

## Faculties and Courses of Instruction



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# Faculty of Applied Medical Sciences

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## History:

The Faculty of Applied Medical Sciences was established in 2003 from the previous Medical Sciences program within the Faculty of Medicine and Allied Science.

## Vision:

To be a pioneer in providing high quality educational programs and research in Applied Medical Sciences.

## Mission:

The faculty strives to be a leader in the generation, dissemination and application of knowledge that advances the sciences and practice of our integrated health related disciplines. The aim is to provide comprehensive high-quality undergraduate education and cutting edge research programs that probe the frontiers of knowledge.

# Faculty of Applied Medical Sciences

## Graduation Requirements:

To earn a B.Sc. in Applied Medical Sciences, students must complete a total of 137 credit hours over a 4 year period, with one additional year of obligatory clinical practice. Credit hours are distributed as follows for each program.

Departments	Credit Hours of University Courses	Credit Hours of Faculty Courses	Credit Hours of Department Courses	TOTAL
Medical Laboratory Technology	26	23	88	137
Nursing	26	23	88	137
Clinical Nutrition	26	23	88	137
Physiotherapy	26	20	91	137
Diagnostic Radiology	26	20	91	137

## Faculty Requirements:

(A) Students in all departments study the following 15 credit hours of faculty courses:

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	MATH	110	Mathematics	3				
2	PHYS	110	General Physics	3				
3	BIO	110	General biology	3				
4	CHEM	110	General Chemistry	3				
5	STAT	110	General statistics	3				
<b>Total</b>				<b>15</b>				

(B) - The following (8) Credit Hours of Electives apply to the departments of Medical Laboratory Technology, Nursing and Nutrition only: There are five departments offering the B.Sc. degree and four departments offering M.sc. degrees.

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	BCHM	205	Biochemistry	4				
2	PHYT	205	Physiology	2				
3	ANTT	205	Anatomy	2				
<b>Total</b>				<b>8</b>				

(C) - The following (5) Credit Hours of Electives apply to the departments of Physiotherapy only:

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	BCHM	206	Biochemistry	2				
2	PHYT	206	Physiology	3				
<b>Total</b>				<b>5</b>				

(D) - The following (5) Credit Hours of Electives apply to the departments of Diagnostic Radiology only:

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	PHYT	205	Physiology	2				
2	ANTT	207	Anatomy	3				
<b>Total</b>				<b>5</b>				

## Departments and Academic Degrees:

Department / Program	Academic Degree
Medical Laboratory Technology	B.Sc
Physiotherapy	B.Sc
Diagnostic Radiology	B.Sc
Nursing	B.Sc
Clinical Nutrition	B.Sc

# Department of Medical Laboratory Technology

## Department Contact:

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## History:

The Medical Laboratory Technology department was established in 1980 as a program within the Faculty of Medicine and Allied Medical Sciences.

## Vision:

To be an educational and research in the field of medical laboratories to provide the community with highly qualified professionals in medical researches and high education to serve the community.

## Mission:

To provide high quality education and to prepare professionals capable of serving their society.

## Departmental Requirements:

The B.Sc. in Medical Laboratory Technology is a four year program with one additional obligatory year of clinical practice (Internship Program). In order to qualify for a B.Sc. in Medical Laboratory Technology students must successfully complete 137 credit hours comprised of:

- 26 credit hours of university and preparatory year courses,
- 23 credit hours of faculty courses,
- And 88 credit hours of core departmental courses.



# Department of Medical Laboratory Technology

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	MLT	211	Hematology (1)	3	2	1		
2	MLT	231	Immunology (1) – (Basic)	3	2	1		
3	MLT	261	Histo- and Cyto-Technology	2	1	1		
4	MLT	271	Diagnostic Genetics and Molecular Biology	3	2	1		
5	MLT	294	Med Tech Skills	3	2	1		
6	MLT	296	Instrumentation	2	1	1		
7	MLT	312	Hematology (2)	3	2	1		
8	MLT	313	Coagulation and Hemostasis	2	1	1		
9	MLT	314	Blood Bank	4	2	2		
10	MLT	321	Diagnostic Clinical Chemistry (1)	4	3	1		
11	MLT	322	Diagnostic Clinical Chemistry (2)	4	3	1		
12	MLT	323	Urinalysis and Body Fluids	3	2	1		
13	MLT	332	Immunology (2)- (Diagnostic)	2	1	1		
14	MLT	341	Diagnostic Microbiology (1)	5	3	2		
15	MLT	342	Diagnostic Microbiology (2)	4	2	2		
16	MLT	351	Diagnostic Parasitology (1)	3	2	1		
17	MLT	352	Diagnostic Parasitology (2)	2	1	1		
18	MLT	411	Clinical Rotation-Hematology	5			5	
19	MLT	414	Clinical Rotation-Blood Bank	4			4	
20	MLT	421	Clinical Rotation-Clinical Chemistry	5				
21	MLT	423	Clinical Rotation- Parasitology and Urinalysis	3				
22	MLT	431	Clinical Rotation- Immunology	4				
23	MLT	441	Clinical Rotation-Microbiology	5				
24	MLT	461	Clinical Rotation-Histopathology and Cytology	2				
25	MLT	471	Clinical Rotation- Molecular Diagnostics	1				
26	MLT	491	Lab Administration and Quality Control	2	2			
27	MLT	492	Student Seminar	1		1		
28	MLT	493	Student Project	2		2		
29	MLT	497	Elective	2		2		
<b>Total</b>				<b>88</b>	<b>34</b>	<b>25</b>	<b>9</b>	

## Course Descriptions:

### MLT 211: Hematology (1)

This is an introductory course in hematology designed to provide the basic and essential information needed to proceed to “Hematology II”. It covers the entire information essential in understanding “normal” hematology, the steps involved in the composition of normal blood (including all of its cellular components) found in “normal healthy” individuals. The later part of the course explains in great detail the abnormal (pathological) situations leading to anemia occurrence, concentrating on Red Blood Cell (RBC) abnormalities leaving the White Blood Cell (WBC), and platelets abnormalities to Hematology II, where they are discussed in great detail.

#### Prerequisites:

Completion of First Year

### MLT 231: Immunology (1) - Basic

In this course, students will have the opportunity to gain the basic knowledge and practical skills required by a medical technologist in an immunology/serology laboratory. Basic immunology will be taught including: the principles and mechanisms of body defenses against infection, normal immune response, abnormal immune response, hypersensitivity, immunodeficiency, autoimmunity, properties of antigens, properties of antibodies, and the HLA system. Serology will cover the principles and

descriptions of various antigen-antibody reactions and the most commonly used serological tests

#### Prerequisites:

Completion of First Year

### MLT 261: Histo- and Cyto-technology

This course is designed to provide students with sufficient information on the basic histology, cytology, histological and cytopreparatory techniques. Thorough preparation in normal histology as a pre-requisite for the successful practice and study of histological techniques, elementary knowledge of basic general pathology and diagnostic cytology so that the employment of the various demonstration techniques is firmly related to the diagnosis.

#### Prerequisites:

Completion of First Year

### MLT 271: Diagnostic Genetics and Molecular Biology

This course is designed to prepare students for the molecular diagnostic procedures and applications. Students will learn how to prepare DNA and RNA, plasmids, agarose gels and competent cells for use in transformation. Cloning techniques, PCR reactions, DNA restriction, digestion, ligation and many of the techniques required in molecular genetics are also experienced.

### MLT 294: Med Tech Skills

This course will provide a foundation of basic laboratory knowledge and manual skills for medical technology students. Such knowledge and skills are a prerequisite for the application and un-

# Department of Medical Laboratory Technology

Understanding of advanced clinical courses. Focus on psychomotor skills required for coordination and use of delicate instruments.

**Prerequisites:** Completion of First Year

## **MLT 296: Instrumentation**

This course is designed with the object of introducing the various instruments and analytical techniques being used in the clinical laboratory. Emphasis is placed on the proper care, calibration, maintenance and use of selected laboratory instruments. Topics include: basic electronics, electrical safety, chromatography, electrophoresis, liquid scintillation counter, solid scintillation counter, microscope, spectrophotometer, flame photometer, chloridometer, Coulter counter, auto analyzers and computers.

**Prerequisites:** Completion of First Year

## **MLT 312: Hematology (2)**

This course is dedicated mainly to WBC abnormalities (both benign and malignant). Detailed discussion of malignant diseases involving all types of WBC, including, acute and chronic leukemia of lymphoid and non-lymphoid (myeloid) origin. Also discussed in great detail are the lymphomas, and plasma cell dyscrasia. Later lectures discuss the benign (non-malignant) WBC disorders.

**Prerequisites:** Completion of Second Year

## **MLT 313: Coagulation and Hemostasis**

This course is dedicated entirely to the mechanism involved in coagulation and hemostasis including the coagulation factors, the methods of activation (intrinsic and extrinsic pathways), the fibrinolytic system, and platelets structure, and function. The later parts of this section concentrate on the pathological states of coagulation leading to clotting problems such hemophilia, DIC, Primary Fibrinolysis, etc. The remaining practical session (per week) is dedicated to hemostasis and coagulation methodologies such as PT, PTT, TT, bleeding time, mixing studies, factor assays, platelets aggregation and adhesion studies, etc.

**Prerequisites:** Completion of Second Year

## **MLT 314: Blood Bank**

This course is designed to prepare students for lifelong-learning in the clinical area of blood banking. Building up the basic knowledge of serological testing and blood group system based upon required reading on pre-transfusion testing, clinical conditions associated with immunohematology, possible complication of transfusion and the practical aspects of transfusion medicine. Emphasis will be placed on the development of student's skills for interpreting results, problem-solving and decision-making. Laboratory sessions will provide students with the opportunity to practice routine pre-transfusion testing procedures.

**Prerequisites:** Completion of Second Year

## **MLT 321: Diagnostic Clinical Chemistry (1)**

This course is a detailed study of the chemical and instrumental analyses of human biological material of clinical significance. Students will be introduced to commonly used clinical chemistry techniques. Discussion of the clinical aspects of carbohydrates, proteins, non-protein nitrogen compounds, enzymes, electrolytes, blood gases, acid-base balance, lipids. Integration of the following topics into the laboratory and lecture sessions: laboratory mathematics, quality assurance, specimen collection and processing,

sources of biological variation, and evaluation techniques.

**Prerequisites:** Completion of Second Year

## **MLT 322: Diagnostic Clinical Chemistry (2)**

This is a continuation of the first course of diagnostic clinical chemistry. The topics covered include vitamins and trace elements, renal function, liver function tests, immunochemical assays, hormones, thyroid function, gastrointestinal function, pancreatic function, tumor markers, therapeutic drug monitoring, and toxicology.

**Prerequisites:** Completion of Second Year

## **MLT 323: Urinalysis and Body Fluids**

This course will provide students with the skills needed to perform a routine urinalysis and to properly analyze other body fluids commonly encountered in the clinical laboratory. The urinary system, formation of urine, the physical, chemical and microscopic examination of urine will be discussed. Analysis of other body fluids will include seminal fluid, synovial fluid, gastric fluid and serous fluids (pericardial, pleural, peritoneal and ascetic). Light microscopy, phase microscopy, polarized microscopy, osmometry, potentiometry (pH) and manual techniques will be utilized in the laboratory portion of the course.

**Prerequisites:** Completion of Second Year

## **MLT 332: Immunology (2)- (Diagnostic)**

The course is designated to give an up-to-date knowledge of basic and technical immunology and serology as well as hands on practical laboratory applications of some common immunological and serological techniques. Students are advised to learn as much as they can about the subject before starting their fourth year hospital training. This will be central to understanding not only aspects of immunological laboratory testing but also aspects of many other areas of medical laboratory testing in which immunological techniques are exploited.

**Prerequisites:** Completion of Second Year

## **MLT 341: Diagnostic Microbiology (1)**

This course covers various topics in general bacteriology including bacterial morphology and ultra-structure, taxonomy, characteristics, bacterial metabolism, and bacterial genetics. Major families of bacteria are discussed in detail in the section on systematic bacteriology, including general characteristics, pathogenesis, culture and differentiation, treatment and prevention. The laboratory section covers basic techniques in bacteriology including microscopic examination, different staining techniques, culture on various types of media, identification using biochemical and serological tests, sterilization and disinfection, and antimicrobial susceptibility testing. The last part of the course covers medical mycology, including properties of medically important fungi, pathogenesis, and laboratory diagnosis.

**Prerequisites:** Completion of Second Year

## **MLT342: Diagnostic Microbiology (2)**

This course extends the coverage of microorganisms to include viruses with an emphasis on the principles of diagnostic microbiology. Virology topics include structure, classification, and pathogenesis, major families of human pathogens, laboratory diagnosis, prevention and therapy. The diagnostic microbiology section covers the normal flora of the body, microbe-host interaction, and principles of diagnosing major microbial agents causing infection at various

# Department of Medical Laboratory Technology

body sites. The laboratory component trains students on proper procedures for collecting and transporting specimens, techniques for isolation and identification of pathogenic organisms and differentiation between them and the normal body flora, and antimicrobial susceptibility testing. Students are trained on how to properly interpret and report results from a microbiology assay, serological tests, sterilization and disinfection, and antimicrobial susceptibility testing.

**Prerequisites:** Completion of Second Year

## **MLT351: Diagnostic Parasitology (1)**

This course is designed to prepare students for diagnostic clinical laboratory testing necessary for the accurate and rapid diagnosis of common helminthic parasitic diseases. Students will learn the biological and clinical aspects of human parasites. This includes nematodal infections, trematodal infections and cestodal infections of medical importance. The course covers the geographical distribution in Saudi Arabia and globally and concepts of epidemiology, prevention, and control of parasitic diseases. The diagnostic morphology of the causative organisms in the adult and developmental stages with their life cycles in man and external environment is presented. Students will receive training in recognition of groups of parasites, modes of infection, life cycles, major clinical aspects as well as different diagnostic methods.

**Prerequisites:** Completion of Second Year

## **MLT 352: Diagnostic Parasitology (2)**

This course is designed to prepare students for diagnostic laboratory testing necessary for the accurate and rapid diagnosis of common protozoan parasitic diseases. Students will learn the biological and clinical aspects of human protozoan parasites and their vector. Systematic study of protozoan infections including intestinal, tissue and blood infections as well as arthropods of medical importance.

**Prerequisites:** Completion of Second Year

## **MLT 411: Clinical Rotation-Hematology**

This clinician rotation focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 414: Clinical Rotation-Blood Bank**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 421: Clinical Rotation-Clinical Chemistry**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 423: Clinical Rotation-Clinical Chemistry**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 431: Clinical Rotation- Immunology**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed

during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 441: Clinical Rotation-Microbiology**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 461: Clinical Rotation-Histopathology and Cytology**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 471: Clinical Rotation- Molecular Diagnostics**

This is a clinical rotation that focuses on the training of students in clinical laboratories in hospitals. Theoretical sections are reviewed during tutorial sessions.

**Prerequisites:** Completion of Third Year

## **MLT 491: Lab Administration and Quality Control**

The course will cover the principles and problems concerning the organization and administration of clinical laboratories with special reference to purchasing, personnel, data processing, fiscal management, budget development, quality assurance and legal aspects. Topics include the function of the laboratory, laboratory equipment and maintenance, human resource management, physical structure and design of laboratories, laboratory design and safety codes, purchasing and inventory control, budget development, quality assurance, type of errors, laboratory organization, and health planning, laboratory information management systems, and policies and procedures

**Prerequisites:** Completion of Third Year

## **MLT 492: Student Seminar**

This seminar will expand students' knowledge of clinical laboratories by reviewing current topics in related journals and references. Students will present a short seminar about their projects with the approval of the project supervisor. All attending students are expected to participate in the discussion of the presented seminar.

**Prerequisites:** Completion of Third Year

## **MLT 493: Student Project**

Students will work with a faculty member or selected senior staff in the clinical laboratory to select a topic of interest related to medical laboratories. Students will be encouraged to integrate information and/or data acquired in the clinical laboratory with the information gained from their literature search. Each student must submit separate scientific dissertation even if the project was done by a group of students.

**Prerequisites:** Completion of Third Year

## **MLT 497: Elective**

This course is intended to introduce the student to an area of medical technology that is of interest to him but which is not covered sufficiently by the required courses of the curriculum. The student will spend two weeks observing and participating in lab work in one areas of which some inside or outside the university.

**Prerequisites:** Completion of Third Year



# Department of Medical Laboratory Technology

## FACULTY MEMBERS

### Professors

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### Lecturers

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# Department of Nursing

## Department Contact:

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## History:

The Department of Nursing was established in 1977 and is credited with being the first baccalaureate nursing education program in Saudi Arabia. The first batch of graduates consisted of six Saudi female students. The department was at first affiliated to the College of Medicine and Medical Sciences, but since the establishment of the Faculty of Applied Medical Sciences in 2003, nursing became one of the faculty's five departments. The number of students increased annually to reach the total number of 949 graduates by 2010, many holding leading nursing positions in various health organizations in the kingdom. The nursing curriculum is a four year academic program followed by one year of internship at the hospital during which graduates consolidate their clinical skills and academic knowledge leading to a Bachelor of Science Degree in Nursing. The curriculum has been updated over the years to meet the health needs of Saudi Arabia as well as to emphasize current and future trends in health care delivery.

## Vision:

The Department of nursing strives to adopt innovative educational strategies that produce competitive national, regional, and global competent nursing professionals.

## Mission:

The nursing program is dedicated to preparing highly skillful competitive nursing professionals, change agents, leaders of the future, leading the discipline by the generation, dissemination and utilization of new knowledge in nursing education, for promoting and improving health through excellence and innovation in student - centered learning academic success, research and scholarly inquiry, partnership and engagement in communities.

## Departmental Requirements:

To earn a B.Sc. in Nursing , students must complete a total of 137 credit hours distributed as follows:

- 26 credit hours of university and preparatory year courses,
- 23 credit hours of faculty courses,
- And 88 credit hours of core departmental courses.



# Department of Nursing

**Department Core Courses:** Students study 88 credit hours of specialty related courses Credit Hours 88

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	MICN	211	Microbiology and Para cytology	3	3			BIO101
2	PATN	211	Pathology	3	3			ANTT 208, BCHM 207
3	CLNN	214	Nutrition	2	2			BCHM 207
4	NURS	221	Basic Concepts of Professional Nursing	2	2			
5	NURS	222	Foundation of Professional Nursing (I)	3	2	1		
6	NURS	223	Foundation of Professional Nursing (II)	5	2	3		NURS 222
7	NURS	241	Development Throughout Life Span	2	2			
8	NURS	251	Sociology for Nursing	2	2			
9	NURS	261	Psychology for Nursing	2	2			
10	PHAN	311	Pharmacology (I)	2	2			
11	PHAN	312	Pharmacology (II)	2	2			PHAN 311
12	NURS	324	Nursing Care of Adults (I)	6	3			NURS 222,NURS 223
13	NURS	325	Nursing Care of Adult (II)	6	3		3	NURS 324
14	NURS	331	Maternity Nursing	6	3		3	NURS 222,NURS 223
15	NURS	342	Child Health Nursing	6	3		3	NURS 331
16	NURS	381	Nursing Informatics	2	2			CPIT 100
17	NURS	426	Care of Older Adults	2	2			NURS241, NURS 324
18	STAT	335	Applied Biostatistics	3	3			STAT 101
19	NURS	427	Critical Care Nursing	6	3		3	NURS 324,NURS 325
20	NURS	452	Community Health Nursing	6	3		3	NURS 324,NURS 325
21	NURS	462	Psychiatric/ Mental Health Nursing	6	3		3	NURS 261 PHAN 311-312
22	NURS	482	Nursing Leadership / Management	6	3		3	NURS 324, NURS 325
23	NURS	499	Research Process & Evidence-Based Nursing	3	6			STAT 335
<b>Total</b>				<b>86</b>	<b>61</b>	<b>4</b>	<b>21</b>	

**Elective Courses:** Students select only one of the following five elective courses representing 2 credit hours:Credit Hours 2

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	MLT	371	Genetics for Nurses	2	2	3		
2	NURS	453	Epidemiology	2	2	3		
3	NURS	426	Counseling	2	2	3		
4	NURS	463	Principles of Education for Nurses	2	2	3		
5	NURS	471	Nursing Theory	2	2			
<b>Total</b>				<b>10</b>	<b>10</b>	<b>12</b>		

## Course Descriptions:

### MICM 211: Microbiology and Paracytology

The course is designed to cover the underlining basic aspects of medical parasitology, in order to fulfill an essential prerequisite datum of knowledge for efficient nursing staff, and be a systematic study of the protozoal and helminthic infections including nematodal, trematodal, cestodal infections as well as arthropods of medical importance. Students will learn the biological and clinical aspects of human parasites and their vectors.

**Prerequisites:** BIO 101

### PATN 211: Pathology

This course is a theoretical introduction to basic pathology and is designed mainly for student before they begin their clinical course. It covers the principles of disease processes including mechanisms and where known the causative and predisposing factors together with the morphological changes characteristic of each pathological process.

**Prerequisites:** ANTT 208, BCHM 207

### CLNN 214: Nutrition

This course aims to study nutrition and the nutritional requirements of individuals and the family, with emphasis on the principles of achieving an adequate diet during all phases of the life cycle.

1. Nutrition in health throughout the life cycle
2. Nutritional Assessment
3. Clinical or Therapeutic Nutrition

Emphasis is given to the role of nurses in nutritional care.

**Prerequisites:** BCHM 207

### NURS 221:Basic Concepts of professional Nursing

This course explores the evolution of the nursing profession with emphasis on nursing in Saudi Arabia. It aims at raising students' awareness of the role of the professional nurse in the health care system and promoting students' familiarization with values and behaviors of the professional nurse. The legal and ethical aspects of nursing, nursing education, the value of research and nursing theories are presented.

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**NURS 222: Foundation of Professional Nursing (I)** Students will acquire knowledge and skills in performing basic nursing skills, in-patient care as a member of the health care team. Emphasis is placed on the physiological, psychological, cultural and developmental needs of individuals. Students practice nursing procedures and skills in supervised laboratory experiences, with emphasis on personal hygiene, body mechanics, medication, aseptic techniques.

## **NURS 223: Foundation of Professional Nursing (II)**

This course enables students to expand their knowledge and understanding of the components of the nursing process as a basic of nursing practice. Clinical knowledge, nursing skills and procedure based on the physiological, psychological, cultural and developmental needs of human beings are emphasized. Students practice nursing procedures and skills in a supervised nursing laboratory. Hospital clinical experiences enable students to therapeutically interact with patients.

**Prerequisites:** NURS 222

## **NURS 241: Development Throughout life span**

This course presents concepts, principles and facts about growth and development. It discusses physical growth, mental, emotional and social development in the different stage of life.

## **NURS 251: Sociology for Nursing**

This course focuses on human behaviors that form and develop through social groups and interaction. The course aims at describing the functions of social groups, their problems in society, basic sociological theories and social systems, social changes, cultural and social developments and reforms.

## **NURS 261: Psychology for Nursing**

In this course students are introduced to the discipline of psychology, and the specific field of developmental psychology. The processes of personality development throughout the life span and factors that may predispose individuals to mental illness are explored.

## **PHAN 311 : Pharmacology I**

This third year course in nursing pharmacology aims to introduce students to the basic concepts of pharmacology, how drugs act on the living system at the molecular level and how the body handles the drug i.e. absorption, distribution, metabolism and excretion of drugs. The effect of drugs on different organs of the living body, the use of the drug in treating various disease, its adverse effects and possible interaction with other drugs taken at the same time. The course consists of lectures and tutorials, with occasional assignments.

## **PHAN 312 : Pharmacology II**

This course is a continuation of Pharmacology I given to third year students. It continues to introduce students to the basic concepts of pharmacology, how drugs act on the living system at the molecular level and how the body handles the drug i.e. absorption, distribution, metabolism and excretion of drugs. The effect of drugs on different organs of the living body, the use of the drug in treating various disease, its adverse effects and possible

interaction with other drugs taken at the same time. The course consists of lectures and tutorials, with occasional assignments.

**Prerequisites:** PHAN 311

## **NURS 324 : Nursing Care of Adult I**

This course provides students with the knowledge used in applying critical thinking and decision making in the healthcare, medical and surgical settings. It aims at developing skills needed in nursing care based on the nursing process approach, and helps students in identifying the actual and potential problems related to patients with GIT, Cardiovascular, liver, hematological renal, respiratory, endocrine, and neurological disorders.

**Prerequisites:** NURS 222 ,NURS 223

## **NURS 325 : Nursing Care of Adult II**

The aim of the course is to enhance students skills gained in medical surgical (I). It focuses on holistic nursing care management, clients experiencing acute and chronic health problems and their associated needs. It enables students to apply the nursing process in caring of patients in medical surgical settings related to Musculoskeletal, Diabetes Mellitus, Endocrine gland, hematology , Immunology and oncology.

**Prerequisites:** NURS 324

## **NURS 331: Maternity Nursing**

This course provides foundation knowledge and skills to maintain high quality nursing care for women through their life span starting from menarche going through menopause. The clinical experience of the students enables them to apply the given knowledge through practice; to assess, diagnose, plan, implement and evaluate the actual and potential women's health needs during adolescence, pregnancy, labor and delivery, postnatal period, family planning and to provide counseling.

**Prerequisites:** NURS 222, NURS 223

## **NURS 342: Child Health Nursing**

This course enables students to expand their understanding of health-related behaviors regarding person-environment interactions of well children and children experiencing moderate alteration in health. Environmental factors influencing health, development and illness/ hospitalization are explored as a basis for nursing intervention. Emphasis is on the use of the nursing process in assessing adaptation to health related changes and promoting holistic adaptation of the child from infancy through adolescence. Health problems are examined as they occur within body systems. Clinical experiences in pediatric settings enable the student to assess and differentiate normal and abnormal finding and use clinical judgment skills in planning, implementing and evaluating nursing actions. It also enables students to interact with family members in health care planning and health counseling.

**Prerequisites:** NURS 331

## **NURS 381: Nursing Informatics**

This is a foundation course that describes the field of informatics in both nursing and healthcare system. It provides an interdisciplinary understanding of using electronic medical records and web-based technologies. The course includes general orientation of informatics application in nursing administration, clinical practice and education.

**Prerequisites:** CPIT 100

# Department of Nursing

## **STAT 335: Biostatistics**

The course offers a brief review of the concepts of statistics, descriptions and summarization of data, basic probability theory and some important probability distributions. It focuses on statistical inference, methods of statistics and their application to problems in the health and biomedical sciences. Topics include sampling distributions, point and confidence interval estimation, parametric and nonparametric hypothesis testing with emphasis on one and two sample comparisons involving continuous and categorical data, simple and multiple regression and correlation analysis, analysis of variance and vital statistics.

**Prerequisites:** STAT 101

## **NURS 426: Care of Older Adults**

The course explores the concept of aging as a healthy developmental process. Topics include the physiology of aging, health problems common to the elderly, the psychological, emotional, and sociological aspects of the aging process. The nurse's role in meeting the needs of older adults during the aging process is emphasized including the application of the nursing process with selected older ill adults in long-term care.

**Prerequisites:** NURS 241, NURS 324, NURS 325

## **NURS 427: Critical Care Nursing**

This course provides students with the knowledge used in applying critical thinking and decision making in the healthcare in ICU, CCU, and Dialysis or in emergency and burn department. It aims at developing skills needed in nursing care based on the nursing process approach, and helping students identify the actual and potential problems related to critically ill patients.

**Prerequisites:** NURS 324, NURS 325

## **NURS 452: Community Health Nursing**

This course focuses on the integration of public health of individuals, families and communities. Health promotion and disease prevention strategies are examined as they relate to the care of families and communities. Clinical practice is planned to give students the opportunity to relate theory to practice.

**Prerequisites:** NURS 324, NURS 325

## **MLT 371: Genetics for Nurses**

This course provides students with knowledge and practice in each of the seven core genetic competencies recommended by international bodies in the UK (Royal College of Nursing and the Nursing and Midwifery Council) and USA (The National Coalition for Health Professional Education in Genetics).

## **NURS 453: Epidemiology**

This course introduces students to the basic concepts and theories of epidemiology. Basic measures and analytical methods for epidemiological analysis on various communicable and non communicable diseases are addressed

## **NURS 462: Psychiatric & Mental Health Nursing**

Applies nursing process with clients experiencing behavioral and psychological problems. Emphasizes mental status assessment and therapeutic communication. Uses a holistic approach

in examining primary, secondary and tertiary levels of care in a variety of psychiatric settings.

**Prerequisites:** NURS 261, PHAN 311, PHAN 312

## **NURS 463: Counseling**

This is a counseling course which focuses on providing extensive training in psychology and human behavior to develop "helping relationships" and working with many different situations.

## **NURS 471: Principles of Education for Nurses**

This course introduces students to theories and principles of teaching and learning that will enhance the role of the nurse educator. The development of teaching strategies and learning activities is explored in a systematic and comprehensive manner. Course planning, development, implementation, and evaluation are included. Evidence-based educational strategies, including technology, are discussed and ways to integrate them into clinical and classroom activities are identified.

## **NURS 472: Nursing Theory**

This course focuses on the essential elements of scientific underpinnings of knowledge development in the discipline of nursing. The course will explain the major grand theories in the nursing profession to gain general understanding of their possible clinical applications in various nursing care delivery systems. It provides an introduction to the foundation of theory development and theory construction in nursing sciences with emphasis on the relationship between theory construction and research methods to generate evidence based knowledge and practice. The course provides basic understanding of the types and levels of theories to identifying mid range theories and explore it applications. It identifies the possible current and future factors that influence the perspectives of nursing sciences.

## **NURS 482: Nursing Leadership/Management**

The course introduces major theories and concepts of leadership and management needed for effective delivery of nursing care. These includes the managerial role of planning, organizing, staffing and scheduling, directing, and controlling as applicable to the first level of nursing management. Trends and issues in nursing leadership will be presented. The clinical component of the course offers the opportunity for students to apply theoretical knowledge into clinical settings.

**Prerequisites:** NURS 324, NURS 325

## **NURS 499: Research Process & Evidence-Based Nursing**

This course emphasizes the philosophical orientation and techniques of a variety of research methods, including both the qualitative and quantitative types. Students learn research question development relevant to nursing profession; consider design issues and techniques including those related to sampling, data collection, data analysis, and data representation, validation and ethical compartments. It prepares the undergraduate students to utilize the research process in improving clinical nursing practice, administration and education, by conducting selective group research projects from various nursing settings.

**Prerequisites:** STAT 101

# Department of Nursing

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# Department of Clinical Nutrition

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## History:

The Clinical Nutrition Department was established in 2003.

## Vision:

To be a pioneer in providing high quality educational programs and research in clinical nutrition.

## Mission:

To produce highly qualified graduates capable of serving the country in clinical nutrition sciences including clinical dietetics, community nutrition and food service management. The program seeks to provide students with a broad perspective of the clinical nutrition profession, with a solid foundation of knowledge required for the practice of clinical nutrition, and with the opportunity to begin to develop professional skills and research. The program also seeks to educate individuals to meet the nutritional needs of the Saudi community.

## Departmental Requirements:

The B.Sc. in Clinical Nutrition is a four-year program with one additional obligatory year of clinical practice (Internship Program). In order for students to qualify for a B.Sc. in Clinical Nutrition, they must successfully complete 137 credit hours distributed as follows:

- 26 credit hours of university and preparatory year requirements,
- 23 credit hours of faculty courses,
- And 88 credit hours of core departmental courses.



# Department of Clinical Nutrition

## Department Core Courses Credit Hours 88

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	CLN	210	Principles of Food Science & Nutrition	3	3			Completion of 1st year courses
2	CLN	211	Nutrition During Life Cycle	4	3	1		
3	BCHT	207	Nutritional Biochemistry	3	2	1		
4	PATT	215	General Pathology	2	2			
5	CLN	240	Nutritional Status Assessment	3	1	2		
6	CLN	212	Food Safety & Hygiene	4	3	1		
7	CLN	230	Health Psychology	2	2			
8	CLN	341	Medical Nutrition Therapy (1)	4	3	1		Completion of 2nd year courses
9	CLN	313	Food Analysis	3	2	1		
10	CLN	306	Medical Microbiology & Parasitology	5	3	2		
11	CLN	314	Nutrition & Immunology	2	2			
12	CLN	315	Nutrient Estimation	3	2	1		
13	CLN	342	Medical Nutrition Therapy (2)	4	3	1		
14	CLN	331	Nutrition & Economy	2	2			
15	CLN	332	Community Nutrition	3	2	1		
16	CLN	343	Enteral & Paraenteral Nutrition	3	2	1		
17	CLN	320	Vocational Health & Safety	2	2			
18	CLN	344	Food & Drugs	2	2		5	
19	CLN	445	Clinical Rotation in Medical Nutrition Therapy (1)	6			6	Completion of 3rd year courses
20	CLN	433	Food Habits & Social Concepts	2	2		5	
21	CLN	421	Professional Skills in Dietetic	3	2	1	3	
22	CLN	422	Research Methods in Health Sciences	3	2	1	4	
23	CLN	446	Metabolic & Genetic Nutritional Disorders	3	2	1	5	
24	CLN	447	Clinical Rotation in Medical Nutrition Therapy (2)	6			6	
25	CLN	434	Nutritional Epidemiology	2	2			
26	CLN	423	Management of Nutrition Services & Dietetic	3	2	1		
27	CLN	424	Advanced Topics in Food Science and Nutrition	2	2			
28	CLN	415	Nutrition for Health & Fitness	2	1	1		
29	CLN	497	Student Research Project	2		2		
<b>Total</b>				<b>88</b>	<b>56</b>	<b>20</b>	<b>34</b>	

### Course Descriptions:

#### CLN 210: Principles of Food Science and Nutrition

Physiologic and chemical roles of carbohydrates, lipids, proteins, vitamins, minerals and water in the human body. Understanding of nutrition standards and relationship between foods and nutrients. Factors affecting absorption, utilization, and the need for nutrients.

**Prerequisites:** Completion of 1st year courses

#### CLN 211: Nutrition During Life Cycle

This course is designed to provide recognition of the relationships among the physiological, biochemical, psychological, and sociological factors that affect nutrient requirements and recommendations over the life cycle.

**Prerequisites:** Completion of 1st year courses

#### BCHM 205: General Biochemistry

Study of metabolic roles of macro- and micronutrients in the body using an integrated approach to explore the roles of nutrients in biochemical, physiological, and metabolic functions. Includes effects of metabolic diseases on physiological and biochemical functions of the body.

**Prerequisites:** Completion of 1st year courses

#### PHYT 205: Physiology

This course enables students to learn physiological concepts, control mechanisms and life processes as they relate to the biological nature of human beings

**Prerequisites:** Completion of First Year

#### ANTT 205: Anatomy

This course aims to provide students with detailed study and understanding of anatomical terms, anatomical structures and functions of the human body.

**Prerequisites:** BCHT 207

#### BCHM 206: Nutritional Biochemistry

This course aims to thoroughly acquaint students with metabolic roles of macro- and micronutrients in the body using an integrated approach to explore the roles of nutrients in biochemical, physiological, and metabolic functions.

**Prerequisites:** PATT 215

#### PATN 215: General Pathology

This course provides students with basic knowledge and general principles of general pathology. The objective of the course is to enable the student to understand, define, and apply basic facts and use appropriate terms in the field of clinical nutrition.

**Prerequisites:** Completion of First Year



# Department of Clinical Nutrition

## **CLN 240: Nutritional Status Assessment**

This course includes study and skills development in nutritional assessment and body composition assessment relevant to individual and population based nutrition and dietetic practice. Key content areas include dietary assessment, anthropometry, laboratory and clinical methods

**Prerequisites:** Completion of First Year

## **CLN 212: Food Safety and Hygiene**

The course will discuss the background to food safety and deal with problems related to genetically engineered food, chemicals in the food chain, microbial toxins and food borne disease and natural toxins.

**Prerequisites:** Completion of First Year

## **CLN 230: Health Psychology**

This course considers psychological theories, concepts and applications. It will cover core areas of psychology including social psychology, cognitive psychology, biological psychology and abnormal psychology. The scientific research methods used by psychologists working in these fields will be explored within each of the core areas.

**Prerequisites:** Completion of First Year

## **CLN 306: Medical Microbiology and Parasitology**

This course covers the basic concepts, principles and techniques of medical microbiology and parasitology. It looks at the domains of bacteria, viruses, fungi, parasites and microbial diseases. Students will be introduced to human infections caused by the main groups of bacterial, viral, parasitic and fungal pathogens and the mechanisms of disease causation.

**Prerequisites:** Completion of 2nd year courses

## **CLN 314: Nutrition and Immunology**

This course will concentrate on current understanding of the interactions between nutrition and immunity, emphasizing the mechanisms of action of the nutrients concerned and the impact on human health.

**Prerequisites:** Completion of 2nd year courses

## **CLN 313: Food Analysis**

This course introduces the experimental procedures required for food analysis. Preparation of samples and reagents for analysis will be covered in terms of appropriate methods and safety aspects. The gross analysis of foods (moisture, fat, protein, ash and visual assessment...) will be covered, in addition to the principles used in the measurement of color used for solids and liquids. A range of separation techniques will be considered both as techniques for analysis and for food purification.

**Prerequisites:** Completion of 2nd year courses

## **CLN 315: Nutrient Estimation**

This course introduces students to the importance of food and well balanced diets. Topics include description of nutrients, their sources, functions and the daily requirements for different age groups.

**Prerequisites:** Completion of 2nd year courses

## **CLN 320: Vocational Health and Safety**

This course is designed to describe the importance of health and safety. Comprehensive knowledge of occupational injuries and illnesses among health care workers and detailed guidelines for protecting their safety and health in hospitals.

**Prerequisites:** Completion of 2nd year courses

## **CLN 331: Nutrition and Economy**

This course will provide detailed study of food availability, access and distribution among household in relation to food security nutrition and environment. Emphasis will be on understanding of the inter-linkages among food security, nutrition and environment.

**Prerequisites:** Completion of 2nd year courses

## **CLN 332: Community Nutrition**

This course will provide detailed study of nutrition-related problems in the community and the various resources, activities, agencies, and programs involved in health promotion and disease prevention and the important role of dietitians in the community and their interaction with other primary health care workers and voluntary organizations.

**Prerequisites:** Completion of 2nd year courses

## **CLN 341: Medical Nutrition Therapy (1)**

This course is an integration of pathophysiology, biochemistry, anatomical and nutrition concepts that form the basis of medical nutrition therapy in health care. A study of nutrition status and assessments; nutrition care strategies; and the modification of normal food intake with emphasis on dietary adjustments necessitated by certain disease and disorder processes and conditions focusing on the hospitalized and/or ambulatory patient.

**Prerequisites:** Completion of 2nd year courses

## **CLN 342: Medical Nutrition Therapy (2)**

This course is an integration of pathophysiology, biochemistry, anatomical and nutrition concepts that form the basis of medical nutrition therapy in health care. A study of nutrition status and assessments; nutrition care strategies; and the modification of normal food intake with emphasis on dietary adjustments necessitated by certain disease and disorder processes and conditions focusing on the hospitalized and/or ambulatory patient.

**Prerequisites:** Completion of 2nd year courses

## **CLN 343: Enteral and Paraenteral Nutrition**

This course is designed to explore nutrition support strategies and to provide dietitians with skills and knowledge to design assess and monitor routine enteral and parenteral feeding regimens.

**Prerequisites:** Completion of 2nd year courses

## **CLN 344: Food and Drugs**

This course describes the importance of food-drug interactions on drug action and the effect of drugs on the nutritional status together with mechanisms of these interactions.

**Prerequisites:** Completion of 2nd year courses

## **CLN 415: Nutrition for Health and Fitness**

This course explores nutrition as a tool for achievement of optimal health and maximum fitness for all ages and genders.

**Prerequisites:** Completion of 3rd year courses

## **CLN 421: Professional Skills and Dietetic**

This course provides a detailed study of the role of dietitians in modern health care systems and application of interviewing, counseling, and educational techniques in dietetics.

**Prerequisites:** Completion of 3rd year courses

# Department of Clinical Nutrition

## CLN 422: Research Methods in Health Sciences

This course is designed to assist students in improving their understanding of, and capabilities in, the research design, planning and implementation processes. A key element of the course is the opportunity to construct a research proposal that would assist in the preparation of senior research projects.

**Prerequisites:** Completion of 3rd year courses

## CLN 422: Research methods in health sciences

This course is designed to assist students in improving their understanding of, and capabilities in, the research design, planning and implementation processes. A key element of the course is the opportunity to construct a research proposal that would assist in the preparation of senior research projects.

**Prerequisites:** Completion of 3rd year courses

## CLN 423: Management of Nutrition Services and Dietetic

The planning, operation, management and evaluation of the role of foodservices in a range of settings. This course will critically examine and contrast the efficient processes involved in the provision of food and nutrition services.

**Prerequisites:** Completion of 3rd year courses

## CLN 424: Advanced Topics in Food Science and Nutrition

This course introduces advanced topics in nutrition and food sciences. Students gain greater understanding of how these topics affect health and illness.

**Prerequisites:** Completion of 3rd year courses

## CLN 499: Student Research Project

In this course students will work with a faculty member or selected senior staff in the hospital to select a topic of interest related to clinical nutrition. Students will be encouraged to integrate information and data acquired in the research with the information gained from their literature search.

**Prerequisites:** Completion of 3rd year courses

## CLN 433: Food Habits and Social Concepts

This course provides a detailed study of the historical, social, psychological, economic, religious, and aesthetic significance of food customs in various cultures and societies. Fulfills multicultural, social and behavioral requirements for individuals or groups.

**Prerequisites:** Completion of 3rd year courses

## CLN 434: Nutritional Epidemiology

This course introduces the fundamental principles and practices of epidemiology in public health. Students will examine basic epidemiological concepts and methods, explore their application, perform elementary epidemiological reviews and critiques, and reflect on the role of epidemiology in public health.

**Prerequisites:** Completion of 3rd year courses

## CLN 445: Clinical Rotation and Medical Nutrition (1)

This course is the core course relevant to the clinical application of nutrition and dietetics knowledge and skills. It includes supervised individualized experience in clinical dietetics (needs assessment, nutrition care plan development, case study and documentation).

**Prerequisites:** Completion of 3rd year courses

## CLN 447: Clinical Rotation in Medical Nutrition Therapy (2)

This course is the core course relevant to the clinical application of nutrition and dietetics knowledge and skills. It includes supervised individualized experience in clinical dietetics (needs assessment, nutrition care plan development, case study and documentation).

**Prerequisites:** Completion of 3rd year courses

## CLN 446: Metabolic and Genetic Nutritional Disorders

This course describes genetic changes which take place in inherited diseases and explains the important role of dietetic therapy, screening, diagnosis and genetic counseling of genetic and metabolic disorders.

**Prerequisites:** Completion of 3rd year courses

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# Department of Physiotherapy

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## History:

The department was established in 2005.

## Vision

This program is designed to graduate highly skilled medical professionals in physical therapy sciences capable of providing the best therapeutic quality to patients and of functioning as integral members of the health care team.

## Mission:

The program aims to provide qualified graduates capable of coping with the requirements of the local, regional and global needs in the field of Physical Therapy. The department offers students the practical experience needed to acquire the optimum level of achievement.

## Departmental Requirements:

The B.Sc. in Physical Therapy is a four year program with one additional obligatory year of clinical training ("Internship"). To qualify for a B.Sc. in Physical Therapy, students must successfully complete a total of 137 credit hours distributed as follows:

- 23 credit hours of university and preparatory year requirements,
- 20 credit hours of faculty courses,
- And 88 credit hours of core departmental courses.



# Department of Physiotherapy

## Core Departmental Courses: Credit Hours 91

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lab	Prac	
1	ANTM	207	Anatomy 1	3	2	1		BIO101
2	ANTM	210	Anatomy 2	3	2	1		ANTM211
3	PHYT	212	Physiology 2	3	2	1		PHYM206
4	PHTH	221	Therapeutic Exercises 1	3	2	1		BIO 101
5	PHTH	222	Therapeutic Exercises 2	3	2	1		PHTH221
6	PHTH	223	Tests and Measurements 1	3	2	1		BIO101
7	PHTH	224	Tests and Measurements 2	3	2	1		PHTH223
8	PHTH	225	Electrotherapy 1	3	2	1		PHYS101
9	PHTH	226	Electrotherapy 2	3	2	1		PHTH225
10	PHTH	227	Hydrotherapy	2	1	1		PHYS101
11	PHTH	228	Biomechanics	3	2	1		ANTM211
12	PATN	311	Pathology	2	2			ANTM212
13	PHAN	311	Pharmacology	2	2			ANTM212
14	PHTH	311	Exercise Physiology	3	2	1		PHYM212
15	RADP	312	Radiology	3	2	1		ANTM212
16	PHTH	331	Cardiopulmonary PT	4	3	1		ANTT210 PHTH222 PHTH223
17	PHTH	332	Geriatrics PT	2	1	1		ANTT210 PHTH222 PHTH223
18	PHTH	333	Clinical Cardiopulmonary PT	3			3	ANTT210 PHTH222 PHTH223
19	PHTH	344	Orthopedic PT	4	3	1		ANTT210 PHTH222 PHTH223
20	PHTH	345	Sports Injuries PT	2	1	1		ANTT210 PHTH222 PHTH223
21	PHTH	346	Clinical Orthopedic PT	3			3	ANTT210 PHTH222 PHTH223
22	PSYP	392	Psychology	2	2			ANTT210 PHTH222 PHTH223
23	PHTH	397	Prostheses and Orthoses	2	1	1		ANTT210 PHTH222 PHTH223
24	PHTH	451	Pediatric PT	4	3	1		ANTT210 PHTH222 PHTH223
25	PHTH	452	Growth and Development	2	2			ANTT210 PHTH222 PHTH223
26	PHTH	453	Clinical Pediatric PT	3			3	ANTT210 PHTH222 PHTH223
27	PHTH	464	Woman Health PT	3	2	1		ANTT210 PHTH222 PHTH223
28	PHTH	475	Wound Care PT	2	1	1		ANTT210 PHTH222 PHTH223
29	PHTH	486	Neurology PT	4	3	1		ANTT210 PHTH222 PHTH223
30	PHTH	487	Neurosurgery PT	2	1	1		ANTT210 PHTH222 PHTH223
31	PHTH	488	Clinical Neurology PT	3			3	ANTT210 PHTH222 PHTH223
32	PHTH	490	Management in PT	2	2			
33	PHTH	499	Research Project	2	1	1		MATH 101 STAT 101 CS 101
<b>Total</b>				<b>91</b>	<b>55</b>	<b>24</b>	<b>12</b>	

## Course Descriptions:

### PHTH 221: Therapeutic Exercises (1)

This course is designed to introduce a variety of physical therapy modalities that are used to manage patient problems. The course content includes, passive exercises, active exercises (assistive, free, resistive), strengthening exercises, therapeutic massage, stretching exercises, relaxation and relaxation training. Practical training will be given.

#### Prerequisites:

BIO 101

### PHTH 223 : Tests And Measurements (1)

The objective of this course is to provide students with practical experience and manual skills for good patient handling and contact. The course is designed to teach applications of musculoskeletal and neurophysiological theories, principles of evaluation and testing of different body parts. Techniques, practical training and practical application will be given.

#### Prerequisites:

BIO 101

### PHTH 225: Electrotherapy (1)

This course will explore fundamental concepts and characteristics of electro physics with special emphasis on clinical applications. Procedures of electrophysiological evaluation and assessment of the neuromuscular system will be addressed. Techniques of therapeutic electrical pain control, tissue healing and repair and functional electrical stimulation are included.

#### Prerequisites:

PHYS 101

### PHTH 227: Hydrotherapy

This course will focus on physical laws governing hydrotherapy, and biological effects and clinical uses of different hydrotherapeutic modalities and equipments. Indications, contra-indications, practical training, clinical correlation and problem-solving will be covered.

#### Prerequisites:

PHYS 101

### ANTT 210: Anatomy (2)

The course content includes anatomy of the thorax, thoracic wall and diaphragm, thoracic cavity superior mediastinum, anterior me-

# Department of Physiotherapy

diastinum, middle mediastinum and heart, posterior mediastinum, pleura, lungs, osteology of the thoracic wall, abdominal wall, abdominal muscles, back muscles, nervous system, cranial cavity and meninges, central nervous system, cerebral hemispheres (forebrain, brain stem, cerebellum, spinal cord, cranial nerve.

**Prerequisites:** ANTT 207

## **PHYT 212: Physiology (2)**

This course is a continuation of the physiological mechanisms of body systems. The course content includes heart and circulation, endocrine glands, nervous system and autonomic nervous system. Methods of instruction include lectures, tutorial lessons, assignments, laboratory experience, and tape-slide program.

**Prerequisites:** PHYT 207

## **PHYT 222: Therapeutic Exercises (2)**

This course is a continuation of Therapeutic Exercises I offering physical therapy modalities that used to manage patient problems. Course content includes cervical traction, lumber traction, and soft tissues mobilization, joint mobilization exercises, balancing exercises, coordination exercises, endurance exercises, corrective postural exercises and closed kinetic chain training. Teaching is based on practical application and training.

**Prerequisites:** PHTH 221

## **PHTH 224: Tests And Measurements (2)**

The objective of this course is to provide students with further practical experience and manual skills of good patient handling and contact. It is a continuation of the application of musculoskeletal and neurophysiological theories and principles of evaluation and testing of different body parts. Practical application and training will be taught.

**Prerequisites:** PHTH 223

## **PHTH 226: Electrotherapy (2)**

Course content includes, heat and cold, conduction methods, infrared radiation, shortwave diathermy, microwave diathermy, low intensity laser therapy, ultraviolet therapy and ultrasonic therapy. Practical training and applications will be given.

**Prerequisites:** PHTH 225

## **PHTH 228: Biomechanics**

This course is designed to introduce students to human motion, body mechanics, posture and stability, kinematics and kinetic of motion. Practical application and training in the use of biomechanical devices in biomechanical analysis.

**Prerequisites:** ANTT 207

## **PATP 311: Pathology**

This course aims at providing students with basic knowledge and general principles of general pathology. The objective of the course is to enable students to understand, define, and apply basic facts and use appropriate terms in the field of physical therapy. Course content includes cell injury, inflammation, and acute inflammation, chronic inflammation, cell regeneration, wound healing, infections, homodynamic disorders

**Prerequisites:** ANATOMY 2 (ANTM 212)

## **PHAP 311: Pharmacology**

This course is designed to give students basic information of the gen-

eral principles of pharmacology. Course content includes mode of drug action, drug interactions, adverse drug reactions, drug addiction and abuse, clinical pharmacokinetics, analgesics, corticosteroids, drugs affecting cardiovascular and respiratory systems and selected muscles, drugs and athletes, drugs used by phonophoresis and iontophoresis.

**Prerequisites:** ANATOMY 2 (ANTM 212)

## **PHYT 311: Exercise Physiology**

This course will explore basic concepts of exercise physiology, including integration of metabolic, pulmonary, cardiovascular and neuromuscular systems during exercise and anaerobic and aerobic metabolism during exercise as well as metabolic training principles and adaptations. Physiological responses of respiratory and cardiovascular to various types of acute exercise will be covered.

**Prerequisites:** Physiology 1 (PHYP 205)

## **PHTH 331: Cardiopulmonary PT**

This course is designed to provide students with comprehensive background in the anatomy, physiology and pathology of the cardiovascular and pulmonary system. These concepts will form the basis for physical therapy management of people with cardiopulmonary disorders. Issues such as the effect of exercise training on cardiopulmonary system and contraindications for physical therapy are presented and discussed. The course includes laboratory instruction.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 332: Geriatrics PT**

This course focuses on the clinical management of geriatric patients, the physiological and psychological aspects of aging, and common musculoskeletal, neurological and cardiopulmonary problems, biological and function changes due to aging. The course includes field trips to geriatric centers.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 333: Clinical Cardiopulmonary PT**

The objective of this course is to develop a high level of competency, integrate theoretical and practical knowledge and apply knowledge, skill and attitude to actual patients. The course provides students with supervised clinical experience in physical therapy practical setting. Emphasis will be on physical therapy for common cardio-vascular and respiratory conditions. Supervised application to patient care will be carried out at hospital.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 344 : Orthopedics PT**

This course provides students with adequate knowledge and skills to evaluate and implement physical therapy procedures to individuals with musculoskeletal problems. Conservative treatment for pre and post operative care will be emphasized. Students learn how to perform and document examinations of orthopedic patients using a variety of measurement tools.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 345: Sports Injuries PT**

This course is designed as lecture and laboratory instruction in patient/client management of the injured athlete, including examination, prognosis, intervention and outcome. Topics include emergency care of athlete; taping; pre-season screening; the fe-

# Department of Physiotherapy

male athlete; the child athlete; common medical; dermatologic and infections of the athlete; and the role of physical therapist and athletic trainer on the sports medicine team.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 346: Clinical Orthopedic PT**

This course requires students to utilize theoretical knowledge and skills in physical therapy evaluation and treatment of common musculoskeletal problems such as soft tissue injuries, fractures, and pre and post surgical conditions. Supervised application of patient care is conducted in hospitals and out-patient departments.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 397: Prostheses And Orthoses**

This course includes the study of the different types and functions of orthoses and prostheses, with their components, indications, usage and fitting. Role of physical therapy toward patients using prostheses and orthoses will be included. Types and indications of different wheel chairs and walking aids will be covered.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PSYP 392 : Psychology**

This course is designed to explore how psychology contributes to the understanding of human behavior either on the personal or group levels. Topics include definition of psychology and its fundamental and applied branches, personality and its different aspects, social environment and its elements, interaction between personality and environment, different psychological functions such as perception, memory and learning, society and its effect.

## **RADP 312: Radiology**

The objective of this course is to provide students with basic theoretical and practical information about the different techniques of radiology that are used for diagnosis of the common musculoskeletal, chest, heart and neurological disorders.

**Prerequisites:** ANTT 210

## **PHTH 451 : Pediatric PT**

This course provides student with an understanding of clinical manifestation and physical therapy management of selected pediatric neuromotor and sensory integrative disorders. Students learn how to perform and document examinations, evaluations and assessment of pediatric conditions using a variety of tests and measurements tools and setting functional goals. Physical Therapy intervention and rationale is emphasized through case studies.

**Prerequisites:** ANATOMY 2 (ANTM 212)

## **PHTH 452: Growth And Development**

This course is designed to explore factors affecting motor development across the life span as they relate to physiotherapy. Different theories regarding motor behavior will be explored from the fetal period through the years of adulthood.

**Prerequisites:** ANATOMY 2 (ANTM 212)

## **PHTH 453: Clinical Pediatric PT**

This course is designed to provide students with a supervised clinical experience in the treatment and management of common

pediatric disorders and injuries. It will familiarize students with health care facilities including hospital wards, outpatient departments and centers for handicapped children.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 464: Women Health PT**

This course offers basic information on the etiology, pathology, clinical picture, complications, prognosis and medical and surgical management of common gynecological conditions. This includes assessment, evaluation, methods of physical therapy intervention, and program planning.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 475: Wound Care PT**

In this course students learn how to perform and document examinations of patients with surgical and wound using a variety of measurement tools to determine impairments and set functional goals. Analysis of theoretical bases for therapeutic approaches will be emphasized. Physical therapy intervention and treatment rationale is emphasized through case study and a multidisciplinary approach.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 486: Neurology PT**

In this course students learn how to perform and document examinations of neurological patients using a variety of measurement tools to determine impairments and set functional goals. Analysis of theoretical bases for therapeutic approaches will be emphasized. Physical therapy intervention and treatment rationale is emphasized through case study and a multidisciplinary approach.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 487: Neurosurgery PT**

This course includes physical therapy approach to neurologically disabled patients who have neurosurgical interference. It informs students about problems, assessment and types of neurosurgical treatment of patients with neurological disorders and the pre and post operative role of physical therapy.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 488 : Clinical Neurology PT**

This course includes physical therapy approach to neurologically disabled patients. Students are trained in the hospital and taught how to deal with patients with neurosurgical disorders regarding the assessment and treatment. The course enables students to apply manually and repeatedly the different methods of management to acquire skills.

**Prerequisites:** ANTT 210 PHTH 222 PHTH 223

## **PHTH 490 : Research Project**

This course is designed to familiarize students with the principles and procedures of scientific research. Each student will choose a research project and write a specific proposal.

**Prerequisites:** MATH 101 STAT 101 CS 101

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## **PHTH 499: Management In PT**

This course provides students with a conceptual framework for moral reasoning in dealing with ethical and professional issues in daily practice. Students will be given basic knowledge in health services, planning and management. Attention will be directed to records, policies and procedure manuals, departmental planning and design, personnel management, leadership, and staff supervision and evaluation.

## ■ ■ ■ ■ ■ FACULTY MEMBERS ■ ■ ■ ■ ■

### Professors

#### **Khaled Ahmed Mamdouh**

Pediatrics  
1979 Cairo University, Egypt  
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# Department of Diagnostic Radiology

## Department Contact:

Chairman's Office

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Web Site: <http://rad.kau.edu.sa>

## History:

The department of Diagnostic Radiology was established in 2003 as one of the five main divisions in the Faculty of Applied Medical Sciences.

## Vision:

To be a leading comprehensive department for radiological sciences in Saudi Arabia and the Arab region and a well distinguished educational center world wide.

## Mission:

To produce competent highly skilled medical imaging technologist in different modalities of radiology.

## Departmental Requirements:

To produce competent highly skilled medical imaging technologist in the different modalities of radiology. To earn a B.Sc. in Diagnostic Radiology, students must complete a total of 137 credit hours distributed as follow.

- 26 credit hours of university and preparatory year requirements,
- 20 credit hours of faculty courses,
- 91 credit hours of core departmental courses.

In addition, the students must show interest in dealing with patients and working in hospital environment.

### **Department Core Courses: 91 Credit Hours**

No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lec	Prac	
1	RAD	210	Radiographic Anatomy	3	3			ANTT203
2	RAD	220	X-Ray Physics and Equipment	3	3			PHYS 101
3	RAD	221	Computers and Imaging Modalities	3	3			MATH 101, CS 100
4	RAD	222	Radiobiology and Radiation Protection	3	3			PHYS 101
5	RAD	223	Nuclear Medicine Physics and Equipment	3	3			PHYS 101
6	RAD	224	Image Recording , Quality Assurance and PACS	3	2	1		PHYS 101 RAD210 221
7	RAD	230	Radiographic Technique I	3	2	1		RAD 210
8	RAD	231	Radiographic Technique II	3	2	1		RAD 210
9	RAD	290	Medical Ethics & Patient Care	2	2			COMM 101
10	RAD	311	Sectional anatomy	3	2	1		ANTT 205
11	RAD	325	Ultrasound Physics and Equipment	3	3			PHYS101
12	RAD	332	Radiographic Technique III	3	2	1		PHYS101 RAD 221
13	RAD	333	Radiographic Technique IV	3	2	1		RAD 210 RAD 332
14	RAD	340	Radiography Clinical Practice I	3			3	RAD230 RAD 231
15	RAD	341	Radiography Clinical Practice II	3		3		RAD 332 RAD 333
16	RAD	350	Nuclear Medicine Technique I	3		3		RAD 223
17	RAD	351	Nuclear Medicine Technique II	3		3		RAD 223, 312, 350
18	RAD	360	Computed Tomography I	3	2	1		RAD 220 RAD 221
19	RAD	370	Ultrasonography I	3	2	1		RAD 325
20	RAD	312	Radiographic Pathology	4	4			RAD 210 RAD 311
21	RAD	426	Radiotherapy Physics and Equipment	3	2	1		PHYS 101



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No.	Course Code:	Course No.	Course Title	Credit	HOURS			Prerequisite
					Theory	Lec	Prac	
22	RAD	426	Radiographic Techniques V	3	2	1		RAD 210, RAD 311
23	RAD	434	Radiographic Techniques VI	3	2	1		RAD 230, RAD 231
24	RAD	435	Radiography Clinical Practice III	3			3	RAD 333
25	RAD	442	Radiography Clinical Practice IV	3			3	RAD 434
26	RAD	461	Computed Tomography (II)	3	2	1		RAD 311 RAD 360
27	RAD	471	Ultrasonography (II)	3	2	1		RAD 31, 312, 370
28	RAD	480	Magnetic Resonance Imaging (I)	3	3			PHYS101
29	RAD	481	Magnetic Resonance Imaging (II)	3		3		RAD 311 RAD 480
30	RAD	492	Radiology Administration	2	2			COMM 101 STAT 101
31	RAD	499	Student Project	2		2		STAT 101 CS 101
<b>Total</b>				<b>91</b>	<b>55</b>	<b>27</b>	<b>9</b>	

## Course Descriptions:

### **RAD 311: Sectional Anatomy**

This course begins with a review of gross anatomy. It is designed to build the knowledge of sectional anatomy of human body regions from a three dimensional perspective. Students will learn the identification of gross anatomical structures in axial (transverse), sagittal, coronal and orthogonal (oblique) planes and the clinical application of this knowledge to imaging modalities of Computed Tomography images, Magnetic Resonance images. Characteristic appearance of each anatomical structure on post contrast images of CT and different sequences of MR images will be stressed.

**Prerequisites:** ANTT 205

### **RAD 312: Radiographic Pathology**

This course will provide students with the knowledge of medical terms that describe the pathological conditions, causes and classification of diseases, radiographic appearances of selected pathological conditions and their impact on the selection of radiographic exposure factors. Skills of adaptations of routine radiographic positioning technique to best demonstrate pathology and maximize diagnostic evidence. Discussion of which imaging method or modality will best demonstrate pathological condition. Care of patients relative to disease process. Review of radiographs with common radiographic pathologies of skeletal system, respiratory system, cardiovascular system, gastrointestinal, hepato-biliary, urinary, reproductive, hemopoietic, and endocrine and nervous system is also included in this course.

**Prerequisites:** RAD 210, RAD 311

### **RAD 325 : Ultrasound Physics and Equipment**

This course introduces students to the basics of ultrasound physics; Sound, infrasound and ultrasound. Sound wave, sound propagation media, frequency, wavelength, amplitude, velocity, pulse of ultrasound and echo. Interaction of ultrasound with tissues; attenuation, absorption, refraction, scatter, reflection. Characteristics of ultrasound beam; beam width, focusing, beam intensity, attenuation, Doppler Effect, pulse duration, pulse repetition period, pulse repetition frequency, harmonic ultrasound. Physical principles of ultrasound imaging. Pulsed and continuous ultrasound. Ultrasound equipment ultrasound transducer construction, ultrasound generation, receiving echo, signal and

image processing by processor, image display on monitor, Scanning modes A-mode, B-mode, M-mode, real time. Control panel. Biologic effects. Quality control of ultrasound equipment.

**Prerequisites:** PHYS101

### **RAD 332 : Radiographic Technique III**

This course includes overview of pharmacology, drug categories of relevance to radiography, dose calculation, and route of administration, pharmacokinetics and pharmacodynamics. Contrast media used in radiography, types, specific applications, dosage, selection, administration techniques and documentation requirements. Reactions to contrast media, preventive care and patient management. Role of radiologic technologist in administration of contrast media and medications, legal implications and scope of practice of technologist. Radiographic techniques for demonstrating soft tissue structures with use of contrast media and without use of contrast media.

**Prerequisites:** PHYS101, RAD 221

### **RAD 333: Radiographic Technique IV**

This course introduces students to the equipment used in fluoroscopy, types, standard RF unit, mobile and specialized fluoroscopy units like Angiography unit and dedicated Cathlab angiography unit, analogue and digital units, components of fluoroscopy unit, Image intensifier construction and operation, Optical coupling device, TV cameras, TV chain and recording system. Techniques for imaging gastrointestinal tract, salivary system, biliary tract and joints and anatomy demonstrated on such examinations. Special emphasis on patient care before, during and after examination.

**Prerequisites:** RAD 210 , RAD 332

### **RAD 340 : Radiography Clinical Practice I**

This course provides practical experience to students in real clinical situations. Radiographic examinations practiced in Radiographic Technique I &II are now practiced on patients. First week is for orientation of radiology department as a whole. Students will observe the radiographic examinations then under direct supervision of senior radiologic technologist carry out radiographic examinations of upper limb, lower limb, skull, chest (bony cage), shoulder, pelvis, sacroiliac joints, cranium, facial bones, chest (lungs, heart) abdomen, and vertebral column. Students will be encouraged to participate in all radiographic procedures, analyze faults in technique and processing, and suggest remedial action.

**Prerequisites:** RAD230 , RAD 231

# Department of Diagnostic Radiology

## **RAD 341 : Radiography Clinical Practice I**

This course provides practical experience to students in real clinical situations. Radiographic examinations practiced in Radiographic Technique III & IV are practiced now on patient. Students will be assigned to contrast study radiography rooms and mammography room (female students only). They will be expected to perform under supervision intravenous pyelography, tomography, oral cholecystography, and mammography. Practical experience in setting exposure factors for fluoroscopy and giving necessary assistance to patients and radiologist during barium studies of GIT, hysterosalpingography (for female students only), cystourethrography, and arthrography. Resuscitation equipment and emergency medicines.

**Prerequisites:** RAD 332, RAD 333

## **RAD 350 : Nuclear Medicine Technique (I)**

Basic concepts of physical, physiological and safe handling of radioisotopes. Administration, calibration and quality control of radiopharmaceuticals.

**Prerequisites:** RAD 223

## **RAD 351: Nuclear Medicine Technique II**

Students will learn imaging technique employed in nuclear medicine such as thyroid scan, bone scan & renal scan. Brief discussion of the use of isotopes in treatment of some benign & malignant diseases.

**Prerequisites:** RAD 223, RAD 312, RAD 350

## **RAD 360 : Computed Tomography I**

This course is designed to impart understanding of evolution of computed tomography, physical principles and instrumentation involved in computed tomography. Topics include; the characteristics of x-radiation, CT beam attenuation, linear attenuation coefficients, tissue characteristics and Hounsfield attenuation numbers application, data acquisition and manipulation, image reconstruction algorithms, such as filtered back-projection and transform. Components of C T scanner; Gantry assembly (patient aperture, rotating frame, x-ray tube, collimator, and detectors), Patient table, Operator console, CT computer and Workstations. Operation of Scan console and Display console to demonstrate various functions.

**Prerequisites:** RAD 220, RAD 221

## **RAD 370 : Ultrasonography I**

The course includes medical terms and abbreviations used in sonography, sonographer ethics, patient care specific to sonography and limitations of ultrasound like patient condition/ habitus and equipment. Protocol for ultrasound procedures and its applications. Cross-sectional sonographic anatomy of Abdominal structures; liver, gallbladder, kidney, pancreas, spleen, and abdominal vessels, Small parts; thyroid, prostate, breast, scrotum, and lymph node, Female pelvis, Fetal appearance, and neonatal brain. Sonographic scanning practice on training phantom in simulation laboratory is part of course.

**Prerequisites:** RAD 325

## **RAD 426: Radiotherapy Physics and Equipment.**

This course introduces students to the basics of treatment equipment, and ongoing quality-control programs. The background for an understanding of dosimetry protocols is described, as well as their practical implementation. Clinical dosimetry is consid-

ered, in terms of both the collection of data and the calculation of dose and treatment planning for the individual patient. Although mainly concerned with external beam therapy, techniques for sealed and unsealed source therapies are also discussed. The importance of quality assurance and the associated quality-control procedures is stressed throughout.

**Prerequisites:** PHYS 101

## **RAD 434 : Radiographic Technique V**

This course is designed to provide students with the theoretical knowledge and practical skills related to special radiographic examinations that are not undertaken routinely and may require specialized equipment. The difficulties concerning patient care and equipment manipulation during these special procedures and remedial measures to be taken by radiologic technologist. The special examinations include, angiography-cerebral, abdominal, peripheral-arteriography and venography; lymphography, myelography, dental radiography, macroradiography, cardiac catheterization and interventional radiography. Students will carry out a research projects preferably related to an applied subject. They will also carry out literature reviews, accomplish the research work and record their results with analysis of data and discussion in dissertation format. Results will be discussed in an open seminar.

**Prerequisites:** RAD 210, RAD 332

## **RAD 435 : Radiographic Technique VI**

This course provides students with the knowledge of accident and emergency conditions and practical experience of modification of standard technique according to the need of injured and acutely ill patient. It also introduces students to the construction and operation of portable and mobile x-ray units as well as mobile C-arm image intensifier unit. Students will learn radiographic techniques for bedside and operation theater mobile radiography and modification of technique in patient on oxygen therapy, respirator, traction, tube drainage, ICU and isolation, first aid measures in radiological emergencies, sterilization methods and aseptic technique.

**Prerequisites:** RAD 230, RAD 231

## **RAD 442 : Radiography Clinical Practice III**

In this course the theoretical and practical experience acquired during, Radiographic Technique V will be applied in real clinical situations on patient in the radiology department. Students will be assigned to special radiography rooms, such as fluoroscopy room, angiography room, and catheter lab. Under the supervision and guidance of qualified radiologic technologist, student will actively participate in myelography, lymphography, angiography and macroradiography, cardiac catheterization and interventional radiography. Student will also be assigned to the dental radiology department to take intraoral and extra oral dental radiograph of patients, under the supervision of qualified radiologic technologist.

**Prerequisites:** RAD 333

## **RAD 443 : Radiography Clinical Practice IV**

In this course the experience acquired during Radiographic Technique VI will be applied in real clinical situations. Students will be assigned to the emergency room. In the first week students will observe modification of standard radiographic techniques according to the need of accident and emergency patients. Under supervision and guidance of qualified radiologic technologist,

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students will take x-ray examinations of injured and acutely ill patients. They will also be assigned in rotation to mobile radiography team., where they will accompany radiologic technologist to attend call for x-ray examination of patient in ICU, isolation room, patient room, nursery and other bedsides, using mobile x-ray equipment. Students will also accompany radiologic technologist to operation theater to carry out x-ray examination of patient using mobile C-arm image intensifier

**Prerequisites:** RAD 434

## **RAD 461 : Computed Tomography II**

The course provides thorough coverage of protocol for CT examinations that include, patient history and assessment, indications for procedure, patient education, scan preparation, preferred orientation and positioning, contrast media use, selectable scan parameters, scout image, filming and archiving of image. The imaging technique for each organ/ region to match the criteria for diagnostic image and modification of technique in clinical condition that affects image quality. Evaluation of image for any artifact, quality, anatomy and pathology. Assignment to CT facility to provide student with opportunity to observe, assist and perform CT procedures under supervision and guidance of qualified CT specialist.

**Prerequisites:** RAD 311, RAD 360

## **RAD 471 :Ultrasonography II**

This course introduces students to echocardiography technique, procedural protocol and sonographic anatomy of pediatric and adult heart. Introduction of color Doppler imaging technique, clinical applications like assessing vascularity of a lesion to differentiate between abscess and neoplasm, assessing presence or absence of blood flow in a blood vessel or an organ and direction of blood flow in cardiac and vascular pathologies. Identification of anatomy and pathological lesions of abdominal organs, small parts, uterus and ovary, fetal parts

and neonatal brain, on ultrasound examinations in real clinical situation on patient under supervision of experienced sonographer.

**Prerequisites:** RAD 311, RAD 312, RAD 370

## **RAD 480 : Magnetic Resonance Imaging (I)**

Basic scientific principles of magnetic resonance imaging, the equipment component and functions of each, including the formation of MR images, magnetization and signal relaxation time, slice levels and contrast media in MRI. Basic construction of an MRI system, preparation of room and patient.

**Prerequisites:** PHYS101

## **RAD 481 :Magnetic Resonance Imaging (II)**

The course is comprised of basic and advanced imaging techniques & the classification of MR imaging sequences, advance imaging sequences parameters, including the formation of MR images, magnetization and signal relaxation time, slice levels and contrast media in MRI. MR artifacts, and the differing tissue contrast on different weighting as well as the application of contrast media.

**Prerequisites:** RAD 311, RAD 480

## **RAD 491: Student Project**

Research projects selected by students in any one of the following areas CT, MRI, Mammography (Females only), Angiography, Ultrasound, Nuclear Medicine and/or Radiation Therapy.

**Prerequisites:** STAT 101, CS 101

## **RAD 492 : Radiology Administration**

Principles of personnel management, staff selection, deployment, assessment, welfare, grievance and disciplinary procedures, departmental records, organization of work schedules, interaction between the radiology department and other administrative and clinical areas, the use of computer information technology in patient and departmental records, and stock keeping.

**Prerequisites:** RAD 492

## ■ ■ ■ ■ ■ FACULTY MEMBERS ■ ■ ■ ■ ■

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