

Academic Programs Booklet

College of Health and Sport Sciences

2018



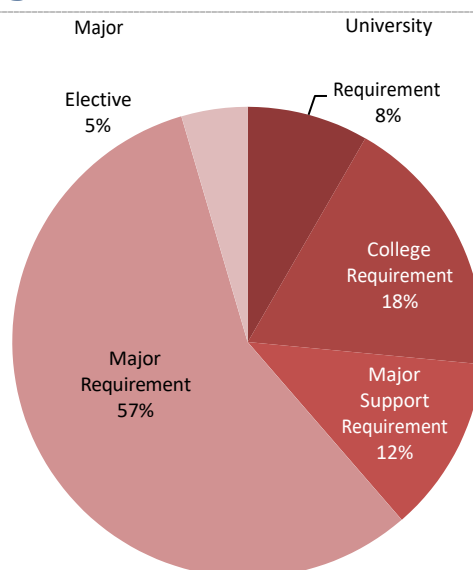
B.Sc. in Radiologic Technology – Diagnostic - 2018

Program Components

Course Type	CRD
University Requirement (UR)	11
College Requirement (CR)	25
Major Support Requirement (MSR)	16
Major Requirement (MR)*	75
Major Elective (ME) ¹	6
Total Credit (CRD)	133
Clinical Training	27 clinical hours

* Including Clinical Training.

¹ Student should select two courses from Major Elective (ME) List.



Teaching Language: English

Detailed Study Plan

Year 1 - Semester 1

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
ENG 114	English for the Profession I	4	3	2	0	CR	-----	No
HIST 122	Modern History of Bahrain and Citizenship	3	3	0	0	UR	-----	No
ISLM 101	Islamic Culture	3	3	0	0	UR	-----	No
RAD 102	Introduction to Radiology	3	3	0	0	MR	-----	Yes

Year 1 - Semester 2

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
LFS 118	Anatomy and Physiology I	4	3	2	0	CR	-----	No
RAD 104	Hospital Practice and Care of Patients	4	3	2	0	MR	-----	Yes
LFS 217	Microbiology	3	2	2	0	CR	-----	No
CGS 201	X-Ray Physics (I)	2	2	0	0	MSR	-----	No

ARAB 110	Arabic Language Skills	3	3	0	0	UR	-----	No
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Year 2 - Semester 3

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
CGS 202	X-Ray Physics (II)	2	2	0	0	MSR	CGS 201	No
ENG 124	English for the Professions II	4	3	2	0	CR	ENG 114	No
STAT 272	Introduction to Biostatistics	3	2	1	0	CR	-----	No
RAD 206	Fundamentals of Imaging	4	3	2	0	MR	-----	Yes
LFS 128	Anatomy and Physiology II	4	3	2	0	MSR	-----	No
HRLC 107	Human Rights	2	2	0	0	UR	-----	No

Year 2 - Semester 4

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 217	Radiography (I)	5	4	2	0	MR	-----	Yes
RAD 227	Clinical Skills (I)	5	0	0	15	MR	-----	Yes
PHAM 321	Pharmacology for Radiology	2	2	0	0	MSR	LFS 128 & LFS 217 & Co- Requisite LFS 227	No
RAD 33X	Major Elective (I)	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes
SBS 316	Fundamentals of Sociology and Psychology	3	3	0	0	MSR	-----	No

Year 3 - Semester 5

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 316	Radiography (II)	5	4	2	0	MR	RAD 217 & RAD 227 & Co-Requisite LFS 128	Yes
RAD 326	Clinical Skills (II)	5	0	0	15	MR	RAD 217 & RAD 227 & Co-Requisite RAD 316	Yes
LFS 227	Pathophysiology	4	4	0	0	CR	LFS 118 & LFS 128	No
RAD 33X	Major Elective (II)	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes

Year 3 - Semester 6

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 317	Advanced imaging (I)	5	4	2	0	MR	RAD 316 & RAD 326	Yes
RAD 327	Clinical Skills (III)	5	0	0	15	MR	RAD 316 & RAD 326 & Co-Requisite RAD 317	Yes
HCA 301	Leadership and Management in Healthcare Setting	3	3	0	0	MSR	-----	No
RAD 341	Radiology Quality Control	3	3	0	0	MR	RAD 206 & CGS 202	Yes
SBS 320	Research Methods	3	2	2	0	CR	CGS 211	No

Year 4 - Semester 7

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 416	Advanced Imaging (II)	5	4	2	0	MR	RAD 317 & RAD 327	Yes
RAD 426	Clinical Skills (IV)	5	0	0	15	MR	RAD 317 & RAD 327 & Co-Requisite RAD 416	Yes
RAD 431	Radiobiology	3	3	0	0	MR	RAD 206 & CGS 202 & LFS 118 & LFS 128	Yes
RAD 432	Forensic Imaging	3	2	2	0	MR	RAD 217 & RAD 316 & RAD 206	Yes

Year 4 - Semester 8

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 417	Advanced Imaging (III)	5	4	2	0	MR	RAD 416 & RAD 426	Yes
RAD 450	Field Practice	7	0	0	21	MR	RAD 416 & RAD 426 & Co-Requisite RAD 417	Yes
RAD 408	Graduation Project	3	3	0	0	MR	SBS 320	Yes

Major Elective Courses

Course Code	Course Title	Course Hours				Course Type	Pre requisite	Major GPA
		Crdt	Lec	Lab	Clinical			
RAD 331	Computerized Tomography	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes
RAD 332	Magnetic Resonance Imaging	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes
RAD 333	Vascular Ultrasonography	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes
RAD 334	Mammography and Breast Imaging	3	2	2	0	ME	RAD 206 & CGS 202 & LFS 128	Yes

Course Description

Course Code: CGS 201 **Course Title:** X-Ray Physics (I)

You will understand the important physical principles underlying Radiology Technology. You will discuss the laws that govern the electric and magnetic field as knowing them is essential in understanding the functions of several components of X-ray imaging system. You will learn about the characteristics of electromagnetic energy to describe various regions of the electromagnetic spectrum and determine how such radiation interacts with matter..

Course Code: CGS 202 **Course Title:** X-Ray Physics (II)

This course is a continuation of CGS-201. You will learn about the components of x-ray tube and interactions of projectile electrons to produce characteristic and bremsstrahlung x-rays. You will find out different methods of interaction of x-rays with matter and their importance in X-ray imaging. You will discuss the numerous factors that affect X-ray beam quality and quantity and get a basic understanding about types of filtrations.

Course Code: HCA 301 **Course Title:** Leadership and Management in Healthcare Setting

Leadership requires that people have the skills, education, and experience to guide the way, therefore, this course will introduce students to the basic concepts of leadership and various best practices of successful management. They will also be presented different skills that leaders must master in order to be effective in their organizations and their lives. Moreover, during this course students will explore the functional roles and processes of leadership and its influence concerning organizational development. The course will also focus on how administrative, supervisory and customer relations skills affect staff productivity and performance. In addition, students will learn about time management, planning, decision-making and motivation in the workplace..

Course Code: LFS 128 **Course Title:** Anatomy and Physiology II

The Human Anatomy and Physiology II course will help you explore the close relationship between the structure and functions of the urinary, and reproductive systems, as well as understand the control and coordination of body functions by the nervous and endocrine systems. It will provide an insight into electrolyte and acid-base balance, pregnancy, and growth and development. It will provide you with the knowledge needed for understanding the Pathophysiology and nursing courses.

Course Code: PHAM 321 **Course Title:** Pharmacology for Radiology

In this course you will acquire the basic knowledge of pharmacology as it relates to the practice of radiography. You will find out also details on the pharmacology of the major classes of drugs used in or have effect on the radiography practice.

Course Code: SBS 316 **Course Title:** Fundamentals of Sociology and Psychology

The course will familiarize students with the basic concepts and theories in Sociology and Psychology that will enable the allied health graduate to recognize the various societal forces and aspects of human behavior that control human interactions. It will facilitate the graduate to develop a holistic perception of health care needs and services.

Course Code: RAD 102 **Course Title:** Introduction to Radiology

In this course you will be oriented to the health care system in the Kingdom of Bahrain and its structure including the clinical, ethical and legal responsibilities of the Radiologic Technology Professionals. In addition you will be able to describe the characteristics of waves, radiation and the risks associated with ionizing radiations. Site visits will provide you with overview of the radiology department environment and set-up.

Course Code: RAD 104 **Course Title:** Hospital Practice and Care of Patients

This course will provide you with an outline of patient care and welfare in the Radiology Department, practice and use of basic nursing procedures, rules regulations and practices of radiation protection, infection control and sterilization.

Course Code: RAD 206 **Course Title:** Fundamentals of Imaging

This course will provide you with the principles involved in the formation and recording of the radiologic image in both conventional and digital imaging systems as well as the principles of image quality assessment.

Course Code: RAD 217 **Course Title:** Radiography (I)

This course will provide you with details of radiographic practice and the positioning techniques used for skeletal radiography including imaging of the chest and thorax, upper and lower extremities, shoulder and pelvic girdles, and vertebral column.

Course Code: RAD 316 **Course Title:** Radiography (II)

This course will provide you with details of radiographic practice and the positioning techniques used for skeletal radiography and special radiologic procedures including imaging of the skull and paranasal sinuses and alimentary, Urinary biliary, respiratory, salivary and central nervous systems, in addition to the Musculoskeletal imaging.

Course Code: RAD 317 **Course Title:** Advanced Imaging (I)

This course will provide you with the necessary knowledge and skills for performing more advanced imaging procedures in Paediatric radiography besides the necessary physics, equipment and applications of Ultrasonography, Mammography and Bone Densitometry.

Course Code: RAD 416 **Course Title:** Advanced Imaging (II)

This course provide you with the necessary knowledge and skills for performing more advanced imaging procedures in Trauma Radiography besides the necessary physics, equipment and applications of Computed Tomography (CT) and Magnetic Resonance Imaging (MRI)..

Course Code: RAD 417 **Course Title:** Advanced Imaging (III)

This course will provide you with the necessary knowledge, physics, equipment and applications of more advance imaging modalities including Radionuclide Imaging (RNI) and Vascular Imaging and Interventional.

Course Code: RAD 227 **Course Title:** Clinical Skills (I)

This course will provide you with the necessary skills and attitudes to perform the radiographic examinations covered in RAD 217 in accordance to the recognized professional standards using standard evaluation criteria for all produced images while meeting the health care needs of the patient at all times. All clinical procedures you perform will be supervised by faculty member, clinical instructors / preceptors.

Course Code: RAD 326 **Course Title:** Clinical Skills (II)

This course will provide you with the necessary skills and attitudes to perform the radiographic examinations covered in RAD 326 in accordance to the recognized professional standards using standard evaluation criteria for all produced images while meeting the health care needs of the patient at all times. All clinical procedures you perform will be supervised by faculty member, clinical instructors / preceptors.

Course Code: RAD 327 **Course Title:** Clinical Skills (III)

This course is a continuation for the previous clinical courses which will concentrate on building the necessary skills, attitudes and knowledge to perform advanced radiologic procedures of paediatrics, ultrasonography and Mammography and Bone Densitometry as covered in RAD 317 in accordance to the recognized professional standards using standard evaluation criteria for all produced images while meeting the health care needs of the patient at all times. All clinical procedures you perform will be supervised by faculty member, clinical instructors / preceptors.

Course Code: RAD 426 **Course Title:** Clinical Skills (IV)

This course is a continuation for the previous clinical courses which will concentrate on building the necessary skills, attitudes and knowledge to perform advanced radiologic procedures of Trauma and how to deal with the emergency patients in addition to the knowledge, principles of operation, applications and instrumentation of Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) as covered in RAD 416 in accordance to the recognized professional standards using standard evaluation criteria for all produced images while meeting the health care needs of the patient at all times. All clinical procedures you perform will be supervised by faculty member, clinical instructors / preceptors.

Course Code: RAD 331 **Course Title:** Computerized Tomography

This is an elective course where you will study in more details the Computerized Tomography, including its principles, applications, instrumentation, safety considerations, sectional imaging and the applications of common procedures protocols.

Course Code: RAD 332 **Course Title:** Magnetic Resonance Imaging

This is an elective course where you will study in more details the Magnetic Resonance Imaging, including its principles, applications, instrumentation, safety considerations, sectional imaging and the applications of common procedures protocols.

Course Code: RAD 332 **Course Title:** vascular ultrasonography

This is an elective course where you will study in more details vascular ultrasonography, including its principles, applications, instrumentation, safety considerations and the applications of common procedures protocols.

Course Code: RAD 334 **Course Title:** mammography and breast imaging

This is an elective course where you will study in more details mammography and breast imaging, including its principles, applications, instrumentation, safety considerations and the applications of common procedures protocols.

Course Code: RAD 432 **Course Title:** Forensic Imaging

The course you will develop your knowledge bases for the forensic imaging which will foster your skills in this field and enables you of practicing forensic radiography within professional and legal contexts.

Course Code: RAD 341 **Course Title:** Radiology Quality Control

The course will provide you with fundamental applications of Quality Control and Quality Assurance in radiology department, with emphasis on areas that will be encountered by new graduate Technologists. The importance of quality in medical settings, the impact of quality control and equipment management will be discussed as well.

Course Code: RAD 431 **Course Title:** Radiobiology

This course will provide you with the principles and concepts underlying the biological effects of ionizing radiation on living organisms at the molecular, cellular, organs and whole-body level. Covering low energy and high energy radiation level, early acute effects, late or hereditary effects, in a way to comprehend the importance of radiation protection.

Course Code: RAD 408 **Course Title:** Graduation Project

This course will permit you under faculty guidance to independently undertake a professionally relevant research project culminating in submission of a degree thesis and potential publication of appropriate results.

Course Code: RAD 450 **Course Title:** Field Practice

In this course you will spend 24 hours per week in the radiology department. Under minimal supervision of faculty, Instructors and clinical preceptors where you will be required to demonstrate the technical and clinical expertise necessary to competently undertake your role as a radiologic Technologist working as a member in a team as well as exhibiting a philosophy of total patient care within the clinical setting. The course gives you the opportunity to practice your developed competencies to perform all the radiologic procedures in a clinical environment and assume full responsibility for the patient in a radiology department as a technologist.

College Requirement Courses Descriptions

Course Code: ENG 114

Course Title: English for the Professions1

English for the Professions – Level 1 is an intermediate level course that will expand and build your English language competencies and communicative abilities acquired at the Orientation English level of the Foundation Semester. This course will also further develop your language skills of reading, listening, speaking and writing with emphasis on the language needs of healthcare professionals. This integrated-skills approach will enable you to succeed in your academic performance, and enhance your ability to communicate effectively in multi-cultural encounters within an English speaking community.

Course Code: ENG 124

Course Title: English for the Professions II

English for the Professions – Level 2 will reinforce your language skills and equip you with higher level language skills of critical reading, inferential comprehension and analytical report writing. You will also be trained to write and present a research essay using APA guidelines.

Course Code: LFS 118

Course Title: Anatomy and Physiology I

This course will provide you with an in depth understanding of the structure and function of the human body with emphasis placed on the following body systems: the integumentary, skeletal, muscular, cardiovascular, lymphatic, digestive and respiratory systems. It will provide you with the basic knowledge needed for understanding of the Pathophysiology course.

Course Code: LFS 217

Course Title: Microbiology

You will be introduced to the basic concepts of microbiology with special emphasis on microbial ecology, epidemiology and pathogenesis of infectious diseases. As health care professionals, you will be equipped to apply the concepts of microbial growth control in preventing the spread of infections in your daily life and in your professional field.

Course Code: LFS 227

Course Title: Pathophysiology

In this course you will understand the basic pathophysiology of disease processes, their clinical manifestations, complications, diagnostic findings and management. You will also acquire knowledge to provide better disease management and apply critical thinking and analytical methods of inquiry regarding the disease processes.

Course Code: SBS 320

Course Title: Research Methods

You will be introduced to the research process dealing with necessary methodology, types of research, sampling and data collection. The major aim of this course is to enable the student to develop the basic knowledge and skills. Further, this knowledge and skills will be applied by developing a research proposal.

Course Code: STAT 272

Course Title: Introduction to Biostatistics

Descriptive Statistics, Some basic probability concepts, Discrete and Continuous probability distribution, Estimations, Hypothesis Testing: one and two sample inference, Analysis of Variance, Inference of categorical data, Simple linear and multiple regression and correlation, logistic regression, Use of statistical packages

University Requirements Courses Descriptions

Course Code: ARAB 110

Course Title: Arabic Language Skills

This course focuses on basic Arabic skills including form, function, and meaning. It also helps the student to appreciate and understand structures and approach them from a critical point of view, through various genres in literature.

Course Code: HIST 122

Course Title: Modern History of Bahrain and Citizenship

Spatial identity of Bahrain: Brief history of Bahrain until the 18th century; the historical roots of the formation of the national identity of Bahrain since the 18th century; the modern state and evolution of constitutional life in Bahrain; the Arabic and Islamic dimensions of the identity of Bahrain; the core values of Bahrain's society and citizenship rights (legal, political, civil and economic); duties; responsibilities and community participation; economic change and development in Bahrain; Bahrain's Gulf, Arab and international relations.

Course Code: HRLC 107

Course Title: Human Rights

This course deals with the principles of human rights in terms of the definition of human rights, scope, sources with a focus on the International Bill of Human Rights; The Charter of the United Nations; Universal Declaration of Human Rights; The International Covenant on Economics, Social and Culture rights; Convention against Torture and other Cruel; Mechanics and the Constitutional Protection of Rights and Public Freedoms in Kingdom of Bahrain.

Course Code: ISLM 101

Course Title: Islamic Culture

An introduction to the general outline and principles of Islamic culture, its general characteristics, its relationships with other cultures, general principles of Islam in beliefs, worship, legislation and ethics.