

BIOMEDICAL DEVICE TECHNOLOGY

COURSE CONTENTS (2020-2021)

I. SEMESTER

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 Math

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.

BCT107 Circuit Analysis

Basic laws, resistance and ohms law, simple resistance circuits, series circuits, parallel circuits, ideal and non-ideal sources, general resistance circuits with source conversion, solution with mesh circuit and node voltages method, circuit theorems, superposition, thevenin, norton and maximum power transfer theorems, triangle-star and star-triangle transformation, transient events in capacitance and resistance-capacitor circuits, charge and discharge, energy storage in capacitor, faraday and lenz laws, transient events in resistance-coil circuits, energy storage in inductance and discharge phase. Related experiments: Investigation of parameters affecting conductor resistance, measurement of current and voltage in direct current, environmental current and node voltage tests in direct current, proof of thevenin method with direct current, direct current series, parallel and mixed circuit experiments.

BCT105 Electronic Measuring Technique and Safety

Basic Concepts, Basic and derived units, unit standards. Errors and static characteristics.

DC measurements. Rotary coil Galvanometer, DC Ammeter, DC Voltmeter, Resistance measurements and ohmmeter, A.C measurements and concepts, Electrodynamic measuring device, electrostatic voltmeters, rotary magnet measuring instrument, Power and energy measurement, Job Safety definition, work accident and dangerous situations, Effect of electric current on human 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 Atatürk 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.

II. SEMESTER

BCT108 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.

BCT110 Electronic Elements And Analysis

Analog circuit elements, Calculation in analog circuit elements, Transistor Amplifiers, Analog and Digital circuit elements

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

BCT106 Hospital Organization

Definition of Management, Historical Development and Function, Characteristics of Health Services, Classification and Functions, Development and Organization of Health Services in Turkey, National and International Health Policy, Hospital Management, Health Care Financing, Human Resource Management in Health Management, Marketing Management in Health Care Management, Health Public Relations and

Communication in Business, Patient Rights and Ethics in Health Business, Contemporary Approaches in Health Business.

RKUL102 University Culture II

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.

RPSI209 Positive Psychology and Communication Skills

1-definition of positive psychology, basic concepts, theoretical foundations and applications, 2-emotional experiences and examine the brain behavior of the system's behavior, 3-yourself and recognize others, 4-psiksosyal life skills and problem solving skills, 5-motivation and planning, 6-anger, aggression, violence, 7-relationship management, healthy decision-making, 8-sebatkarlık and agreeableness

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 Atatürk 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.

III. SEMESTER

BCT221 Life Support And Operating Room Devices

Functions of the incubators, ventilators, nebulizers, electroshock systems, defibrillators and pacemakers, heart lung pumps, operation, electrical-electronic malfunctions, 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 Equipment

Introduction to Medical Analysis and Laboratory Devices, Blood Gas Analyzers, Blood Counting Devices, Spectrophotometers, Centrifuges, Autoanalyzers, Coagulometers, Automatic staining devices, Decomposers and Mixers, Tissue tracking devices, Microtome devices, Cryostat devices, Storage Devices (cold / hot).

BCT225 Physiological Signal Viewers

Demonstration of ECG, EEG, EOG, ENMG, sleep disturbance diagnosis, respiratory measurement systems, bedside signal trackers, audiometric trackers, NIBP (sphygmomanometer) and tympanometry devices and their working principles are shown and their possible electrical and mechanical failures are eliminated.

BCT227 Medical Imaging Devices

Ultrasonic imager, mechanical structure of the conventional (conventional) x-ray devices, cold light sources, in-body imaging, medical monitors, camera and video processors, film bath devices, working principle, purpose of use, types and usage areas, modes of operation, sound wave, sound physical properties of the wave, electrical structure, electrical connection diagrams, block diagrams, feed measurement points, electronic structure, electronic connection diagrams, block diagrams, feed points, control cards, display circuit, accessories, common malfunctions, printers, monitor, poloroid, video recorders, cd / dvd printers

BCT237 Digital Electronics

Number Systems-Codes, Boolean Algebra and Logic Doors, Logical Functions and Simplification Techniques, Combination Logic Circuits, Arithmetic Operations-Circuits, Multifunctional Circuits, Code Converters-Coders, MUX and DEMUX Circuits, Flip-Flops-Data Recorders, Synchronous Counter Circuits, Asynchronous Counter Circuits, Special Counter Circuits, Counter Circuits-Applications, Slider, Recorders

BCT235 Vocational Practice I

It is the field applications carried out in biomedical technical services of hospitals and companies during the period.

IV. SEMESTER

BCT218 Calibration

Calibration instructions, accreditation, traceability, instruction preparation, archiving, function test, electrical safety, measuring instruments used in calibration, calibrators used in biomedical devices, test devices used in biomedical devices, matters to be considered in biomedical device measurements, calibrator and test devices.

BCT206 Biological Hazards In Medical Devices

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

KGS101 Quality Assurance And Standards

Quality and definition, standardization and definition, for business standardization, benefits for the consumer and for the economy, the standardization work carried out in Turkey, international standardization activities and examples, quality approaches, total quality management, quality assurance, ISO 9000 standards, professional quality standards

BCT204 Microcontrollers

Number Systems, Structure Of Microprocessors, Structure Of Microcontroller, Programming And Drawing Flow Diagrams In Assembly Language, Basic Commands And Applications, Seven-Part Indicators And Counters, Control Of Step Motors, Interrupts.

BCT222 Vocational Practice II

It is the field applications carried out in biomedical technical services of hospitals and companies during the period.

BCT999 Summer Internship

Field applications of the theoretical knowledge acquired during the year for 20 business days in the summer.