

BIOMEDICAL DEVICE TECHNOLOGY

COURSE CONTENTS

SEMESTER I

MYO006 INTRODUCTION TO BIOMEDICAL TECHNOLOGY

Development and history of Biomedical Device Technology and relationship with other disciplines. Working areas of Biomedical Device Technician, duties and responsibilities; Coordination with Biomedical Engineer, biopotential signals and their formation; medical device transducers and electrodes, types and features; human-instrumentation system.

MAT101 BASIC MATHEMATICS

Creating mathematical awareness and making applications for the branch. To give priority to the examples related to the subjects covered in the course, especially in the fields of Electric and Electronics. Transfer of derivative to field applications, function concept, definition of interval function, basic functions, the widest definition set of a function, number sets, equations and Horner method, inequalities and linear programming, matrices and determinant, linear equation systems, exponential and logarithmic functions, trigonometry, vectors, complex numbers, limit and continuity, slope and derivative -1, applications of derivative, graphic drawing and solved examples.

BCT109 DIRECT CURRENT CIRCUIT ANALYSIS

Electrical elements, symbols, units. Current, voltage and resistance. Ohm's law, energy and power. Series circuits, Parallel circuits, Series-Parallel Circuits, Circuit Analysis Methods, Superposition Theorem, Thevenin Theorem, Norton's Theorem, Maximum Power Transfer Theorem.

BCT113 ELECTRONICS COMPONENTS AND MEASURING TECHNIQUE

Semiconductor technology, Semiconductor switching circuit elements, Diodes, Zener Diodes, Transistors, Fets, Operational Amplifiers, Integrals. Base and derived units, unit standards. Errors and static characteristics. DA measurements. Galvanometer with rotating coil, DC Ammeter, DC Voltmeter, Resistance measurements and ohmmeters, A.A measurements and concepts, Electrodynamic measuring instrument, electrostatic voltmeters, rotating magnet measuring instrument, Power and energy measurement, Occupational safety definition, occupational accident and dangerous situations, Human exposure of electric current its effect on and fault current circuit.

MYO101 BASIC ANATOMY AND PHYSIOLOGY

Introduction to Anatomy and Physiology, Cell theory, Cell organelles, Item exchange, Cell metabolism, Locomotor System Anatomy and Bone, joint and muscle physiology, Respiratory System Anatomy and Physiology, Circulatory System Anatomy and Physiology, Digestive System, Urinary System, Genital System, Endocrine System, Nervous System, Sensory Organs Anatomy and Physiology.

RKUL101 UNIVERSITY CULTURE I

14 seminars will be held throughout the week, conferences, panels, workshops and singing Includes've frame Academics at the university, student council it recommends a program of student clubs of his era.

TURK101 TURKISH LANGUAGE I

What is Language: Theories about the birth of language, Language-culture-nation relationship; Language Revolution: Turkish Language Institution and its works; World Languages: Language families, the place of Turkish among world languages; Features of Turkey Turkish: Voice properties, Format properties, Sentence properties; Writing rules; Punctuation; Correspondence: CV, Petition, Letter, Business letter, Telegram.

INGU101 ENGLISH I

Markers; Preliminary Prepositions: Place, Time, Movement; Singular and Plural Names: Countable and Uncountable nouns; Times: Wide time, Present time, Past time structures; Modes: Will, Should, Should not, Must, Must not, Can; Comparative structures; Fairings: Personal titles, Possessive titles; Adjectives; Positive sentence, Negative sentence and Question sentences; Conjunctions: And, But, While-While, Because.

ATA101 PRINCIPLES OF ATATURK AND HISTORY OF REVOLUTIONS I

Ottoman Social and State Order Delay and Reform Movements; Disintegration of the Ottoman State and the Start of the National Struggle; Organization of the National Struggle in Mustafa Kemal Pasha in Anatolia; Opening of the First T.B.M.M.; Military and Political Developments Between 1920-1922; Revolutions and Counter-Reactions; Establishment of Constitutional System; Domestic and Foreign Politics in the Republican Era; Basic Features of Turkish Revolution and Thought Movements that are Affected; Innovations in Law, Education, Economy and Social Life; Atatürk's Principles and General Qualifications of These Principles; Evaluation of Kemalism in Ideological Perspective.

SEMESTER II

BCT100 FAILURE ANALYSIS AND TROUBLESHOOTING

Finding the fault by various methods and eliminating the fault by using the order of operation, making the soundness checks of the circuit elements, reading the catalog information of the semiconductors.

BCT116 ALTERNATIVE CURRENT CIRCUIT ANALYSIS

AC Current and voltage, Capacitors, Alternating Current RC Circuits, Coils, Alternating Current RL Circuits, Alternating Current RLC Circuits and Resonance, First and Second Order Circuits.

BIK101 BIOCHEMISTRY

Cell, Amino Acids, Peptides, Proteins, Enzymes, Nucleic Acids, Carbohydrates, Lipids and Membranes, Fats, Vitamins.

BCT114 MATHEMATICS IN BIOMEDICAL

Indefinite integrals, Applications of certain integrals, Calculation of areas, volumes, arc lengths, Transcendent Functions, Integration Techniques, 1st order differential equations and their application to engineering problems, Infinite Sequences and series.

RKUL102 UNIVERSITY CULTURE II

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RPSI209 POSITIVE PSYCHOLOGY AND COMMUNICATION SKILLS

To help students learn about positive psychology and its applications, and also develop their own positive perspective by providing their own awareness.

TURK 102 TURKISH LANGUAGE II

To gain the skill of using mother tongue correctly; In the course where students who have come to the university by acquiring this skill are also essential to produce their thoughts and write their thoughts in order to develop their skills in this field, punctuation marks, spelling rules, composition rules, writing types are discussed with examples and writing studies are carried out. In addition, various novels, poetry books and theater works are read and studied. By making a reading theater in the classroom, applied emphasis and intonation lessons are performed with various diction techniques.

INGU 102 ENGLISH II

Tenses: Present tense, Wide tense, Past tense, Future tense structures; Modes: Might, Could, Can, Must, May; Envelopes: Place, Direction, Purpose, State envelopes; Adjectives: Order of adjectives, Comparison, Structures which show superiority; Passive Structure: Present, Wide, Past, Passive structure in the future; Conditional Clauses; Adjective clauses; Transfer Sentences; Verb Structures: TO, -ING; Noun Clauses; Envelope Clauses; Comparative Structures.

ATA 102 PRINCIPLES OF ATATURK AND HISTORY OF REVOLUTIONS II

Ottoman Social and State Order Delay and Reform Movements; Disintegration of the Ottoman State and the Start of the National Struggle; Organization of the National Struggle in Mustafa Kemal Pasha in Anatolia; Opening of the First T.B.M.M.; Military and Political Developments Between 1920-1922; Revolutions and Counter-Reactions; Establishment of Constitutional System; Domestic and Foreign Politics in the Republican Era; Basic Features of Turkish Revolution and Thought Movements that are Affected; Innovations in Law, Education, Economy and Social Life; Atatürk's Principles and General Qualifications of These Principles; Evaluation of Kemalism in Ideological Perspective.

SEMESTER III

BCT241 LIFE SUPPORT AND OPERATING ROOM DEVICES

Functions, operation, electrical-electronic failures of Incubators, Ventilators, Nebulizers, Electroshock systems, Defibrillators and Pacemakers, Heart-lung pumps, Operating table-patient bed malfunctions, Operation and malfunctions of electrocautery devices, installation of operating room lamps, Operation and malfunctions of anesthesia devices.

BCT223 MEDICAL ANALYSIS AND LABORATORY DEVICES

Introduction to Medical Analysis and Laboratory Equipment, Blood Gas Analyzers, Blood Count Devices, Spectrophotometers, Centrifuges, Autoanalyzers, Coagulometers, PCR devices, Microscopes, Separators and Mixers, Tissue tracking devices, Microtome devices, Cryostat devices, Storage Devices (cold/hot) .

BCT225 PHYSIOLOGICAL SIGNAL VIEWERS

Introduction and working principles of EKG, EEG, EOG, ENMG, sleep disorder diagnosis, respiratory measurement systems, bedside signal monitors, audiometric monitors, NIBP (blood pressure monitor) and tympanometry devices, which are physiological signal monitors, and eliminating possible electrical and mechanical malfunctions of these devices.

BCT239 MEDICAL IMAGING DEVICES

Ultrasonic imager, mechanical structure, working principle, purpose of use, types and areas of use of conventional (conventional) x-ray devices, cold light sources, in-body imaging, medical monitors, camera and video processors, film processing devices, operating modes, sound wave, sound wave physical properties, electrical structure, electrical wiring diagrams, block diagrams, supply measurement points, electronic structure, electronic wiring diagrams, block diagrams, feeding points, control cards, display circuit, accessories, common faults, printers, monitor, polaroid, video recorders, cd/dvd writers.

BCT237 DIGITAL ELECTRONICS

Number Systems-Codes, Boolean Algebra and Logic Gates, Logical Functions and Simplification Techniques, Combinational Logic Circuits, Arithmetic Operations-Circuits, Multi-Function Circuits, Code Converters-Encoders, MUX and DEMUX Circuits, Flip-Flops-Data Recorders, Synchronous Counter Circuits, Asynchronous Counter Circuits, Special Counter Circuits, Counter Circuits-Applications, Slider, Recorders

ILK101 FIRST AID

Basic principles of first aid, Human body, Evaluation of the patient/injured and the scene, Basic life support, First aid in respiratory tract obstructions, First aid in bleeding, shock, injuries, First aid in burns, frostbite and heatstroke, First aid in unconsciousness, First aid in poisoning Assistance, First aid in animal bites, First aid in foreign objects in eyes, ears, nose, First aid in suffocation, First aid in fractures, dislocations and sprains, Techniques for transporting the sick and injured.

MYO020 CAREER PLANNING AND PROFESSIONAL COMPETENCIES

In some weeks, the courses will be held by inviting industry professionals and guest educators from public institutions with the aim of establishing sectoral connections. In the course, students will be informed about the methods and tools used in the recruitment processes, and applications and assignments will be given to reinforce these methods.

SEMESTER IV

BCT200 TEST, CONTROL AND CALIBRATION OF MEDICAL DEVICES

Medical Device Regulation, Test and Calibration Standards for Medical Devices, Calibration guidelines, accreditation, traceability, preparation of instructions, archiving, function test, electrical safety, measuring instruments used in calibration, calibrators used in biomedical devices, test devices used in biomedical devices, attention should be paid in biomedical device measurements considerations, calibrator and test equipment.

BCT230 BIOLOGICAL HAZARDS IN MEDICAL DEVICES

General laboratory rules, Protective measures against disease risks, Using protective barriers suitable for the job, Fighting against risks that may occur in or around oneself, Definition of Infectious Diseases, causative agents, transmission routes, Disinfection, Sterilization, Contamination, Decontamination, Asepsis, Antisepsis concepts, Sterilization and Disinfection Methods.

BCT214 ESTABLISHING QUALITY MANAGEMENT SYSTEMS ON MEDICAL DEVICES

Quality Concept, Standard and Standardization, Quality Management Models, Standards Related to Medical Devices (EN ISO 13485:2016 etc.) Medical Device Regulations and Legislation, CE Marking, Preparation of Technical Files in Medical Devices, R&D and Certification Processes in Medical Devices, Medical Devices Ensuring Standards Required for Production of Devices and Internal Audit, Structure of TÜRKAK, TSE Standards, Notified Bodies.

BCT224 MICROCONTROLLERS

Number systems, Structure of microprocessors, Structure of microcontroller, programming in assembly language and drawing flowcharts, Basic instructions and their applications, Seven-part displays and counters, Control of stepper motors, Interrupts.

BCT226 HOSPITAL ORGANISATION

Definition of Management, Historical Development and Functions, Characteristics, Classification and Functions of Health Services, Development and Organization of Health Services in Turkey, National and International Health Policies, Hospital Management, Health Services Finance, Human Resources Management in Healthcare Businesses, Marketing Management in Healthcare Businesses, Healthcare Public Relations and Communication in Businesses, Patient Rights and Ethics in Healthcare Businesses, Contemporary Approaches in Healthcare Businesses.

MYO021 ENTREPRENEURSHIP AND PROJECT CULTURE

In the program, which will be held in cooperation with Üsküdar University, GOSB Technopark and GOSB Technopark companies, Technopark companies will include marketing in entrepreneurship, human resources in entrepreneurship, financial management in entrepreneurship, production management in entrepreneurship, technology management in entrepreneurship, entrepreneurship and brand, patent law, R&D and innovation in entrepreneurship will be discussed.

BCT999 SUMMER INTERNSHIP

Doing field applications of the theoretical knowledge acquired during the year during the summer period for 20 working days.