College of Applied Medical Sciences
Biomedical Technology Department
BMT Curriculum

Brief Description of the Core and Elective Courses

*Credit Hours (Contact Hours) ≡ **Credit Hours** (Lecture Contact Hours + Laboratory Contact Hours + Tutorial Contact Hours)
Credit Hours = (Lecture Contact Hours) x 1.0 + (Laboratory Contact Hours) x 0.5 + (Tutorial Contact Hours) x 0.0
* The contact hours of the Internship depend on the training institution

Brief Description of the BMT Program Core Courses			
3rd Level (Year-2)			
MATH 218	**Differential Calculus**	**Credit Hours 4 (4+0+2)***	**Pre-requisites**
The first part of this course contains a brief review of pre-calculus; algebraic operations, summary of functions, operations on functions, different classes of functions and their properties. It also covers the sequences and series, arithmetic sequences, geometric sequences, the binomial theorem. The second part deals with differential calculus for functions of one variable including limits, continuity, derivatives of different classes of functions, maxima and minima, concavity, related rates, and optimization problems			
BMT 201	**Applied Physics**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course provides the student basic knowledge about the application of Gauss and Ampere's law, physics of waves, electromagnetic waves and Maxwell equations, the students gain the basic knowledge of ionizing and non-ionizing electromagnetic radiations, Polarization, Refraction and interference of light, lasers and fiber optics and their application of the biomedical instrumentation. The students would gain the knowledge about matter waves. The students also have the two hours laboratory work for this course.			
BMT 213	**Electrical Circuits**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
Students completing this course will be able to analyze electrical circuits using Kirchhoff's laws and ideal circuit element models. An emphasis is placed on the formulation of nodal equations for linear resistive circuits as a foundation. Consequences of linearity are emphasized through superposition and the venin equivalents. Transient analysis of capacitive and inductive circuits is emphasized to promote understanding of time-domain linear circuit response. For linear circuits excited with sinusoidal source, phasor and frequency domain			

analysis techniques for determining steady state response are emphasized. Application of complex power calculations is also highlighted.			
BMT 241	**Computer programming**	**Credit Hours 2 (1+2+0)**	**Pre-requisites**
This course introduces Python programming language for students without prior programming experience. It covers the basics of programming in Python including variables, expressions, conditions, loops, exception handling, simple file input and output, functions, strings, lists, dictionaries, tuples and sets. It also covers, at an introductory level, some Object-Oriented programming aspects like objects and classes.			
4th Level (Year-2)			
MATH 228	**Integral Calculus**	**Credit Hours 4 (4+0+2)***	**Pre-requisites**
MATH 228 is a 4-credits integral calculus course that comes in continuation to MATH 218, differential calculus. The course covers topics on indefinite and definite integrals, properties, applications, techniques of integration. Infinite, power, and Taylor series. Function of several variables, differentiation, double and triple integrals.			**MATH 218**
BMT 214	**Introduction to Electronic Devices**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course provides the students with basic theoretical and practical aspects of basic electronic semiconductor devices (diodes, BJTs, JFETs), etc. The student should also develop the skill for solving problems on basic electronic circuits and develop the ability to analyze electronic systems using acquired basics. This course is aligned with the laboratory work, which is taken in the same semester.			**BMT 213**
BMT 230	**Introduction to Biomechanics**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course presents the fundamentals of biomechanics that include an understanding of kinematic and kinetic concepts to analyze human motion, the use of equilibrium equations to solve statics problems applied to the human joints and the understanding of the basics of biomechanics of the bone and muscles structures.			**CLS 224** **BMT 201**
BMT 251	**Biomedical Sensors & Measurements**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course provides the students with the basic concepts of measurements and biomedical sensors by focusing on its medical purpose, the principle of			**BMT213**

operation, and technical specifications of related medical applications and measuring systems. Topics include principles of measurement, Instrument types and performance characteristics, errors during the measurement process, basic concepts of medical sensors instrumentation, problems encountered in measuring a living system, classification of transducers, chemical biosensors, the origin of biopotentials, biopotential electrodes and applications of common biomedical Measurement.			
ME 200	**Introduction to Engineering Design and Graphics**	**Credit Hours 3 (1+4+0)**	**Pre-requisites**
This course is aimed to introduce students to the concepts of computer aided design: solid modeling, assembly design, engineering drawing, practice and conventions, dimensioning and tolerance specification in addition to an overview on the main machine elements. Moreover, students are familiarized with the conceptual design skills such as creative thinking and idea illustration and exposed to the fundamental elements of a good engineering design and problem-solving methods practiced by engineers.			
5th Level (Year-3)			
MATH 318	**Differential Equations**	**Credit Hours 4 (4+0+2)***	**Pre-requisites**
MATH 318 covers topics on ordinary differential equations, including linear equations, mathematical models and involving differential equations, equations with variable coefficients, existence and uniqueness of solutions, series solutions, singular points, transform methods, and boundary value problems; application of differential equations to real world problems.			**MATH 228**
BMT 316	**Biomedical Integrated Circuits**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course introduces the integrated circuits; in particular, operational amplifier integrated circuits. It covers the fundamentals of operational amplifiers needed to understand, design, and analyze operational amplifier-based circuits. This course also includes the common configurations of operation amplifier circuits used for signal amplification purposes. Also, this course covers further applications of operational amplifiers-based circuits in signal processing (e.g., derivation integration, filtration) and wave shaping.			**BMT 214**

BMT 331	Mechanics of Materials	Credit Hours 2 (2+0+0)	Pre-requisites
Mechanics of Materials is the first course in the understanding of solid body mechanics in the curriculum. This course is essential and is a pre-requisite to any design course involving deformable mechanics. The objectives of this course include the understanding of the concepts of stress and strain, normal stress and strain, shear stress and strain, general state of stress, learning about axially loaded members, statically indeterminate structures, torsion, angle of twist, transmission of power by shafts, understand bending, shear and moment diagrams, shear force, transverse loading relationship, and flexure formulas, understanding stress analysis, materials' behavior, constitutive relationship, Hooke's law, transformation equations, and Mohr's circle.			**MATH 218** **BMT 230**
BMT 332	**Biomaterials**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course provides a broad perspective about an overview for biomaterials engineering and processing, classes of material used and application of materials in medicine, biology, and artificial organs.			**BMT 230**
BMT 352	**Diagnostic Medical Equipment**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course provides the students with the medical purpose, principle of operation, components and technical specifications of related diagnostic medical equipment. Topics include: patient monitoring systems, electrocardiographs, electroencephalo-graphs, endoscopes, ophthalmic devices, introduction to clinical lab equipment and different modalities of medical imaging systems.			**BMT 251**
BMT 371	**Biomedical Signal Processing**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
The course is dedicated to introduce the digital signal processing and applications in biomedical field. An introduction about transforming an analog signal to digital one including sampling and quantization, digital frequency and Nyquist Frequency is also introduced. Operation on digital signal like time shift, flip, interpolation decimation, symmetry and fractional delay are included. Linear systems operations, impulse response convolution and some application to finite and infinite systems are described. Fourier Transform is described and application to medical signal is proposed. Z-Transform and its application are also introduced.			**BMT 251**

6th Level (Year-3)			
BMT 317	**Microcontroller Applications in Healthcare**	**Credit Hours 3 (2+2+0)***	**Pre-requisites**
This course uses a commercial CPU(s) as realistic vehicles to demonstrate the architecture and function of microprocessors. Provided topics include: introducing students to CPU instructions and internal register structures; Flip/Flops, understand the full internal workings of a typical simple microcontroller (Arduino); including Programming techniques; designing of basic project as application in medical instrumentation, microcontroller.			**BMT 316**
BMT 318	**Biomedical Control Systems**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
The course introduces the control systems theory and its applications in biomedical field. An introduction to the basic components of a control system, the concept of feedback, closed-loop control versus open-loop control, using mathematical transforms such as Laplace to understand system control in biomedical applications is provided.			**MATH 228**
BMT 339	**Fluid Mechanics**	**Credit Hours 2 (1+2+0)**	**Pre-requisites**
This course is an introductory course to fluid mechanics. It provides an understanding of the basic principles governing the statics and dynamics of fluids, especially incompressible fluids. The topics covered include fluid properties, fluid in statics and dynamics, conservation laws, dimensional analysis and similitude, inviscid and viscous incompressible flow, and flow in confined streams and around objects.			**MATH 218** **BMT 201**
BMT 342	**Internet of Medical Things**	**Credit Hours 2 (1+2+0)**	**Pre-requisites**
In this course, students will learn the fundamentals of the emerging technology Internet of Things (IoT). The Internet of Medical Things (IoT) is concerned with the integration and information exchange between medical devices using networking technologies. The course will expose students to communication, networking and data collection technologies for the IoMT, cybersecurity concepts, networking protocols and cloud computing technologies			**BMT 241**
BMT 353	**Therapeutic Medical Equipment**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
This course provides the students with the medical purpose, principle of operation, components, and technical specifications of related therapeutic			**BMT 251**

medical equipment. Topics include infant incubators, mechanical ventilators, anesthesia machines, drug delivery devices. hemodialysis delivery systems, pacemakers, defibrillator, electrosurgical machines, electrotherapy equipment, and radiotherapy equipment and lithotripsy.			
BMT 362	**Design in Biomedical Engineering**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course covers topics related to the design of biomedical devices and the requirements need to be considered going from the biocompatibility to the regulation affairs. The biomechanical design topics including fracture under combined stresses, different yield criteria, stability, safety factors, reliability, failure theories, mechanical design for longevity including topics of fatigue, and fracture are covered. Along the course, case studies related to the design of orthopedic medical devices will be discussed and solved.			**ME 200** **BMT 331** **BMT 332**
BMT 372	**Medical Image Processing**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
The course is dedicated to introducing the digital image processing and applications in biomedical field. An introduction about digital image representation, Intensity transformation of images. Operation on digital images for visual enhancement and noise filtering will be introduced. The student will recognize and apply the frequency domain filtering. Further, the color image models, representation and processing are introduced. MATLAB application where students will practice on laboratory on real medical images all the methods learned during the lectures.			**MATH 318** **BMT 371**
7th Level (Year-4)			
BMT 443	**Biomedical Data Sciences**	**Credit Hours 2 (1+2+0)**	**Pre-requisites**
Recent biomedical technologies such as imaging systems and IoT sensors are generating a huge amount of data. There is a great demand for methods dealing with capturing and automatically analyzing the generated biomedical data. Data science and machine learning approaches are used to transform biomedical data into actionable knowledge. This course introduces data science from a biomedical perspective. The focus will be on biomedical applications of data science techniques and biomedical data science libraries, as well as a general overview of some data science tools and their applications. The course will cover the complete process of data science, including defining a problem, extracting raw data, data cleaning and formatting, exploratory data analysis,			**BMT 324**

statistical and machine learning models, assessing model results, and reporting results. Case studies from biomedical sciences will be utilized.			
BMT 444	**Health Informatics -1-**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
Health Informatics course provide students a conceptual framework for understanding Health Informatics and applications of information technology in the healthcare environment. The course will include in-depth discussion of how to use of technology in health care systems with emphasis on leveraging technology to improve quality and efficiency in care delivery. Moreover, the course provides an overview of the most important aspects of health informatics that will impact the clinical research, education, health management and clinical services.			**BMT 342**
BMT 463	**Simulation in Biomedical Engineering**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
Computational approaches to solving engineering problems have become essential analysis and design tools for engineers. Finite-element method (FEM) is at the center of modern computer analysis techniques. Students are first introduced to the techniques used to generate accurate 3D solid models of biological structures from sets of CT or MR images. They are then familiarized with the theoretical background of FEM expressed as differential or integral statements. Students are lastly exposed to an FE commercial software to perform solid and fluid simulation making use of some selected and previously reconstructed 3D models. This course will also emphasize the importance of verifying finite-element results by providing comparisons to exact analytic solutions when possible since excellent agreement between computational results and exact analytic solutions of complex problems strengthens students' confidence in the finite-element method.			**BMT 339** **BMT 362**
BMT 481	**Clinical Practice/Project -1-**	**Credit Hours 3 (0+6+0)**	**Pre-requisites**
This course provides students with the principle and approach of identifying and analyzing the project topic, perform a literature review, define the methodological solution, apply the solution to the problem, get and discuss the theoretical results, and writes a report about the whole procedures.			**All Level 6 Courses**

8th Level (Year-4)			
BMT 464	**Biomedical design and Manufacturing**	**Credit Hours 3 (2+2+0)***	**Pre-requisites**
This course covers topics related to the innovation of biomedical devices from a systems approach and the requirements need to be considered going from the idea to the product. The systems approach includes structure, life cycle, needs analysis, conceptualizing, risk management, building blocks, prototyping and regulations. Within the course, the practical part will be utilized to perform a full innovation life cycle of a design.			**BMT 362**
BMT 482	**Biomedical Innovation and Entrepreneurship**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
The course provides an overview of the complete process of innovating medical technologies using three major phases: identification, invention, and implementation. The course assists students to understand how to bring their ideas to market including needs, findings, concept generation, development strategy and planning, and integration. The course covers the entrepreneurship initiatives related to local healthcare systems.			**BMT 362**
BMT 483	**Health Technology Management**	**Credit Hours 3 (2+2+0)**	**Pre-requisites**
The plan is to engage students into real life case studies and expand in the coverage of some topics to meet the demand of the market through relating the lectures to real life setting through examples of real life problems and solutions related to health technology management, engaging students in case studies and discussions and finally, organizing field trips so they can experience real work place environment.			
BMT 486	**Clinical Practice/Project -2-**	**Credit Hours 3 (0+6+0)**	**Pre-requisites**
This course provides principle and approach of defining the technical specifications and engineering standards of the required learning outcomes including design, implementation, testing, acquiring results and writing reports.			**BMT 481**
(Year-5)			
-	**Internship**	**Credit Hours 0 (0+0+*)**	**Pre-requisites**
The internship is 50-week filed experience that aims to enable students to advance their professional preparation through work experiences which			**All Courses**

complement the course work in their major as biomedical technology engineers and for which they earn academic credit. The major student activities taking place during the field experience are: • Analyzing, identifying and solving problems in the biomedical technology contest. • Using various tools for conducting tests and repairs. • Performing technology assessments in the health care setting. • Performing Periodical Preventive Maintenance (PPM). • Performing Corrective maintenance. • Performing Calibration of medical and test equipment. • Attending maintenance workshops provided by vendors, if any.	

Brief Description of the BMT Program Elective Courses (Year-4)			
Technical Area 1: Biomechanics & Biomaterials (3)			
BMT 433	**Structural Aspects of Biomaterials**	**Credit Hours 2 (2+0+0)****	**Pre-requisites**
This course covers the mechanical and structural aspects of biological tissues and their replacements. Tissue structure and mechanical function are addressed. Natural and synthetic load-bearing biomaterials for clinical and medical applications are reviewed. Biocompatibility of biomaterials and host response to structural implants are examined. Quantitative treatment of biomechanical issues and constitutive relationships of tissues and biomaterials are covered. Material selection for load-bearing applications including reconstructive surgery, orthopedics, dentistry, and cardiology. Mechanical design for longevity including topics of fatigue, wear, and fracture. Use of bioresorbable implants and hybrid materials.			**BMT 332** **BMT 362**
BMT 434	**Orthopedic Biomechanics**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
The course provides an overview of musculoskeletal anatomy, the mechanical properties and structural behavior of biological tissues. Specific course topics will include structure and function relationships in tissues and organs; application of stress and strain analysis to biological tissues; analysis of forces in human tissues and joints. The course will acquaint students with the morphology of cortical and trabecular bone and its adaptation to imposed loads as well as the degenerative changes associated with immobilization and aging. The students will become familiar with the osteoporosis, diagnosis and associated risks of fracture. Finally, the course will introduce students to the principles of fracture fixation and explain the various stages of fracture healing and systemic/local factors affecting healing.			**BMT 230** **BMT 332**
BMT 435	**Cardiovascular Biomechanics**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
The primary objective of the course is to teach how to model blood flow and mechanical forces in the cardiovascular system. After a brief review of			**BMT 230** **BMT 331**

cardiovascular physiology and fluid mechanics, the course will progress from modeling blood flow in small-scale steady flow applications to small-scale pulsatile applications ending to large-scale or complex pulsatile flow applications. The course will also discuss how to calculate mechanical forces on cardiovascular tissue (blood vessels, the heart) and cardiovascular cells (endothelial cells, platelets, red and white blood cells), and the effects of those forces. At the end, the course will teach various methods for modeling cardiac function and its application to the design and function of selected medical devices (heart valves and ventricular assistive devices.			
BMT 436	**Cell and Tissue Engineering**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
Cell and Tissue Engineering (CTE) is interdisciplinary field covering numerous of specialties in engineering, medicine, biology and material sciences. CTE is the science that develops, manipulates and applies laboratory-based engineering principles and techniques on cells, tissue and organs to replace or support injured body part. This course introduces the fundamental elements of CTE to students, focusing on biomaterials, cell and growth factors. Also, in this course, students recognize important considerations and exposed to underlying factors in CTE for clinical applications. Most common CTE applications in bone, cartilage, skin and soft tissue are covered in this course, in addition to current examples of scientific literature through interactive in-class discussion.			**BMT 332**
Technical Area 2: Health Informatics (4)			
BMT 445	**Health Informatics -2-**	**Credit Hours 2 (2+0+0)** **	**Pre-requisites**
Health Informatics -2- course provides students with a conceptual framework for understanding eHealth concepts and applications. The course will include in-depth discussion on how to use eHealth strategy and policy as well as identifying the innovative ecosystem required for the strategy. Moreover, the course provides an overview of the most successful cases of implementing eHealth strategies and discusses eHealth Strategy in Saudi Arabia.			**BMT 343** **BMT 444**
BMT 446	**System Analysis and Design**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course examines the analysis of healthcare information systems and their redesign through automated applications. It introduces the students to the concepts and skills of system analysis and design. It includes expanded			**BMT 343**

coverage of data flow diagrams, data dictionary, and process specifications. Students will learn the nature of information needs and the role of information systems in organizations.			
BMT 447	**Healthcare Business Processes Reengineering**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
The aim of this course is to introduce methodologies and techniques of healthcare business process modelling and reengineering. The course presents the concepts and state of the art / state of the practice of business process design and business process reengineering for improving healthcare business performance, effectiveness, quality, customer service and satisfaction. Issues related to characteristics, goals, benefits and costs of enterprise-wide design, and the role of information technology during the design process will be discussed. The main goal of this course is to provide students with a background to the fundamental and emerging issues surrounding Business Process Reengineering, to clarify how various fields of study contribute to the implementation of BPM programs, and to enable students to participate in BPM projects.			**BMT 446**
BMT 448	**Healthcare Data Analytics**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course introduces a comprehensive review of data analytics in the field of healthcare. The goal is to learn about the fundamental principles, algorithms, and applications of intelligent data acquisition, processing, and analysis of healthcare data. It provides students with an understanding of different analytical techniques for healthcare problems and their relationships with one another. The course includes details of specific techniques and required combinations of tools to design effective ways of handling, retrieving, analyzing, and making use of healthcare data.			**BMT 444**
Technical Area 3: Biomedical Instrumentation (5)			
BMT 454	**Advanced Biomedical Devices**	**Credit Hours 2 (2+0+0)** **	**Pre-requisites**
This course introduces students to a world of modern biomedical devices and bioinstrumentation systems, and guide them in understanding the essential aspects of biomedical instrumentation design, including the source of biological signals, medical data and image acquisition, recording, and processing methods. Through the introductions to a list of real-world medical applications, we teach			**BMT 352** **BMT 371**

students the fundamentals of bio-sensors biomedical circuit designs, and medical signal processing techniques. Students will have opportunities to gain hands-on experience on a number of medical systems, building bio-sensor circuitry and processing measured data. The class exposes the students to the advanced medical instrumentation design concepts, as well as emerging medical devices medical devices based on new technologies such as micro/nanotechnology or mobile health technology.			
BMT 455	**Biomedical Automation and Intelligence**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course introduces students to the underlying concepts, methods, and the potential of intelligent systems in medicine. We will explore foundational methods in artificial intelligence (AI) with greater emphasis on machine learning and knowledge representation and reasoning, and apply them to specific areas in medicine and healthcare including, but not limited to, time series analysis of physiological data, disease progression modeling, and patient outcome prediction. As a research and project-based course, student(s) will have opportunities to identify and specialize in AI methods, clinical/healthcare applications, and relevant tools.			**BMT 343**
BMT 456	**Implantable Medical Devices**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
Students completing this course will be able to layout a theoretical design of an implantable medical device. An emphasis is placed on the main parts of typical implantable medical device (internal and external device), monitoring sensor(s), first-stage data processing, signal receiving/transmitting, and power management. Students also will acquire knowledge and skills relating to common requirements for an implantable medical device such as: size, drift, compatibility, complying with the Food and Drug Administration (FDA), measurement range, data transmission rate, sampling rates, and sensitivity.			**BMT 332**
BMT 457	**Assistive Technology Devices**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course provides the students with the design, development, operation and technical specifications of medical and assistive devices that can improve the quality of human life. Topics include: spinal orthoses, upper and lower limb orthoses, canes , crutches and walkers, wheeled mobility, driving assistive devices, assistive devices for recreation, circulatory assist device.			**BMT 362**

Technical Area 4: Biomedical Imaging (7)			
BMT 473	**Biomedical Signal Processing Application**	**Credit Hours 2 (2+0+0)** **	**Pre-requisites**
This course begins with a discussion of the analysis and representation of discrete-time signal systems, including discrete-time convolution, difference equations, the z-transform, and the discrete-time Fourier transform. The course covers FIR (finite impulse response) design digital filters. It concludes with MathLab applications on analysis of biomedical signal like ECG, EEG, and EMG.			**BMT 371**
BMT 474	**Medical Imaging Systems**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This Course Covers Equipment and different modalities of medical imaging systems. A detailed study of the equipment design and function in: digital detection systems, X-Ray, Breast Imaging, Nuclear Medicine/PET, Computed Tomography, Ultrasonography, Elastography and Magnetic Resonance Imaging. Furthermore, back Projection for 3D reconstruction, 3D visualization methods and finally Quality assurance & quality control of the imaging systems will be studied.			**BMT 372**
BMT 475	**Medical Image Analysis**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course covers current fundamental components in analyzing and processing of the medical images. A detailed study to teach the concepts of biomedical image processing and analyzing for digital detection systems; X-Ray, Breast Imaging, Nuclear Medicine/PET, Computed Tomography, Ultrasonography (including Elasto Images) and Magnetic Resonance Imaging. In addition, understanding of histogram, image segmentation, image texture analysis, methods of classification for images, addressing clinical problems, MathLab Application and Image visualization rendering.			**BMT 352** **BMT 372**
Technical Area 5: Clinical Engineering (8)			
BMT 487	**Healthcare Project Management**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
Projects is one of the main tasks biomedical engineers and those who deal with healthcare equipment have to manage frequently. Projects do not succeed by luck or by chance, and unsuccessful projects costs institutions a lot of time,			

effort and money. Successful projects require knowledge, expertise and skills in project management field. This course introduces project management from a manager standpoint in healthcare industry. Best practices and effective tools used in the vital aspects of project management such as project budget, schedule, quality and others during the entire life cycle of the project, in addition to necessary interpersonal skills are covered in this course. This course is taught using combination of lecture, discussion and hand-on exercise with emphasis on active learning.			
BMT 488	**Maintenance of Biomedical Equipment**	**Credit Hours 2 (2+0+0)** **	**Pre-requisites**
The main purpose of this course is to introduce students to the importance of preventive maintenance and repair of medical equipment and its impact on medical equipment safety, performance, and life expectancy. It will highlight the fundamentals of maintenance and repair of medical equipment, medical equipment electrical safety, radiation protection, and computerized maintenance management systems. It will also Introduce students to calibration and its impact medical equipment performance and patient safety.			
BMT 489	**Human Factors in Biomedical Technology**	**Credit Hours 2 (2+0+0)**	**Pre-requisites**
This course is designed to provide students with a fundamental understanding of human factors in the biomedical environment that must be taken into account in the design or the use of medical related systems. The main focus is the human physiological design aspects that should be considered when using or designing equipment. Criteria from sensory, motor, cognitive sources or principles of displays, controls and ergonomics as well as the nature of human error, basic experimental design, and human-computer interaction are included in this course.			**BMT 230**