First level - The First Semester

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course Marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	CSE		
1	OFRET101	English Language &Terminology	1	0	1	0	1	0	2	0	80	0	20	2	100
2	OFRPY102	Basic physics	1	0	1	0	1	0	2	0	80	0	20	2	100
3	OFRMA103	Mathematics	1	0	1	0	1	0	2	0	80	0	20	2	100
4	OFREE104	Introduction to electrical Engineering	2	1	0	0	2	2	0	0	60	60	30	3	150
5	OFRCS105	Basic Computer Skills	1	1	0	0	1	2	0	0	40	40	20	2	100
6	OFRME106	Mechanics	1	0	1	0	1	0	2	0	80	0	20	2	100
						Total Marks								-	650
7	UR 01	Introduction to Quality	1	0	0	0	1	0	0	0	20	0	0	1	20
						Total Credit Hours								14	-

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course Marks
			First level - The Second Semester												
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	CSE		
1	OFREC111	Electronic circuits &devices	2	1	0	0	2	2	0	0	60	60	30	3	150
2	OFRAH112	General Anatomy and histology For Technologists	1	1	1	0	1	2	2	0	60	60	30	3	150
3	OFRGP113	General Physiology For Technologists	1	1	1	0	1	2	2	0	60	60	30	3	150
4	OFRGM114	General Microbiology	1	1	1	0	1	2	2	0	60	60	30	3	150
5	OFRGC115	General Chemistry	1	1	1	0	1	2	2	0	60	60	30	3	150
6	OFRCP001	Effective communication and presentation skills	0.5	0	0.5	0	0.5	0	1	0	40	0	10	1	50
Total marks															
7	UR02	Human right and fighting corruption	1	0	0	0	1	0	0	0	20	0	0	1	20
														-	__800__
Total Credit Hours														__17__	-

Requirements for

Technology of Biomedical Equipment Program

Course Code	Course	Actual Hours				Credit Hours	Pre-requisite
		Lecture	Practical	Tutorial	Field		
BEBM201	Biomaterial	1	2	0	0	2	
BEDC202	Digital circuits &systems	2	2	0	0	3	
BECP203	Computer programming(1)	2	2	0	0	3	
BEME204	Medical Electronics	2	2	0	4	4	
BEBE211	Introduction to Biomedical Engineering	2	0	2	0	3	
BEBR212	Biomechanics &rehabilitation	1	2	2	0	3	
BEME213	Technical principles of medical Instruments	2	2	2	0	4	
BEEM214	Electrical machines &power electronics	2	2	2	4	5	OFR EE104 OFR EC111
BEAL301	Automation in clinical laboratories	2	0	2	0	3	
BECP302	Computer programming (2)	2	2	2	0	4	OFRCP203
BETP303	Therapeutic & Prosthetic Devices (1)	2	2	0	4	4	
BEPC304	Programmable Logic Controller	1	2	2	0	3	
BEIE311	Instruments & electrical measurement	2	2	0	0	3	OFR EE104
BEMC312	Microcontroller (1)	2	2	2	0	4	
BETP313	Therapeutic & Prosthetic Devices (2)	2	2	0	4	4	BETP303
BEPS314	Physiologic signal instrumentation	2	2	0	4	4	
BECL401	Clinical Laboratory instrumentation	2	2	0	0	3	
BEMC402	Microcontroller (2)	1	2	2	0	3	BEMC312
BEBM403	Biomedical modeling& simulation	2	2	2	0	4	
BEBI404	Biomedical imaging equipment (1)	2	2	0	4	4	
BEBO411	Biomedical optics	2	2	2	0	4	
BEBI412	Biomedical imaging equipment (2)	1	2	2	0	3	
BEFD413	Fault detection &preventive maintenance program	1	2	2	0	3	
BECE414	Calibration of biomedical Equipment	1	2	2	0	3	
BEGP415	Graduation project					2	

Second level - The First Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	CSE		
1	BSME200	Mechatronics Engineering	1	1	0	0	1	2	0	0	40	40	20	2	100
2	BEBM201	Biomaterial	1	1	0	0	1	2	0	0	40	40	20	2	100
3	BEDC202	Digital circuits &systems	2	1	0	0	2	2	0	0	60	60	30	3	150
4	BECP203	Computer programming(1)	2	1	0	0	2	2	0	0	60	60	30	3	150
5	BEME204	Medical Electronics	2	1	0	1	2	2	0	4	80	80	40	4	200
6	OFRSR002	Basics of Scientific Research	0.5	0	0.5	0	0.5	0	1	0	40	0	10	1	50
Total marks														_	750
7	EFR01	Elective Faculty Requirements												1	50
-		Total Credit Hours												16	-

Second level - The Second Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	CSE		
1	BEBE211	Introduction to Biomedical Engineering	2	0	1	0	2	0	2	0	120	0	30	3	150
2	BEBR212	Biomechanics &rehabilitation	1	1	1	0	1	2	2	0	60	60	30	3	150
3	BEME213	Technical principles of medical Instruments	2	1	1	0	2	2	2	0	80	80	40	4	200
4	BEEM214	Electrical machines &power electronics	2	1	1	1	2	2	2	4	100	100	50	5	250
		Total marks												-	750
5	EFR02	Elective Faculty Requirements												1	50
		Total Credit Hours												16	-

Third level – The Frist Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	Activities		
1	BEAL301	Automation in clinical laboratories	2	0	1	0	2	0	2	0	120	0	30	3	150
2	BECP302	Computer programming (2)	2	1	1	0	2	2	2	0	80	80	40	4	200
3	BETP303	Therapeutic & Prosthetic Devices (1)	2	1	0	1	2	2	0	4	80	80	40	4	200
4	BEPC304	Programmable Logic Controller	1	1	1	0	1	2	2	0	60	60	30	3	150
5	OFRIS003	Infection Control and Occupational Safety	0.5	0.5	0	0	0.5	1	0	0	20	20	10	1	50
Total marks														-	750
6	EFR03	Elective Faculty Requirements												1	50
-		Total Credit Hours												16	-

Third level – The Second Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	Practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	Activities		
1	BEIE311	Instruments & electrical measurement	2	1	0	0	2	2	0	0	60	60	30	3	150
2	BEMC312	Microcontroller (1)	2	1	1	0	2	2	2	0	80	80	40	4	200
3	BETP313	Therapeutic & Prosthetic Devices (2)	2	1	0	1	2	2	0	4	80	80	40	4	200
4	BEPS314	Physiologic signal instrumentation	2	1	0	1	2	2	0	4	80	80	40	4	200
Total marks														-	750
5	EFR04	Elective Faculty Requirements												1	50
Total Credit Hours														16	-

Fourth level - The Frist Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	Activities		
1	BECL401	Clinical Laboratory instrumentation	2	1	0	0	2	2	0	0	60	60	30	3	150
2	BEMC402	Microcontroller (2)	1	1	1	0	1	2	2	0	60	60	30	3	150
3	BEBM403	Biomedical modeling& simulation	2	1	1	0	2	2	2	0	80	80	40	4	200
4	BEBI404	Biomedical imaging equipment (1)	2	1	0	1	2	2	0	4	80	80	40	4	200
5	OFRHM004	Hospital management	1	0	0	0	1	0	0	0	40	0	10	1	50
Total marks														-	750
6	EFR05	Elective Faculty Requirements												1	50
-		Total Credit Hours												16	-

Fourth level - The Second Semester
(Program Technology of Biomedical Equipment)

A Series	Course Code	Course	Credit Hours				Contact Hours				Marks			Credit Hours	Course marks
			Lecture	practical	Tutorial	Field	Lecture	practical	Tutorial	Field	Written exam	practical	Activities		
1	BEBO411	Biomedical optics	2	1	1	0	2	2	2	0	80	80	40	4	200
2	BEBI412	Biomedical imaging equipment (2)	1	1	1	0	1	2	2	0	60	60	30	3	150
3	BEFD413	Fault detection &preventive maintenance program	1	1	1	0	1	2	2	0	60	60	30	3	150
4	BECE414	Calibration of biomedical Equipment	1	1	1	0	1	2	2	0	60	60	30	3	150
5	BEGP415	Graduation project												2	100
		Total marks												-	750
6	EFR06	Elective Faculty Requirements												1	50
-		Total Credit Hours												16	-

Appendix (2)

Course Description

متطلبات كلية اجبارية
(Obligatory Faculty Requirement)

Hours are demonstrated in credit hours
L (Lecture), P (practical), T (tutorial, F (field)

OFRET101 English Language &Terminology (L=1, T=1):

The study of Scientific English will focus on appropriate grammatical structures and verb tenses and presents an extensive practice in conversation and writing. The common medical and engineering terms in practice are declared using medical and engineering topics and journal articles. Report writing and abstract writing using accurate grammar and vocabulary are to be focused upon.

OFRPY102 Basic physics (L=1, T=1):

This course provides the student with the basic concepts of physics needed for their future studies and their applications in the health science fields. The laboratory sessions deal with the basic physical laws and phenomena concerning heat, electricity, magnetism and properties of matter.

OFRMA103 Mathematics (L=1, T=1):

An introductory course designed to provide a review of fundamental operations in mathematics. Topics include elementary algebra and functions; intermediate algebra and functions; geometry and measurement; and data analysis, statistics, and probability.

OFREE104 Introduction to electrical engineering (L=2, P=1):

Electrical circuit constants and variables - Electrical circuit elements – Simple resistance circuit - Electrical circuit analysis – Transformation between electrical sources – Electrical network theories – Steady state sinusoidal AC current circuit – Time vector representation – Power and power factor – Resonance circuit

OFRCS105 Basic Computer Skills (L=1, P=1):

This course gives a brief introduction to the construction of the computer as CPU, storage devices, output and input devices, different types of drives. It Introduces student to concepts and terminologies of spread sheet, database, database management systems, and the concept of hypertext markup language (HTML). It practice some computer applications in the laboratories such as Microsoft excel, Microsoft access, etc…

OFRME106 Mechanics (L=1, T=1):

This course is an introduction to the physical concepts and mathematical methods of continuum mechanics with the aim of preparing the student for further studies to understand the subsequent courses related to instruments, machines and equipment in different programs.

OFREC111 Electronic circuits and device (L=2, P=1):

Semiconductor physics – Semiconductors – Diffusion current in pn junction Biasing of pn junction Different types of pn - junctions – Electron ballistics – Semiconductor diodes application – Zener diodes and other elements - Bipolar Junction Transistor fundamentals - Bipolar Junction Transistor Characteristics - Bipolar transistor Circuits - Small Signal Bipolar Transistor Equivalent Circuit - Single Stage Bipolar Transistor Amplifier - Multi stages amplifier .

Practical part: Measuring the properties of the p -n junction and its estimated resistance - Halve wave rectifier – Full wave rectifier – Measuring the properties of bipolar transistor - Study methods of connection and transistor biasing - Bipolar Transistor Amplifier.

OFRAH112 General Anatomy and histology for technologists (L=1, P=1,T=1):

This course deals with general anatomy and histology of human body where basic knowledge helps to clarify and is of importance to an understanding of the clinical disorders that may arise. The course comprises a brief anatomical and histological knowledge about the surface anatomy, the musculo-skeletal system, the limbs, the abdomen, the pelvis, the chest, the circulation and the nervous system.

OFRGP113 General Physiology For Technologists (L=1, P=1,T=1):

This course deals with human physiology in relation to the normal cell physiology. Each system is reviewed with reference to function and its role in body homeostasis.

OFRGM 114 General Microbiology (L=1, P=1,T=1):

This course consists of general microbiology and brief introduction about principles of immunology. The course describes the structure, classification and growth of the microorganisms of medical importance. Identification of common microorganisms by staining and culture characteristics and biochemical reactions.

OFRGC115   General Chemistry (L=1, P=1,T=1):

An introduction to the fundamental concepts of general chemistry (physical, organic inorganic and analytical chemistry). Focus areas include scientific measurement and analysis, atomic structure, chemical nomenclature, balancing equations, stoichiometry, and energy dynamics. Moreover, focus areas include intermolecular forces and solution dynamics, valence electron shell pair repulsion and molecular geometry, organic structure, naming, and basic chemical reactions.

OFRME200 Mechatronics Engineering (L=1, P=1):

 Mechatronics is a multidisciplinary engineering field that combines systems design, computer, electronic, mechanical, and control engineering. Students will work with pneumatics, hydraulics, electricity and manufacturing of mechanical parts.

OFRCP001 Effective communication and presentation skills: (L=0.5, T=0.5)

This course is designed to good communication skills with patient giving opportunity to practice communication skills and the presentation. Help students to adopt the ethics of practice in medic al field when dealing with patients and colleagues and to

explore technique to prepare and deliver presentation and how to use presentation technology.

OFRSR002 Basics of scientific research (L=0.5, T=0.5)

This course introduces the student to methods of scientific research in the health professions by studying common experimental designs and critically analyzing published research articles. The student will also design appropriate research paradigms, search the literature, and prepare a preliminary research proposal.

OFRIS003 Infection control and occupational safety (L=0.5, P=0.5)

To provide students with sufficient knowledge, skills and attitudes essential for safe practice and proper infection prevention and control procedures in different types of healthcare organizations and services.

OFRHM004 Hospital management (L=1)

This course is designed to provide a range of applicable skills and a solid foundation of hospital management knowledge. To promote awareness among functionaries involved in health and hospital management. Research in the field of health and hospital management. The health care delivery systems. The development of high quality hospital services and community health care. Operation management and operation management skills. Healthcare institutions' performance evaluation. Accountability in health organization. Financial considerations for cost effectiveness will be also outlined.

3-Technology of Biomedical Equipment
3-برنامج تكنولوجيا الاجهزة الطبية الحيوية

BEBM201 Biomaterial (L=1, P=1):

This course focuses on mechanical properties of biomaterials such as composite minerals, polymers, viscoelastic. Plastics, ceramics, porous structures, composite material. Mechanical testing, friction, wear and lubrication properties of biological materials. Biocombust ability. Bending, fatigue properties. Standard specifications. Implant materials. It focuses also on synthetic replacement, and methods of linking the orthopedic organs with tissue and bone inside the body.

BEDC202 Digital Circuits & Systems (L=2, P=1):

Boolean algebra and truth table. Combinational logic circuits. Sequential logic circuits, multiplexers, and read/ write memories. Analog – to- digital convertor (A/D) and applications. Digital – to- analog convertor (D/A) and applications. Address decoding hardware. Digital arithmetic's

BECP203 Computer programming 1 (L=2, P=1):

Techniques of engineering problems- solution in communication engineering- field of information systems-development of planned programs using c++ language-improving, translation, and correction of programs.

BEME204 Medical electronics (L=2, P=1,F=1):

Fundamental knowledge of electronics. Sensors and physiological signals will be explained. Patient safety and regulations will be emphasized.

BEBE211 Introduction to biomedical engineering (L=2,T=1):

Study a brief introduction to the field of biomedical engineering, different fields that the biomedical engineers involved in and focusing on their duties as a clinical engineers, Introduce Medical Equipment technology, Medical Equipment Classification and An overview of medical equipment used in the hospital and other medical environments to diagnose and treat patients in various hospital departments.

BEBR212 Biomechanics &rehabilitation (L=1, P=1,T=1):

This course is designed to introduce purpose for studying biomechanics, basic biomechanical principles, biomechanics of human body bones and joints and human skeletal muscles. Walking gait. It also include hydrotherapy, heat therapy, electrotherapy equipments, types of electrostimulation equipment , indication &

contraindication of electrostimulation, The orthotics of upper & lower limbs and spinal orthosis . Full description of the prosthetic apparatus for upper & lower limbs.

BEME213 Technical principles of medical Instruments (L=2, P=1,T=1):

This course provides an introduction to medical instrumentation systems and its technical principals, modes of operation, constraints, classification. Study of various Physiological systems, related biopotentials and physiological parameters. The origin and significance of the physiological signals. Methods for measuring temperature, pressure, flow and volume. Study basic principles involved in sensors instrumentation, mechanisms of different sensors, their classification. Understanding of sensors to solve real world problems of medical device development, troubleshooting, interference, and modifying inputs. Study the importance and objectives of medical sensors in modern day medicine and Identify the underlying physics principles and relate them to mechanisms of a number of biomedical sensors. Need for bio-amplifier - single ended bio-amplifier, differential bio-amplifier, right leg driven ECG amplifier. Band pass filtering, isolation amplifiers. Precision, resolution, sensitivity, accuracy, uncertainty of Biomedical Instrumentation measurement.

BEEM214 Electrical machines and power electronics (L=2, P=1,T=1, F=1):

Transformers – Induction motors (single and three phases) – Direct current machines - Introduction to power diodes, Diac, SCR, and triac. - Firing ,protection, and switching circuits Description

BEAL301 Automation in clinical laboratories (L=2, T=1):

Dynamic system model building principles -Introduction, Differential equation, Laplace transform , Time response, Step and impulse responses - System transient response(steady state error and dynamics) Basics of system modeling, Mathematical models, Physical models, Parameter models, Balance equations - Application to thermal systems, chemical and mechanical process, Mechanical and electromechanical systems , Analogy between different systems - Characteristics of closed loop systems - Introduction to closed loop systems, Performance of control systems, Pole assignments - Stability of linear systems, Routh stability.

BECP302 Computer programming (2) (L=2, P=1,T=1):

Basics of data structure- Algorithms and data types – Data structure – Scheduling – sorting - graphic- Algorithms (processing, arrangement, searching), all structure and programming are performed using C++ language - Tree analysis and algorithms design - Algorithms efficiency - Training on using one of the visual programming language as an example of windows programming.

BETP303 Therapeutic & Prosthetic Devices (1) (L=2, P=1,F=1):

This course provides principle of operation and design of Therapeutic & Prosthetic Devices such as Hemodialysis and its associated water treatment unit in the hospital, Ventilators and its associated pipes system in the hospital, Baby incubators and anesthesia machines, diathermy and electrical surgical unit with covering some biological systems physiology and diseases that need to the intervention by these devices

BEPC304 Programmable Logic Controller (L=1, P=1,T=1):

Introduction to programmable controllers (Conceptual design of the PLC & Principles of operation) - PLC Hardware (Processor - Power supply - Memory organization) - Programming devices - PLC programming Language (Ladder diagram)- Lab./Practical Applications.

Practical part includes Simple Ladder Logic Program, Examples Simple Start/Stop Ladder, Logic Relay Single Push Button On/Off Ladder Logic, Ladder Logic Examples with Timers, PLC Program Example with On Delay Timer, PLC Program Example with Off Delay Timer, PLC Program Example with Retentive Timer

BEIE311 Instrument and electrical measurement (L=2, P=1):

Introduction to Measurement systems – Measurement errors –Direct and alternating current indicating instruments – DC bridges – AC bridges – Error detection in cables – Sensors - Electrodes, and Transducers Practical part: Errors in Measurement and Basic Statistical Sampling - DC Current and Voltage Measurement - Resistor Description Characteristics and Ohms Law - Oscilloscope - Oscilloscope - Measurement Using DC Bridges - Measurement Using AC Bridges - Measurement of Semiconductor Devices with Multimeter - Thermistor Characteristics and Temperature Controlled Circuits

BEMC312/BEMC402 Microcontrollers 1&2 BEMC312 (L=2, P=1,T=1) BEMC402 (L=1, P=1,T=1):

1. Introduction and review ● Logic design 2. Introduction and review ● Microcomputer architecture 3. Memory ● program memory ● data memory ● external memory 4. Arithmetic logic unit ● Control unit ● time control ● timers ● interrupt 5. PIN/PORT operation ● Ports operation ● Pin operation 6. Programming ● assembly ● language ● Basic language 7. interfacing methods ● Digital interface ● Protection. ● keypad 8. Applications ● Connecting opto-couplers, transistors, relays. ● LED-7segment-LCD. ● Timer ● Real time clock ● ADC ● PWM ● Flash memory

BETP313 Therapeutic & Prosthetic Devices (2) (L=2, P=1,F=1):

This course provides the principle of operation and design of Therapeutic & Prosthetic Devices used for the heart such as defibrillators, cardioversion, Automatic External Defibrillator (AED), implantable cardioversion defibrillator

(ICDs), pacemakers, left ventricular assisted device (LVADs), watchman device, Amplatzer Cardiac Plug (ACP) and Amulet Device , LARIAT Device, AtriClip device, heart lung machines and syringe pump with covering some biological systems physiology and diseases that need to the intervention by these devices to prevent or treatment of these biomedical problems.

BEPS314 Physiologic signal instrumentation (L=2, P=1,F=1):

Biomedical recording systems: Basic Recording systems, General consideration for signal conditioners, Electrocardiograph, Electroencephalograph, Electromyography, Other biomedical recorders, Biofeedback instrumentation, Electrostatic and Electromagnetic coupling to AC signals, Proper grounding, Patient isolation and accident prevention. **Patient Monitoring Systems:** System concepts, Cardiac monitor, selection of system parameters, Bedside monitors, Central monitors, Blood pressure and flow measurement, Heart rate meter, Pulse rate meter, Holter monitor and Cardiac stress test, Cardiac cauterization instrumentation, Organization and equipments used in ICCU & ITU.

BECL401 Clinical Laboratory instrumentation(L=2, P=1):

But it should cover Clinical Laboratory Instrumentation that Responsible for analyzing patient specimens to provide information to aid in diagnosis of disease or to evaluate effectiveness of therapy such as Spectrophotometer, Automated Chemical Analyzers (Autoanalyzer), Centrifuge, Electrophoresis and Coulter Counter, Autoclave/ sterilizers, lab microscope, lab refrigerator.

BEBM403 Biomedical Modeling and simulation (L=2, P=1,T=1):

Model definition- Performance Evaluation Techniques- Development of Systems Simulation- Designing and Implementing a Discrete-Event Simulation Framework.

BEBI 404/ BEBI412 Biomedical Imaging equipment 1 &2 : BEBI 404 (L=2, P=1,F=1), BEBI412 (L=1, P=1,T=1):

This course will cover some X-Ray Machines such as conventional x-ray and fluoroscopic machines that includes, a brief introduction of Electromagnetic radiation, Production of X Rays and how it interacts with matters, x-ray tube design, different types of X ray tube Generators, exposure Factors determining the diagnostic quality of the image. X-rays, filters, how to control scatter radiation through beam restrictors, grids and air gap technique and how to qualify the performance of some components through Quality assurance tests, the conventional film and Cassette with Intensifying screen. also cover Fluoroscopic machines generations, types, component and operation, Patient and technologist protection procedures, common x-ray tube faults. This course will also cover X-ray Tube Rating Charts and cooling mechanisms, the advancement in X-ray tubes that can used in CT scanners, this covers, metal ceramics x-ray tubes, Aquilion X-ray Tube, New Straton Tube, Computed tomography (CT) scanners, tomographic principles, machine component including gantry, filters, collimators, detectors types,

characteristics and generations, data types and image component, The Hounsfield unit, windowing, image control and reconstruction methods. Introduction for other imaging techniques such as ultrasound and magnetic resonance imaging (MRI).

BEBO411 Biomedical optics (L=2, P=1,T=1):

This course is to designed to covers principles and applications of the emerging optical technology for high-resolution, three-dimensional imaging, optical coherence tomography (OCT). It provides the basic technology of endoscopy, surgical microscopy and ophthalmic instruments like Slitlamp ……

BEFD413 Fault detection &preventive maintenance program (L=1, P=1,T=1):

This course is designed to provide students with basic problem solving skills, and to track down and identify problem frequently encountered with medical instrumentation .Emphasis is placed on developing logical troubleshooting techniques using technical manuals, flowcharts, and schematics, to diagnose equipment faults. Upon completion, students should be able to logically diagnose and isolate faults, and perform repairs to meet manufacturer specification It introduces the printed circuits boards, different design of electronic circuit, troubleshooting. Instruments control program, preventive maintenance, failure reporting and recall, instrument selection and evaluation criteria, risk management techniques and resources, part inventory and control, equipment's planning for medical facilities, application of computers in maintenance managements.

BECE414 Calibration of biomedical Equipment (L=1, P=1,T=1):

This course is defining calibration and qualification of different medical equipment for improving its accuracy. It includes purpose and importance, procedures used for equipment quality control check, reference standard, performance verification and action after calibration.

BEGP415 Graduation project (2 Credit hour)
Students undertake a major project as part of the program. The aim of the project is to provide the students, who work in groups, with an opportunity to implement appropriate concepts and techniques to a particular design. Students are required to select and research the expected project to be designed and implemented. A dissertation on the project is submitted on which the student is examined orally.

متطلبات جامعة المنوفية

مدخل الجودة

يشمل هذا المقرر تعريف ضمان الجوده واهميته في تحسين موارد الامم و كيف انه يتطلب تعليما متطورا ذو جوده عاليه عن طريق اكساب الطالب القدره علي التعلم والابداع واستخدام النكنولوجيا بحيث تركز علي تنميه المهارات مع متطلبات سوق العمل. وفوائد تطبيق نظم الجوده في تخريج خريجا متميزا وسط الاف الخريجين ويجعل سوق العمل تتهاتف علي توظيفه. مميزات الطلاب الخريجين من الجامعات التي تطبق نظم الجوده.

حقوق الانسان ومحاربة الفساد

تعريف الحقوق التي يتمتع بها الانسان لمجرد كونه انسان. تعدد حقوق الانسان تبعا لنظم كل دوله ودستورها علي مدار التاريخ. امثلة لتعرض هذه الحقوق للعدوان علي مدار التاريخ. حقوق الانسان اليوم قضيه عالميه غير منحصره في ميدان معين وكيف اصبحت في الوقت الراهن رمزا للتطور والتتقدم والارتقاء. الاعلان العالمي لحقوق الانسان والحد من تعسف السلطه العامه مساسا بهذه الحقوق. تعريف الفساد وامثلته وسبل محاربتة .