sohi 2nd e edition 2018 • Therapeutic Nutrition: A Guide To Patient Education by Eileen Behan 2005 • Normal and Therapeutic Nutrition 17th Edition by Corinne H. Robinson, Marilyn R. Lawler, Wanda L. Chenoweth, Ann E. Garwick 1990 • https://alraziuni.edu.ye/uploads/pdf/fundamentals-of-foodnutrition-and-diet-therapy.pdf • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours

Delivery	Lecture-based, Group interaction and discussion, active participation.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Understand the role of nutrition in the treating and preventing disease. • Familiarity with basic therapeutic nutrition. • Realizing the role of nutrition in treatment most of digestive diseases • Understand the role of nutrition in control liver disease • Acquired the necessary skills to treat malnutrition in the children. • Describe the methods used to adapt a normal diet to treat a specific clinical nutritional disorder. • Apply recent various methods and techniques in the field of therapeutic nutrition. • Lists methods for preparation of normal food to adjust various pathological conditions. • Recommend dietary adjustments leading to better health outcomes and improved quality of life.
Course Assessments	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	Clinical Nutrition and Dietetics
Session 3 (Week 3-4)	Diet, Nutrient and Drug Interaction
Session 5 (Week 5)	• Diet Modifications
Session 6 (Week 6-7)	Dietary management in critically ill patients
Session 8 (Week 8)	Dietary management in Febrile condition
Session 9 (Week 9-10)	Dietary management of cancer
Session 11 (Week 11-14)	Dietary management in deficiency diseases
Session 12 (Week 15)	Midterm Exam
Session 13 (Week 16-19)	Dietary management in Surgery Burns , Trauma and Sepsis



Session 14 (Week 20-23)	Dietary management in Weight Imbalance , Obesity ,Underweight and eat disorder
Session 15 (Week 24-27)	Dietary management in allergy and Nervous System Disorders
Session 16 (Week 28-29)	Revision and discussion
Session 17 (Week 30-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Food Microbiology

1	Course name	Food Microbiology
2	Course Code	NT306
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	General microbiology
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course covers the food microbiology and the important equipment used to provide. It also gives a general information about Microbiology, and the problem of microbiology in food. It also covers the laboratory safety issues and the important precautions needed to be taken before, during, and after finishing the laboratory work. Occupational health and safety (definition, aims, quality, requirements, and procedure). How to promote occupational health and safety in work place. Occupational hazards, Occupational risk for nutritionist. Laboratory safety, universal precaution in laboratory, waste disposal.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Food Microbiology: An Introduction 3rd Edition by Thomas J. Montville, Karl R. Matthews, Kalmia E. Kniel 3rd edition 2012 • Food Microbiology: Fundamentals and Frontiers, 5th Edition by Michael P. Doyle, Francisco Diez-Gonzalez, Colin Hill 2019 • http://nuristianah.lecture.ub.ac.id/files/2014/09/fundamental-food-microbiology.pdf • Microbial Control and Food Preservation Theory and Practice by Vijay K. Juneja, Hari P. Dwivedi, John N. Sofos 1st edition 2010 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture, group interaction and discussion, self-directed actives.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Distinguish the types of Microbiology. • Describe disease to person from poisoning food. • Explain the procedures, operations and treatments to save the person. • Determine through symptoms and signs the appropriate diagnosis for the condition. • Understand the framework of the Health and Safety at Work etc. • Evaluate hazards and risks in order to carry out a risk assessment. • Understand the legal requirements to report any Microbiology. • Know the types of microorganisms that cause food poisoning • Knowing how to preserve food • Develop risk assessments for scientific laboratories that use chemicals or biological organisms or both. • State the various controls that protect laboratory personnel, including engineering, administrative, work practices, and personal protective equipment.
Course Assessments	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their





	textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to food microbiology
Session 2 (Week 2)	Foods as a substrate for microorganisms
Session 3 (Week 3)	Basic concepts and scope of food microbiology
Session 4 (Week 4)	Study of primary sources of microorganisms in foods
Session 5 (Week 5)	Effect of intrinsic (pH, moisture content) and extrinsic (temperature and relative humidity) factors on microbial growth in various foods.
Session 6 (Week 6)	Effect of intrinsic (pH, moisture content) and extrinsic (temperature and relative humidity) factors on microbial growth in various foods.
Session 7 (Week 7)	Microbial Spoilage of various foods
Session 8 (Week 8)	Effect of outer covering –spoilage of intact fruits and fruits with damaged skins.
Session 9 (Week 9)	Study of spoiled vegetable, bread and egg samples
Session 10 (Week 10)	Study of spoiled vegetable, bread and egg samples
Session 11 (Week 11)	Study of spoilage of milk for acid, gas and proteolysis
Session 12 (Week 12)	Methods of food Preservation
Session 13 (Week 13)	Comparison of shelf life of pasteurized, UHT milk, raw milk both at low and room temperature
Session 14 (Week 14)	Comparison of shelf life of pasteurized, UHT milk, raw milk both at low and room temperature
Session 15 (Week 15)	Study of specimens of various canned foods (vegetables, fruits, pickles etc) and treatments given to them for preservation
Session 16 (Week 16)	Study of specimens of various canned foods (vegetables, fruits, pickles etc) and treatments given to them for preservation
Session 17 (Week 17)	Med-term Exam
Session 18 (Week 18)	Food preservation: Physical, chemical and biological methods
Session 19 (Week 19)	Food preservation: Physical, chemical and biological methods
Session 20 (Week 20)	Microbiology and Process of Fermented Foods
Session 21 (Week 21)	Use of starter cultures and preparation of Dahi
Session 22 (Week 22)	To perform various tests such as pH and titratable acidity of various fermented milk products(yogurt,market dahi, etc) available in market

Session 23 (Week 23)	To perform various tests such as pH and titratable acidity of various fermented milk products(yogurt,market dahi, etc) available in market
Session 24 (Week 24)	Surveying of probiotic drinks available in the market
Session 25 (Week 25)	Food-Borne Diseases
Session26(Week26-29)	Case studies of food intoxications
Session27(Week30)	Revision and discussion
Session28(Week31-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Food Elements & Metabolism

1	Course name	Food Elements & Metabolism
2	Course Code	NT307
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2 units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Biochemistry
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the nature of food elements & nutrition.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Lippincott Illustrated Reviews: Biochemistry (Lippincott Illustrated Reviews Series) 7th Edition • by Denise Ferrier 2017 • https://faculty.ksu.edu.sa/sites/default/files/nutrition_and_metabolism.pdf • Introduction to nutrition and metabolism by David A Bender 3rd edition 2002 • Nutrient Metabolism Structures, Functions, and Genes by Martin Kohlmeier 2nd Edition - May 8, 2015 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Understand the nature of food elements and their metabolism. • Identify several problems linked with human abnormal metabolism • Recognize the features of diseases caused by altered metabolism • Identify representations, terms, conditions, and concepts related to food elements and their biological significance • Recognize different strategies to study their biomedical importance. • Construct a useful model to investigate the relations between each food element with other food elements and metabolic alterations associated with them
Course Assessments	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to food elements and metabolism
Session 2 (Week 2)	Types of foods and Elements of foods



Session 3 (Week 3)	Electrolytes and their medical significance
Session 4 (Week 4)	Calcium and phosphorus
Session 5 (Week 5-6)	iron, selenium ,magnesium, iodine and others
Session 6 (Week 7-8)	Oxidative phosphorylation and Electron transport chain
Session 7 (Week 9 & 10)	Lipids and their functions Classifications of lipids
Session 8 (week 11 to 13)	Cholesterol and its biological and biochemical functions Cholesterol transport and synthesis
Session 9 (week 14)	Triglycerides and their functions
Session 10 (Week 15)	Midterm Exam
Session 11 (week 16-17)	Metabolic disease associated with of fatty acids and triglycerides
Session 12 (week 18-21)	Amino acids and proteins Metabolic diseases linked with of amino acids and proteins
Session 12 (Week 22-27)	Carbohydrate metabolism
Session 13 (Week 28)	Metabolic diseases associated with carbohydrates
Session 14 (Week 29)	Revision and discussion
Session 15(Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Nutrition of Animal Sources

1	Course name	Nutrition of Animal Sources
2	Course Code	NT308
3	Course type: /general/specialty/optional	specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Nutrition during lifespan
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide students with The physicochemical properties of milk, as are the processing methods involved in the conversion of milk to other dairy products such as cheese, yoghurt and butter. The chemistry, structure, composition, properties, uses, and method of processing of animal food such as eggs, fish meat and meat products are also examined. By completing this course, students will appreciate the properties of animal-based foods and explain the processing methods of animal foods.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Food Science by Roday,S first edition Journal of Agri. & Food- once a month- online. • Principles of Animal Nutrition ByGuoyao Wu 1st edition 2017 • file:///C:/Users/BMI/Downloads/99368-Article%20Text-261804-1-10-20140109.pdf • Control of Products and Food of Animal Origin, University Textbook 1st Edition Publisher: PIMEditor: Publishing House "Ion Ionescu de la Brad" IasiISBN: 978-973-147-139-6, 2017 • Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor.
Course Duration		4 * 28 = 112 teaching hours
Delivery		Lecture, group interaction and discussion, self-directed actives.
Course Objectives:		Upon completion of this course, the student should have the ability to:



- Explain the composition, structure and function of meat, eggs, milk and fish.
- Identify and describe the physical and biochemical changes occurring during the conversion of muscle to meat;
- Describe and evaluate the implication of storage and processing operations on the quality of selected foods of animal origin;
- Collect and interpret the data of experiments on the effect of processing conditions on quality parameters of animal food products;
- Identify and explain the product composition, quality and production process of commercially available selected animal food products.


	<ul style="list-style-type: none"> • Explain the composition, structure and function of meat, eggs, milk and fish. • Identify and describe the physical and biochemical changes occurring during the conversion of muscle to meat; • Describe and evaluate the implication of storage and processing operations on the quality of selected foods of animal origin; • Collect and interpret the data of experiments on the effect of processing conditions on quality parameters of animal food products; • Identify and explain the product composition, quality and production process of commercially available selected animal food products.
Course Assessments	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction
Session 2 (Week 2-3)	Impart basic knowledge of animal food products
Session 4 (Week 4-5)	Meat, Poultry and Fish :Definition , composition and nutritional properties
Session 5 (Week 6-7)	Topics to be covered in the session (week) physical ,chemical , nutritional of eggs
Session 6 (Week 8-10)	Milk and Milk Products Chemical composition of milk, its constituents
Session 7 (Week 11)	processing of milk and its types
Session 8 (Week 12)	Midterm Exam
Session 9 (Week 13-17)	Fermented dairy: cheese and its kinds, yogurt, butter, ghee , sour milk , cream.
Session 10 (Week 18-21)	Nutritional properties of fermented dairy products
Session 11 (Week 21-23)	Bee's honey Kinds of honey
Session 12 (Week 24-26)	natural, chemical and organoleptic properties of honey
Session 13 (Week 27)	Bee honey preservation


Session 14 (Week 28)	Review and discussion
Session 15 (Week 29-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Pharmacology and Nutrition

1	Course name	Pharmacology and Nutrition
2	Course Code	NT309
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2units
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Physiology
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will introduce the basic concepts of pharmacology and the different classes of medicinal compounds that are in use. Differences and similarities between drugs, nutrients and dietary supplements will be addressed, as well as the way these are discovered and developed into products. Attention will also be given to the consequences of drug formulation for the dose-

	<p>regimen and effect(s). Examples from clinical therapy will be used to illustrate pharmacotherapy. Finally, the interaction between nutrients and drugs will be studied.</p>
<p>Textbooks required for this Course:</p>	<ul style="list-style-type: none"> • Basic Pharmacology: Understanding Drug Actions and Reactions (Pharmacy Education Series) 1st Edition by Maria A. Hernandez Ph.D. , Appu Rathinavelu Ph.D.2006 • Pharmacology and drug administration for imaging technology book. • Handbook of Food-Drug Interactions (Nutrition Assessment) (Hardcover) by Beverly J. McCabe (Editor), Eric H. Frankel (Editor), Jonathan J. Wolfe (Editor) Publisher: CRC (April 29, 2003) ISBN: 084931531X • Handbook of Drug-Nutrient Interactions (Nutrition and Health (Totowa, N.J.)) (Hardcover) by Margaret Malone (Foreword), Joseph I., Ph.D. Boullata (Editor), Vincent T., M.D. Armenti (Editor) Publisher: Humana Press (May 17, 2004) ISBN: 1588292495 • A-Z Guide to Drug-Herb-Vitamin Interactions Revised and Expanded 2nd Edition: Improve Your Health and Avoid Side Effects When Using Common Medications and Natural Supplements Together (Paperback) by Alan R. Md Gaby (Editor), Inc. HealthnotesPublisher: Three Rivers Press; 2nd Rev&Ex edition (February 28, 2006) ISBN: 0307336646 • Herb Contraindications And Drug Interactions, Second Edition (Paperback) by Francis Brinker, Nancy Stodart (Editor) Publisher: Eclectic Medical Pubns; 2nd Rev edition (December 1, 1998) ISBN: 1888483067 • Additional textbooks and web links may be used in this course at the discretion of the instructor.
<p>Course Duration</p>	<p>2 8 28 = 56 teaching hours</p>
<p>Delivery</p>	<p>Lecture-based.Group interaction and discussion. Self-directed activities. Active participation.</p>
<p>Course Objectives:</p> 	<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> • Acquire new knowledge in pharmacology by conducting and promoting innovative research. • Establish the efficacy, safety and effectiveness of medication in humans, to discover new lead compounds and to understand the mechanisms of action of drugs. • Report the clinical applications, side effects of drugs used in medicine. • Translate pharmacological principles into clinical decision making. • Define drug-food interactions

	<ul style="list-style-type: none"> Understand the biochemical metabolic mechanisms involved in drug-food interactions. Understand what recommendations to make to prevent undesirable drug interactions
Course Assessments 	Midterm Exam 20% Attendance 10% Activities 10% Final Exam: 60%. A 60% is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use and design any assignment that may be beneficial to the student-learning outcome
Content Breakdown	Topical Coverage
Session 1 (Week 1)	Introduction to pharmacology
Session 2 (Week 2)	Pharmacy Basic Concepts
Session 3 (Week 3-4)	Drug sources, Routes of drug administration and Pharmacokinetics.
Session 5 (Week 5-6)	Biopharmaceutics of Orally ingested products. Sympathetic depressants.
Session 6 (Week 7)	Drug Interactions: Basic concepts
Session 7 (Week 8)	Nutrition and Metabolism of drugs
Session 8 (Week 9-11)	Monitoring Nutritional Status in Drug Regimens
Session 9 (Week 12-13)	Gastrointestinal and metabolic disorders and Drugs
Session 10 (Week 14)	Midterm exam
Session 11 (Week 15-16)	Drug interactions in nutritional support
Session 12 (Week 17)	Alcoholism and Nutrition
Session 13 (Week 18-19)	Nutrition and Drug regimen in older people
Session 14 (Week 20-21)	Obesity and appetite drugs
Session 15 (Week 22-23)	Non-prescription drugs and nutrient interactions
Session 16 (Week 24-25)	Herbal and dietary supplements interactions with drugs
Session 17 (Week 26-27)	Dietary counselling to prevent food-drug interactions
Session 18 (Week 28)	Revision and discussion
Session 19 (Week 29-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until

	class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	Knowledge of basic clinical skills required to meet the skills objective including interviewing, physical diagnosis, communication and clinical reasoning processes.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Research Methodology

1	Course name	Research Methodology
2	Course Code	MT301
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Medical Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022

Brief Description:	This course will provide students with a fundamental understanding of the research Methodology and offers "An overview of research methodology including basic concepts employed in quantitative and qualitative research methods. Includes computer applications for research.
Textbooks required for this Course:	<ul style="list-style-type: none"> Tuckman, B. W. & Harper, B. E. (2012). Conducting educational research (6th ed.). Lanham, MD: Rowan & Littlefield Publishers (ISBN: 978-1-4422-0964-0). Cohen, L. Lawrence, M., & Morrison, K. (2005). Research Methods in Education (5th edition). Oxford: Oxford University Press. Denscombes, M. (2010). The Good Research Guide: For small-scale social research projects. Maiden-Read: Open University Press. Dornyei, Z. (2007). Research Methods in Applied Linguistics. Oxford: Oxford University Press. Hoadjli, A.C. (2015). The Washback Effect of an Alternative Testing Model on Teaching and Learning: An exploratory study on EFL secondary classes in Biskra. Unpublished Doctoral Thesis, University of Mohamed Kheider, Biskra.



	<ul style="list-style-type: none"> • Kothari, C. R. (1980). Research Methodology: Research and techniques, New Delhi: New Age International Publishers. • Kumar, R. (2011). Research Methodology: a step-by-step guide for beginners (3rd edition). London, UK: TJ International Ltd, Padstow, Cornwall • Leedy, P. D. (1980). Practical Research: Planning and design. Washington: Mc Millan Publishing Co., Inc. • Singh, Y. K. (2006). Fundamental of Research Methodology and Statistics. New Delhi. New International (P) Limited, Publishers. • Wallinman, N. (2006). Your Research Project: A step-by-step guide for the first-time researcher. London: Sage Publications. • http://www.pitt.edu/~super7/43011-44001/43911.ppt • http://web.tamu-commerce.edu/academics/graduateSchool/ • Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based, Group interaction and discussion, self-directed activities, active participation, Laboratory experiments.....etc.
Course Objectives:	<p>Upon completing this course, each student will be able to:</p> <ul style="list-style-type: none"> • Understand some basic concepts of research and its methodologies and identify appropriate research topics. • Demonstrate knowledge of research processes (reading, evaluating, and developing). • Perform literature reviews using print and online databases. • Understand the formats for citations of print and electronic materials. • Identify, explain, compare, and prepare the key elements of a research proposal/report. • Compare and contrast quantitative and qualitative research paradigms, and explain the use of each of them. • Describe, compare, and contrast descriptive and inferential statistics, and provide examples of their use in research. • Describe sampling methods, measurement scales and instruments, and appropriate uses of each. • Explain the rationale for research ethics and importance • select and define appropriate research problem and parameters • prepare a project proposal (to undertake a project) • organize and conduct research (advanced project) in a more appropriate manner • Write a research report, thesis and research proposal. <ul style="list-style-type: none"> • Make Critical Appraisal of the Literature
Course Assessments	Midterm exam 20 % Activity 10 % Attendance 10 % Final Exam 60 % A 60% is required for a pass in this course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction to research methodology <ul style="list-style-type: none"> • Meaning of Research • Definitions of Research • Objectives of Research



Session 2 (Week 2)	Introduction to research methodology <ul style="list-style-type: none"> • Motivation in Research • General Characteristics of Research • Criteria of Good Research
Session 3 (Week 3)	The Research Problem <ul style="list-style-type: none"> • Scientific Thinking • What is a Research Problem? • Selecting the Problem • Sources of the Problem • Defining a Problem • Statement of a Problem • Delimiting a Problem • Evaluation of a Problem Assignment 1 handed out
Session 4 (Week 4)	•The Review of Literature <ul style="list-style-type: none"> • Meaning of Review of Literature • Need of Review of Literature • Objectives of Review of Literature • Sources of Literature • The Functions of Literature • How to Conduct the Review of Literature • Some Hints for the Review of Literature • Precautions in Library Use • Reporting the Review of Literature
Session 5 (Week 5)	Practice on how to find a literature <ul style="list-style-type: none"> • Selecting a topic • Highlighting the electronic websites that help to better search of literature
Session 6 (Week 6)	The Research Hypotheses <ul style="list-style-type: none"> • Meaning of Hypothesis • Definitions of Hypothesis • Nature of Hypothesis • Functions of Hypothesis • Importance of Hypothesis • Kinds of Hypothesis • Characteristics of a Good Hypothesis • Variables in a Hypothesis • Formulating a Hypothesis • Testing the Hypothesis Assignment 2 handed out
Session 7 (Week 7)	The Research Approach <ul style="list-style-type: none"> • The Philosophical Background • The Qualitative Approach • The Quantitative Approach • The Mixed-Methods Approach
Session 8 (Week 8)	Criteria for Selecting a Research Approach
Session 9 (Week 9)	The Research Designs <ul style="list-style-type: none"> • Meaning of research design • Need for research design • features of a good design
Session 10 (Week 10)	Review


Session 11 (Week 11)	Assignment of research paper <ul style="list-style-type: none"> • selecting paper • guidelines of reading research paper
Session 12 (Week 12)	Assignment of research paper <ul style="list-style-type: none"> • Review before submitting the assignment
Session 13 (Week 13)	Cross-sectional study
Session 14 (Week 14)	Case-control study
Session 15 (Week 15)	Cohort study
Session 16 (Week 16)	Midterm Exam
Session 17 (Week 17)	Experimental study
Session 18 (Week 18)	Criteria for Selecting a Research design
Session 19 (Week 19)	Sampling <ul style="list-style-type: none"> • Meaning and Definition of Sampling • Functions of Population and Sampling • Methods of Sampling • Characteristics of a Good Sample • Size of a Sample
Session 20 (Week 20)	Data Collection Methods <ul style="list-style-type: none"> • Questionnaires • Interviews • Focus Groups • Observation
Session 21 (Week 21)	Interviewing techniques <ul style="list-style-type: none"> • Face-to-face interview • Telephone interview • Computer based interview
Session 22 (Week 22)	Data management and analysis <ul style="list-style-type: none"> • Descriptive statistics • inferential statistics
Session 23 (Week 23)	Writing research proposal
Session 24 (Week 24)	Writing research report
Session 25 (Week 25)	Critical Appraisal of the Literature
Session 26 (Week 26)	Guidelines for submitting graduation project
Session 27 (Week 27)	Review of research methodology
Session 28 (Week 28)	Revision and discussion
Session 29 (Week 29)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.


ج. المقررات الدراسية للسنة الرابعة قسم تقنية التغذية



Nutritional Pathology

1	Course name	Nutritional Pathology
2	Course Code	NT401
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology
8	Instruction Language	English
9	Date of course approval	2002-2001
Brief Description:		The Pathology and Nutrition course presents common pathological disorders and conditions that systematically stress their body systems, discuss underlying causes, and recommend nutritional strategies where appropriate. Students are able to describe the categories of pathologies and their effects on the major organ systems. They can translate pathological terms into common language and recognize specific pathologies from case histories and make nutritional recommendations based on their assessment.
Textbooks required for this Course:		<ul style="list-style-type: none"> • Robbins & Cotran Pathologic Basis of Disease 10th Edition - May 18, 2020 • Nutritional Pathology Pathobiochemistry of Dietary Imbalance by H. Sidransky • Kumar, V., Abbas, A.K., Aster, J.(2017). Robinson Basic Pathology, 10th Edition. Elsevier • Nutritional Pathology: Pathobiochemistry of Dietary Imbalances (Biochemistry of Disease) 1st Edition by Herschel Sidransky. • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based. Group interaction and discussion. self-directed activities. active participation. Laboratory experiments.

<p>Course Objectives:</p> 	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Understand the common terms and definitions used in Nutritional pathology. • Identify of the nature of the disease related to nutrition. • Recognize the biological characteristics that distinguish each disease from the other based on types of nutrition. • Distinguish the origin of the disease and how it develops • Distinguishes between the causes of disease, its mechanisms, and the method of treatment • Infer the causes of disease and its growth patterns • Determines the appropriate diagnostic tools and mechanisms to detect the disease
<p>Course Assessments</p>	<p>Attendances 10% Activities: 10% Midterm Exam 20% Final Exam: 60%A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use</p>
<p>Content Breakdown</p>	<p>Topics Coverage</p>
<p>Session 1 (Week 1)</p>	<p>Introduction to Nutritional pathology</p>
<p>Session 2 (Week 2)</p>	<p>Malnutrition</p>
<p>Session 3 (Week 3)</p>	<p>Obesity</p>
<p>Session 4 (Week 4)</p>	<p>Metabolic syndrome</p>
<p>Session 5 (Week 5)</p>	<p>Diabetes Mellitus</p>
<p>Session 6 (Week 6)</p>	<p>Thyroid disease</p>
<p>Session 7 (Week 7)</p>	<p>Congenital metabolism errors</p>
<p>Session 8 (Week 8)</p>	<p>Carbohydrate metabolism& Aminoacid metabolism diseases.</p>
<p>Session 9 (Week 9)</p>	<p>Lipid metabolism: Dyslipidemia</p>
<p>Session 10 (Week 10)</p>	<p>Diseases of plasma proteins. Metabolism of purines. Gout</p>
<p>Session 11 (Week 11)</p>	<p>Pathology of the musculoskeletal system. Calcium and phosphorus metabolism disorders</p>
<p>Session 12 (Week 12)</p>	<p>Oncology: nutritional pathophysiology.</p>
<p>Session 12 (Week 12)</p>	<p>Advances in molecular nutrition (nutrigenomics)</p>
<p>Session 13 (Week 13)</p>	<p>Nutritional effects of alcohol</p>
<p>Session 14 (Week 14)</p>	<p>Gastrointestinal pathology.: esophageal dysphagia, gastroduodenal ulcer, heartburn, intestinal constipation and diarrhea</p>
<p>Session 15(Week 15)</p>	<p>Midterm Exam</p>
<p>Session 16(Week 16)</p>	<p>Malabsorption syndrome I. Celiac disease.</p>
<p>Session 17 (Week 17)</p>	<p>Malabsorption syndrome II. Short bowel syndrome. Inflammatory bowel disease</p>
<p>Session 18 (Week 18)</p>	<p>Liver and nutrition. Pancreatic insufficiency</p>
<p>Session 19 (Week 19)</p>	<p>Food allergy and food intolerance</p>
<p>Session 20 (Week 20)</p>	<p>Vitamin deficiency Hypervitaminosis</p>
<p>Session 21 (Week 21)</p>	<p>Diseases related to trace elements</p>
<p>Session 22 (Week 22)</p>	<p>Nutritional pathology in neurological diseases</p>
<p>Session 23 (Week 23)</p>	<p>Renal insufficiency. Dialysis, renal transplantation.</p>

Session 24 (Week 24)	Nutritional pathology in cardiovascular diseases (hypertension, heart insufficiency, atherosclerosis).
Session 25 (Week 25)	Nutritional pathology in respiratory diseases (COPD)
Session 26 (Week 26)	Nutritional pathology in surgical diseases I
Session 27 (Week 27)	Nutritional pathology in organ transplantation
Session 28 (Week 28)	Bariatric surgery
Session 29(Week 29)	Revision and discussion
Session30(Week30-32)	Final exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	 <p>The student should be able to work in a team The ability to perform tasks in accordance with ethical and professional principle. The student should be able to write a report on the diseased condition The student should be able to think critically to solve problems and make decisions</p>
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Community Health and Nutritional Education



1	Course name	Community Health and Nutritional Education
2	Course Code	MNT402
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Bachelor in Medical Technology Specializing in Nutrition Technology
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will provide an overview of concepts, empirical research, and public health practice in community health sciences with an emphasis on: (1) social context and

	<p>determinants of population health and (2) principles of planning interventions to protect and improve public health.</p> <p>The course describes ways to define and measure health and illness, the social construction of illness, social and behavioral determinants of health, and health disparities, including socioeconomic status (SES), race/ethnicity, gender, and age. Students will also learn about social and behavioral theories of health-related behavior change, health promotion strategies and methods, and public policy. The course provides case studies of evidence-based health promotion programs. It includes lectures, assigned readings, and in-class discussions.</p>
Textbooks required for this Course:	<ul style="list-style-type: none"> • Essentials of public health approach by Jenison & Deft 8th Edition. • Community Nutrition: A Handbook for Health and Development Workers by Ann Burgess et al, 2009 • https://alraziuni.edu.ye/uploads/pdf/An-Introduction-to-Community-Health.pdf • https://dpi.wi.gov/sites/default/files/imce/community-nutrition/pdf/HealthyBites.pdf • https://www.ugc.ac.in/pdfnews/8280582_B.A.-Nutrition-and-Health-Education.pdf • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:	<p>Upon completion of this course, the student will have reliably demonstrated the ability to:</p> <ul style="list-style-type: none"> • Identify key cultural, social, political, economic, and psychological determinants of health and health-related behaviors. • Describe how health and health-related behavior are conceptualized and measured at the individual, community, and societal levels. • Explain theories of health-related behavior and behavior change • Define the basic elements of program planning and intervention. • Describe community organizing and community-based participatory research, as well as societal level initiatives. • Identify the major modes of advocacy for changing health policy pertaining to populations.
Course Assessments	<p>Attendances 10% Activities: 10% Midterm Exam 20% Final Exam: 60%</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course. Instructors are encouraged to use</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1 & 2)	<ul style="list-style-type: none"> • Introduction of community health science.

Session 2 (Week 3 & 4)	<ul style="list-style-type: none"> Review about sociodemographic alert and health.
Session 3 (Week 5 & 6)	<ul style="list-style-type: none"> Sex, Gender, and Health
Session 4 (Week 7 & 8)	<ul style="list-style-type: none"> Principle of environmental issues and health
Session 5 (Week 9 & 10)	<ul style="list-style-type: none"> Basic Principles and Methods of Epidemiology
Session 6 (Week 11 & 12)	<ul style="list-style-type: none"> Basic Principles of occupational health.
Session 7 (Week 13 & 14)	<ul style="list-style-type: none"> Prevention of non-communicable diseases: a global & nation
Session 8 (Week 15 & 16)	Prevention of communicable diseases
Session 9 (Week 17)	Midterm Exam
Session 10 (Week 18 & 19)	<ul style="list-style-type: none"> Strategies for Public Health Programs to Improve
Session 11 (Week 20 & 21)	<ul style="list-style-type: none"> Adult Immunization
Session 12 (Week 22 & 23)	<ul style="list-style-type: none"> Vaccination: A Cornerstone of Public Health
Session 13 (Week 24 & 25)	<ul style="list-style-type: none"> Essentials of Migration Management for Policy Makers and Practitioners
Session 14 (Week 26 & 27)	Nutrition related disease
Session 15 (Week 28 & 29)	Revision and discussion
Session 16 (Week 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Nutrition from of Plant Sources

1	Course name	Nutrition from of Plant Sources
2	Course Code	MNT 403
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology
8	Instruction Language	English
9	Date of course approval	2022
Brief Description: 		<p>This course will serve as an introduction to the Cereal Economically important, cereal crops, wheat proteins and wheat flour nutritional composition, health benefit, and quality evaluation. Legumes and Nuts classification, structure and composition. Fruits and Vegetables classification and general composition. Fruit juices extraction and preservation. Spices definition and functional properties. Mycotoxins in spices and herbs.</p>
Textbooks required for this Course: 		<ul style="list-style-type: none"> • Foods of Plant Origin by Salunkhe, D.K 1st Edition. • Healing Through Nutrition: The Essential Guide to 50 Plant-Based Nutritional Sources Paperback by Eliza Savage 2020 • Plant-Based Keto: How to Cleanse Your Body, Reduce Inflammation, Cholesterol and Diabetes through Ketogenic Diet. Low-Carb Vegetarian Diet Plan to Lose Weight Quickly with 30 Tasty Veg Keto Recipes. Paperback by Lara Rush. 2022 • https://www1.villanova.edu/content/dam/villanova/dining/documents/Nutrition/Plant%20Based%20Diet%20Booklet.pdf • Book Launch: Plant-based Nutrition in Clinical Practice by Ismailmail, 2022 • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration		2 * 28 = 56 teaching hours
Delivery		Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:		<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Identify the different types of foods from plant origin natural or processed.



	<ul style="list-style-type: none"> • Use correct terminology to discuss the chemical, physical, and nutritional properties of foods from plant origin. • Identify and explain the side effects of excessive consumption of foods from plant origin. • Identify and explain the side effects of excessive consumption of foods from plant origin.
Course Assessments	<p>Attendances 10% Activities: 10% Midterm Exam 20% Final Exam: 60%</p> <p>A 60 % is required for a pass in this course.</p> <p>Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course.</p>
Content Breakdown	Topical Coverage
Session 1 (Week 1 -2)	Introduction to foods of plant origin, aim, and functions
Session 2 (Week 3-4)	Cereal Economically important cereal crops
Session 3 (Week 5-8)	Wheat proteins and Wheat flour : Nutritionl composition and health benefit ,Quality evaluation
Session 4 (Week 9-12)	Legumes and Nuts Classification ,Structure and composition
Session 5 (Week 13-15)	Fruits and Vegetables Classification of fruits and vegetables, general composition
Session 6 (Week 16)	Midterm Exam
Session 7 (Week 17-20)	Fruit juices: juice extraction and preservation Accessory parts of the digestive system (salivary gland, teeth, pancreas, liver, and gull bladder)
Session 8 (Week 21-24)	Spices definition and functional properties and Mycotoxins in spices and herbs
Session 9 (Week 25-27)	practical's: Cereals , Pulses and Vegetable and fruits
Session 10 (Week 28)	Revision and discussion
Session 111(Week29- 30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational

employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Therapeutic Nutrition II

1	Course name	Therapeutic Nutrition II
2	Course Code	MNT 404
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course introduces the role of medical nutrition therapy in the prevention and treatment of clinical diseases and disorders. This course aims to develop clinical knowledge and problem solving skills relevant to nutrition disorders, including aetiology & pathophysiology, as well as the nutrition care process including assessment, diagnosis, nutrition intervention planning, intervention evaluation and outcome management. The course includes topics in diabetes mellitus, cardiovascular disease, renal disease, Gastro-intestinal diseases, and cancer. Other pertinent topics include weight control, nutrition in critical care and during stress, nutritional needs of surgical clients, clients suffering burns
Textbooks required for this Course:		<ul style="list-style-type: none"> • Krause's Food & Nutritional Therapy • https://www.ejmste.com/download/food-technology-and-therapeutic-nutrition-in-the-biology-textbooks-of-the-intermediate-stage-5601.pdf • Nutrition Therapy and Pathophysiology by Nelms, Marcia, Sucher, Kathryn P., Roth, Sara Long 2nd edition 2010 • Fundamentals of Clinical Nutrition by Morgan, Sarah L., Weinsier, Roland L. 2nd edition 1997 • Applications in Medical Nutrition Therapy by Zeman, Frances J., Ney, Denise M 2nd edition 1996 • Additional Resources: Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration		4 * 28 = 112 teaching hours



Delivery	Lecture-based, Group interaction and discussion, active participation.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Understand the role of nutrition in the treatment of endocrine disorder • Devising the most important nutritional recommendation for cancer patients. • Familiarity with important nutritional consideration for AIDS patients. • Awareness of the necessary nutritional aspects that must be taken into account for patients with kidney diseases, D M, anemia & HTN • Develop an individualized nutrition intervention plan, review the plan, and justify the nutrition management in relation to best evidence • Write a nutritional assessment, write a nutrition diagnosis & management. • Apply recent various methods and techniques in the field of therapeutic nutrition • Develop skills in various components of course module and working with patients • Recognize the Diet-Drug Interactions.
Course Assessments	Attendances 10% Activities: 10% Midterm Exam 20% Final Exam: 60%. A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	Introduction (explain the role of CHO in raising blood sugar)
Session 1 (Week 1)	glycemic index
Session 2 (Week 2)	Types of DM
Session 3 (Week 3-4)	Nutritional advice for gestational diabetes
Session 4 (Week 5)	types of anemia
Session 5 (Week 6-7)	Nutritional recommendation for each type of anemia
Session 6 (Week 8-9)	Hypertension (causes ,risk factors complication)
Session 7 (Week 10-11)	Nutritional recommendation (DASH diet)
Session 8 (Week 12-13)	Types of renal diseases
Session 9 (Week 14)	Midterm Exam



Session 10 (Week 15-16)	Nutritional recommendation for chronic & acute renal failure and ESRD
Session 11 (Week 17)	Kidney stone & dietary advice
Session 12 (Week 18-19)	Kidney transplant and nutritional recommendation
Session 13 (Week 20-21)	Types of dialysis
Session 14(Week 22-23)	Dietary recommendation for each type of dialysis
Session 15 (Week 24-25)	Cancer and dietary advice.
Session 16 (Week 26-27)	HIV and nutritional recommendation
Session 17 (Week 28)	Revision and discussion
Session 18 (Week 29-30)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time.
Generic Skills	Interpersonal communications and critical thinking skills will be embedded in all courses.
Course Change	. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs.

Immunity and nutrition

1	Course name	Immunity and nutrition
2	Course Code	MNT405
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	3
5	Educational hours	4 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course will discuss basic immunology including cellular and molecular processes that represents the human immune system. Subjects to be presented include cells and organs of the immune system, antigen, immunoglobulins and antibody diversity, molecular mechanisms of innate and adaptive immunity. It will also

	include the effect of nutrition on the immune system functions. (interactions between nutrition and immune function) which is fundamental to understanding risk of both infectious and chronic diseases. Students will be provided with an in-depth understanding of how diet supports the optimal functioning of the immune system. Throughout the course, students will gain skills and understand the optimal process of immune function, including auto-immune conditions and balancing gut bacteria.
Textbooks required for this Course:	<ul style="list-style-type: none"> • Immunology 4th ed Paperback – 2 Feb. 2000 by Janis Kuby (Author), Richard A. Goldsby Thomas J. Kindt Barbara A. Osborne 2002. • https://studylib.net/doc/8013421/course-%23- • Nutrition and Immune Function. Edited by P.C. Calder, C.J. Fields, H.S. GillCABI Publishing; The Nutrition Society; New York, NY; 2002. • Additional materials will be handed during lectures and/or will be posted on the Webpage. • Nutrition & Immunology; Gershwin, German, Keen • Present Knowledge in Nutrition; Volumes I & II, 9th Edition (Bowman & Russell, editors); ILSI publisher; Washington DC 2006. • Essentials of Clinical Immunology 4th Edition by Helen Chapel, Mansel Haeney, Siraj Misbah, Neil Snowden 1999 • Additional textbooks and web links may be used in this course at the discretion of the instructor.
Course Duration	4 * 28 = 112 teaching hours
Delivery	Lecture-based power point presentations, Group interaction and discussion, self-directed activities, and active participation.
Course Objectives:	<p>Upon completion of this course, the student will have the ability to:</p> <ul style="list-style-type: none"> • Demonstrate the basic knowledge of immunological processes at a cellular and molecular level • Define central immunological principles and concepts • Outline, compare and contrast the key mechanisms and cellular players of innate and adaptive immunity and how they relate • Describe the interplay between the human immune response and nutritional status. • Explain the general effects of malnutrition on host immune function • Discuss the implications for nutritional interventions and disease control in low- and middle-income countries • Elucidate the genetic basis for immunological diversity and the generation of adaptive immune responses • Outline key events and cellular players in antigen presentation, and how the nature of the antigen will shape resulting effector response • Identify the main mechanisms of inflammation • Outline key events and cellular players governing mucosal immunity





	<ul style="list-style-type: none"> • Understand the principles governing vaccination and the mechanisms of protection against infectious diseases • Understand and explain the basis of immunological tolerance, autoimmunity and transplantation
Course Assessments	Attendances 10% Activities: 10% Midterm Exam 20% Final Exam: 60%. A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course.
Content Breakdown	Topics Coverage
Session 1 (Week 1)	<ul style="list-style-type: none"> • Introduction of immunology
Session 2 (Week 2)	<ul style="list-style-type: none"> • Immune organs and Innate immunity
Session 3 (Week 3)	<ul style="list-style-type: none"> • Antigen, Antibody and Antigen-antibody interactions
Session 4 (Week 4)	<ul style="list-style-type: none"> • Soluble Recognition receptors and cellular Recognition receptors
Session 5 (Week 5)	<ul style="list-style-type: none"> • Complement system, Innate immune response and Innate immune response
Session 6 (Week 6)	<ul style="list-style-type: none"> • Phagocytosis
Session 7 (Week 7)	<ul style="list-style-type: none"> • Overview of adaptive immunity
Session 8 (Week 8)	<ul style="list-style-type: none"> • Vaccination
Session 9 (Week 9)	<ul style="list-style-type: none"> • Basics of Humoral immunity and Cell mediate immunity
Session 10 (Week 10)	<ul style="list-style-type: none"> • Hypersensitivity and Autoimmune diseases
Session 11 (Week 11)	<ul style="list-style-type: none"> • Immune deficiency disease
Session 12 (Week 12)	<ul style="list-style-type: none"> • Transplantation
Session 13(Week 13)	<ul style="list-style-type: none"> • Overview of the global burden of malnutrition and infection
Session 14 (Week 14)	<ul style="list-style-type: none"> • Evaluation of the effects of nutrients on immune function
Session15(Week 15)	Midterm Exam
Session 16 (Week 16)	<ul style="list-style-type: none"> • Effect of Iron and Zinc status on immunity
Session 17 (Week 17)	<ul style="list-style-type: none"> • Effect of Selenium status on immunity
Session 18 (Week 18)	<ul style="list-style-type: none"> • Iodine and the immune response
Session 19 (Week 19)	<ul style="list-style-type: none"> • Vitamin A and Essential Amino Acids on immunity
Session 20 (Week 20)	<ul style="list-style-type: none"> • Specific amino acids & immunity:L-arginine; Glutamine; Sulphur amino acids; glutathione.
Session 21 (Week 21)	<ul style="list-style-type: none"> • Antioxidants and immunity (Vit E, C)
Session 22 (Week 22)	<ul style="list-style-type: none"> • Fatty acids & Immunity <p>Nutrition, obesity, and immunity</p>
Session 23 (Week 23)	<ul style="list-style-type: none"> • Nutritional modulation of autoimmune diseases/inflammation • Probiotics and Immunity
Session 24 (Week 24)	
Session 25 (Week 25)	<ul style="list-style-type: none"> • Breastfeeding mucosal immunity, and defense against infection • Nutrition, ageing, and the immune system
Session 26 (Week 26)	<ul style="list-style-type: none"> • Food allergy & immunity • Exercise, nutrition, and immunity
Session 27 (Week 27)	<ul style="list-style-type: none"> • Nutrition, HIV infection and immunity • Nutrition, immunity and alternative medicine
Session 28 (Week 28)	<ul style="list-style-type: none"> • Nutrition, Infection, and Immunity: Public Health Implications
Session 29 (Week 29)	Revision and Discussion
Session 30 (Week 30)	Final Exam

Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

Healthy Nutrition and Fitness

1	Course name	Healthy Nutrition and Fitness
2	Course Code	NT406
3	Course type: /general/specialty/optional	specialty
4	Accredited units	2
5	Educational hours	2 hours per week
6	Pre-requisite requirements	Non
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description:		This course covers the nutrition and fitness, the important needs food for fitness. It also gives a general information about nutrition and fitness for health food for goof performs the body, and the problem to obtaining the most venerable nutrients for energy for the athletic human body from optimal food. Occupational health and safety (definition, aims, quality, requirements, and procedure). How to promote occupational health and safety in work place. Occupational hazards, Occupational risk for nutritionist.
Textbooks required for this Course:		<ul style="list-style-type: none"> Sport and Exercise nutrition. Edited by Susan Ianham- New, Samanths Stear, Susan Shirreffs and Adam Collins


	<ul style="list-style-type: none"> • Nutrition for Health, Fitness and Sport by Melvin Williams, Eric Rawson, David Branch 11th Edition 2016 • Nutrition for Health, Fitness & Sport by Melvin Williams, Dawn Anderson, Eric Rawson 10th Edition 2012 • https://ncert.nic.in/textbook/pdf/kehe103.pdf • Principles of Nutrition Textbook, by Lisa Jellum et al 3rd Edition 2018 • Jellum, Lisa; Hitzeman, Jason; Knauss, Mark; Henderson, Sharryse; Harnden, Tom; Elsberry, Cynthia; and Ford, Greg, "Principles of Nutrition Textbook, Third Edition" (2018). Nursing and Health Sciences Open Textbooks. 5 • https://oer.galileo.usg.edu/health-textbooks/5 • Additional Resources: Additional textbooks and web links may be used in this course at the discretion of the instructor
Course Duration	2 * 28 = 56 teaching hours
Delivery	Lecture, group interaction and discussion, self-directed actives.
Course Objectives:	<p>Upon completion of this course, the student should have the ability to:</p> <ul style="list-style-type: none"> • Know the components of fitness • Distinguish between foods that provide the body with energy and foods that build the body • Know effect of hormones on giving energy to the body and their effect on metabolism. • Learn about catalysts and energy stimulants and their types. • Gain the knowledge of the appropriate time for athletes to eat food during competitions and training. • Introduce a career oriented and skill enhancing course on nutrition for fitness • Impart knowledge regarding importance of nutrition and exercise for physical, psychological, social and spiritual fitness of an individual. • Develop intellectual as well as physical skills the • Planning and execution of exercise and nutritional principles for fitness management. • Understand the importance of alternative therapies in the overall fitness of an individual • Develop entrepreneurial abilities in the field of fitness. • knowledge on changes in the human physiology during exercise. • Understand the role of exercise in fitness. • Understand the benefits of exercise in therapeutic conditions
Course Assessments	<p>Attendances 10% Activities 10% Midterm Exam 20% Final exam 60% A 60 % is required for a pass in this course. Homework & Assignments Students will be required to read chapters in their textbook, handouts, and any other material necessary for the course.</p>
Content Breakdown	Topics Coverage



Session 1 (Week 1-2)	Definition of fitness and its components.
Session 2 (Week 3-4)	Components sources and energy that the body needs from food.
Session 3 (Week 4 -5)	Study of macro-and micro-nutrients.
Session 4 (Week 6-7)	Study o macronutrients as an important source of energy.
Session 5 (Week 8-9)	Effect of carbohydrate deficiency in food on athletic performance.
Session 6(Week 10-11)	Knowing the right time to eat before high-effort performance.
Session 7 (Week 12)	Eating and drinking while performing.
Session 8(Week 13-14)	Eating after performing physical training.
Session 10 (Week 15)	Med-term Exam
Session 9(Week 16-17)	Effect of motor activity on food digestion.
Session 11(Week 18- 19)	Study types ergogenic aids
Session 12 (Week 20-21)	Nutritional ergogenic, the student's knowledge of its sources influence.
Session 13 (Week 22-23)	Hormonal regulation during exercise knowing the effect of hormones on the ability and performance of the athlete's body.
Session 14 (Week 24-25)	Sport nutrition
Session 15 (Week 26-27)	Digestion and Metabolism
Session 16 (Week 29)	Revision and discussion
Session 17 (Week 30-32)	Final Exam
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until class is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.



Hospital Training

1	Course name	Hospital Training
2	Course Code	MNT 407
3	Course type: /general/specialty/optional	Specialty
4	Accredited units	2
5	Educational hours	6 hours per week
6	Pre-requisite requirements	Nutrition during life cycle / Medical Nutrition/ Microbiology
7	Program offered the course	Nutrition Technology Prog.
8	Instruction Language	English
9	Date of course approval	2022
Brief Description: 		<p>This course is a professional experience that introduces the student to the dietary management in hospitals and health centers. This experience can contribute to the student's knowledge, develop skills, and provide awareness of personal and career strengths or limitations. It provides the opportunity to gain a better understanding of the organization, develop a number of professional skills, acquire a greater understanding of the responsibilities of nutritional professionals at the selected organization, and provide opportunities to network with other professionals. Moreover, this experience enables the student to decide whether the organization provides the type of career opportunities the student wants.</p>
Textbooks required for this Course:		<ul style="list-style-type: none"> The Internship, Practicum, and Field Placement Handbook by Brian N. Baird. P.D. 6th edition (2010). Additional Resources: Additional textbooks, handouts, and web links may be used in this course at the discretion of your instructor. <p>(2004) دليل تغذية المرضى في المستشفيات لـ جلال المخلاطي عن: دار الشروق التغذية العلاجية لمنى خليل عبد القادر الناشر: مجموعة النيل العربية</p>
Course Duration		6 * 28 = 168 teaching hours
Delivery		<ul style="list-style-type: none"> -Practical Training -Tutorials -Group interaction and discussion -Self-directed activities (Write a detailed report on the practical side) -Laboratory experiments (training in the lab)
Course Objectives:		<p>Upon completion of this course, the student will the ability to:</p> <ul style="list-style-type: none"> Obtain a meaningful experience in a profession related to Human Development and dietary.



	<ul style="list-style-type: none"> • Apply knowledge and theory learned in an academic setting to actual situations in a field-based setting. • Provide feedback regarding the relevance of the university curriculum to the field-based setting. • Develop relationships and interact with experienced professionals. • Develop or enhance professional skills under the simultaneous guidance of a related organization supervisor, and a faculty supervisor.
Course Assessments	<p>Daily Assessments and homework: 20%</p> <p>Lab Report: 50 %</p> <p>Practical Exam in the lab: 30%</p> <p>A 60 % is required for a pass in this course.</p>
Content Breakdown	Topics Coverage
Session 1 (Week 1-2)	<ul style="list-style-type: none"> • Blood Bank Department • Learning the safety guidelines followed in blood bank lab • ABO system of different blood groups and how to conduct tests to identify them • Identify Rh blood system
Session 2 (Week 3-4)	<ul style="list-style-type: none"> • The correct and safe methods for blood transfusion. • Transfusion the main blood components (serum, plasma and cells) to the patient
Session 3 (Week 5-6)	<ul style="list-style-type: none"> • Conduct of blood transfusion compatibility tests • Cross match • Coombs test (direct & indirect)
Session 4 (Week 7-8)	<ul style="list-style-type: none"> • Blood donation methods • Anticoagulants in the blood bags • Identifying the reasons that lead to blood cells clogging in the event of an incorrect blood transfusion • Saving blood and blood derivatives correctly
Session 5 (Week 9-11)	<ul style="list-style-type: none"> • Clinical Chemistry Department • Learning the safety guidelines followed in Clinical Chemistry lab. • Identify the correct mechanisms for receiving patient samples in the Department of Clinical Chemistry • Working all types of analyzes for all organs of the body (kidney, liver, heart, etc.)
Session 6 (Week 12-13)	<ul style="list-style-type: none"> • Practicing the different methods (primitive manual and modern systemic) for conducting medical tests • Ensure the accuracy of the results of blood chemistry tests
Session 7 (Week 14-15)	<ul style="list-style-type: none"> • Calibrate the used machines in the lab to avoid any possible errors Apply the quality controls for all the tests to achieve reliable results • the implementation of quality control in clinical chemistry lab.
Session 8 (Week 16)	(handing the draft of lab report)
Session 9 (Week 17 -18)	<ul style="list-style-type: none"> • Department of Immunology • Learning the safety guidelines followed in Immunology lab. • Identify the correct mechanisms for receiving patient samples in the Department of immunology

	<ul style="list-style-type: none"> Identify the immune response of the body through measuring the WBCs counts.
Session 10 (Week 19)	<ul style="list-style-type: none"> Antibody-antigen reactions tests Serology tests (ASO, RH-factor)
Session 11 (Week 20-21)	<ul style="list-style-type: none"> Performing practically all the following tests ELISA, Antigen-Antibody interaction, C-reactive protein and Flow cytometry Identify the dilution methods used in studying the proportion of the amount of foreign bodies in the body.
Session 12 (Week 22-23)	<ul style="list-style-type: none"> Microbiology department Learning the safety guidelines followed in Microbiology lab. Identify the different microbes that infect the body Conducting all tests for biological samples (blood, urine and feces) to detect and classify microbes that infect the body.
Session 13 (Week 24-25)	<ul style="list-style-type: none"> Preparation the media for bacterial culture dishes Learn how to grow and grow bacteria to help diagnose and treat disease
Session 14 (Week 26-27)	<ul style="list-style-type: none"> Conducting biochemical distance tests to differentiate between different types of bacteria and fungi Conduct an antibiotic sensitivity test to be able to choose the appropriate antibiotic to eliminate microbes.
Session 15 (Week 28)	<ul style="list-style-type: none"> Isolation the colonies of bacteria from different sources and growing it in different agars. Learn about the different sterilization methods to avoid infection and the spread of microbes.
Session 16 (Week 29)	Handling the lab report for assessment
Attendance Expectations	Students are expected to attend every session of class, arriving on time, returning from breaks promptly and remaining until training is dismissed. Absences are permitted only for medical reasons and must be supported with a doctor's note.
Generic Skills	The faculty is committed to ensuring that students have the full range of knowledge and skills required for full participation in all aspects of their lives, including skills enabling them to be life-long learners. To ensure graduates have this preparation, such generic skills as literacy and numeric, computer, interpersonal communications, and critical thinking skills will be embedded in all courses.
Course Change	Information contained in this course outline is correct at the time of publication. Content of the courses is revised on an ongoing basis to ensure relevance to changing educational employment and marketing needs. The instructor will endeavor to provide notice of changes to students as soon as possible. Timetable may also be revised.

