

Biomedical Equipment Technician
UCAT Certificate of Completion
Course Descriptions
2008 - 2009

REQUIRED COURSES

ELEC2010 Applied Math for Electronics 90 Hours

This course offers an introduction to applied mathematics in electronics, including operations with powers, roots, and powers of ten, the metric system, and basic trigonometry, different base numbering systems for computer math such as binary and hexadecimal, complex numbers, inverse, exponential, and logarithmic functions. It may include topics for basic algebraic methods such as linear equations, inequalities, systems of linear equations, exponents, polynomials, factoring, rational expressions, roots, radicals, and quadratic equations. Prepares students for Advanced Math for Electronics and all introductory electronics courses.

BMET2305 Biomedical Instrumentation I 100 Hours

This course covers theory of operation, circuit analysis, troubleshooting techniques, and medical applications for a variety of instruments and devices. Topics include instruments found in clinical laboratories, intensive care units, and research facilities. Upon completion, students should be able to repair, calibrate, and certify that instrumentation meets manufacturers' original specifications.

BMET2315 Biomedical Instrumentation II 85 Hours

This course provides continued study of theory of operation, circuit analysis, troubleshooting techniques, and medical applications for a variety of instruments and devices. Topics include instruments found in clinical laboratories, intensive care units, and research facilities. Upon completion, students should be able to repair, calibrate, and certify that instrumentation meets manufacturers' original specifications.

BMET2205 Biomedical Measurements 85 Hours

This course introduces problems encountered in attempting to obtain measurements from a living body. Topics include electrodes, transducers, instrumentation, amplifiers, electrocardiographs, monitors, recorders, defibrillators, ESU units, and related equipment. Upon completion, students should be able to analyze, troubleshoot, repair, and calibrate diagnostic and therapeutic equipment.

BTEC1110 Computer Literacy 90 Hours

This course provides a fundamental understanding of computing including knowledge and use of computer hardware, software, and operating systems, and use of word processing, spreadsheet, database, Internet and e-mail applications.

ELEC1130 Digital Fundamentals 120 Hours

Introduction to the basic theory of digital circuits and programmable logic controllers (PLCs). Binary, octal, and hexadecimal number systems, truth tables, logic gates, flip-flops, counter, shift registers, interfacing techniques, microprocessors, and assembly language. Advanced topics including counter, sequential logic circuits, shift registers, memory systems, digital busses, A/D and D/A conversions will be covered.

ELEC1000 Electronics Assembly and Soldering 60 Hours

Develops the ability to solder and desolder connectors, components, and printed circuit boards using industry standards. Topics include: component identification, safety practices, soldering, desoldering, antistatic grounding, and surface mount techniques.

ELEC1010 Electronics Fundamentals 120 Hours

Introduces the concepts and fundamentals of electronic devices, systems and circuits. Topics include direct current electricity, alternating current electricity, transistors and integrated circuits, transmitters and receivers, oscillators and amplifiers, electronics memory, digital logic circuits, and microcomputers.

ELEC1120 Instrumentation Devices 120 Hours

This is a study of differential amplifiers, operational amplifiers, regulators, instrumentation amplifiers, active filters, and timers. Emphasis is placed on laboratory experiments on various op amp performances leading to design and interfacing between the analog and digital world.

BMET1100 Medical Terminology for BMETs 60 Hours

This course focuses on the vocabulary necessary for effective medical communication skills in a health care environment. This course provides the student with the skills necessary to interpret and understand medical terminology.

ELEC1110 Semiconductor Devices 120 Hours

A study of diodes, transistor principles including semiconductor theory, bipolar, and field effect device characteristics and modern thruster devices.

WKSK1400 Workplace Relations 60 Hours

Develop essential human-relation skills needed to maintain gainful and satisfying employment. This course includes familiarization with problematic areas found in the workforce including, solving problems; understanding relationships and diversity; increasing personal ethics; and developing strong personal, interpersonal, and human relation skills.

ELECTIVES

ITEC1300B A+ Essentials 90 Hours

This class is designed to explore physical and functional characteristics of computer devices and components and trends in computer architecture. Emphasis will be placed on configuring a microcomputer, troubleshooting, interrupts, device and memory management, virtual memory and paging, file management, and performance analysis. Lab exercises include assembling a computer and troubleshooting problems. Prepares student for hardware exams such as the A+ hardware certification.

ITEC1400B A+ Technician 90 Hours

This course is designed to teach common components and features in operating systems; command prompt use; installing, configuring, upgrading and troubleshooting common operating systems; and basic networking. The course prepares students for operating systems exams such as the A+ operating systems certification.

BMET2500 Basic X-Ray & Medical Imaging Systems **130 Hours**

A study of radiation theory and safety hazards, fundamental circuits and application of x-ray systems including circuit analysis, troubleshooting, and isolation of system malfunctions.

BMET2800 Biomedical Equipment Practicum **120 Hours**

A supervised experience with a local health care facility or biomedical equipment service provider in the operation, maintenance and repair of biomedical instrumentation.

WKSK1500 Job Seeking Skills **30 Hours**

Prepares students to apply for a job and get it! This course will present job-seeking skills needed to find gainful employment.

ITEC1500 Networking Technology **120 Hours**

Networking Technology includes terminology and networking concepts including design, topology, implementation, cabling, connecting network components, signal transmission, and network adapter cards. The OSI and 802 networking models within the network environment teach students how networks send data. Architectures will be included as well as administration, support, security, fault tolerant systems, wide area network and troubleshooting network problems. Prepares student for exams such as the Network+ certification exam and qualifies as one exam in the Microsoft Certified Systems Administrator (MCSA).

ELEC1200 Practical Electronics Troubleshooting **120 Hours**

Introduction to troubleshooting various electronics components, circuits, and systems. Covers the use of basic test equipment to build and troubleshoot circuits containing analog, digital, and a combination of both technologies.

IAMT2000 Programmable Logic Controllers I **90 Hours**

Learn ladder logic and programming techniques of Programmable Logic Controllers with hands-on experience. Covers different makes of Programmable Logic Controllers, integration with sensors, switches, and various outputs, various input and output modules, relay and ladder logic diagrams, various software packages for ladder logic design, simulation, and programming and hands-on labs with real components attached for testing.

IAMT2050 Programmable Logic Controllers II **90 Hours**

Learn advanced programming techniques of Programmable Logic Controllers. Includes advanced topics of Programmable Logic Controllers not covered in the introductory course such as sequencers, shift registers, process control, data acquisition, computer controlled processes, variable speed drives, and networking. It may cover various software packages not included in the introductory class such as Allen Bradley 5000 series programming with hands-on labs and other advanced topics as needed to meet employer needs.