

Biomedical Equipment Technology

A course of study prepares the students to use basic engineering principles and technical skills to install, operate, troubleshoot, and repair sophisticated devices and instrumentation used in the health care delivery system. Includes instruction in instrument calibration, design and installation testing, system safety and maintenance procedures, procurement and installation procedures, and report preparation. With an Associate in Applied Science (A.A.S.) degree and two years of experience, students should become a certified Biomedical Equipment Technician.

Information on the Biomedical Equipment Technology program is available on the Biomedical Equipment Technology website.

For specific information about potential positions and wages in biomedical equipment employment, visit the Central Piedmont Career Coach website.

Biomedical Equipment Technology (A50100)

Degree Awarded

The Associate in Applied Science Degree - Biomedical Equipment Technology is awarded by the college upon completion.

Admissions

- A high school diploma or equivalent is required. High school students preparing for an Engineering Technology program should complete courses in algebra, geometry, and advanced mathematics. Skills and proficiencies should be developed in writing, computer literacy, and science.
- Central Piedmont placement tests are required in English and mathematics. Advancement Studies in mathematics and English courses are available for students to build basic skills and knowledge. A counseling/orientation appointment follows placement testing.
- Many courses require prerequisites or co-requisites; check the Courses section for details.

Contact Information

The Biomedical Equipment Technology program is in the Engineering Technology Division. For additional information, please contact the Program Chair at 704-330-2722 ext 3143.

General Education Requirements

ENG 111	Writing and Inquiry	3.0
Select 1 of the following:		3.0
ENG 112	Writing and Research in the Disciplines	
ENG 113	Literature-Based Research	
ENG 114	Professional Research & Reporting	
COM 110	Introduction to Communication	
COM 231	Public Speaking	
Select 1 of the following:		3.0
MAT 121	Algebra/Trigonometry I	
	or MAT 171 Precalculus Algebra	
Select 1 of the following:		3.0
PSY 150	General Psychology	

	or SOC 210 Introduction to Sociology	
Select 1 of the following:		3.0
ART 111	Art Appreciation	
	or ART 114 Art History Survey I	
	or ART 115 Art History Survey II	
	or DRA 111 Theatre Appreciation	
	or HUM 120 Cultural Studies	
	or HUM 130 Myth in Human Culture	
	or MUS 110 Music Appreciation	
	or MUS 112 Introduction to Jazz	
	or PHI 215 Philosophical Issues	
	or PHI 240 Introduction to Ethics	
	or REL 110 World Religions	

Major Requirements

ACA 122	College Transfer Success	1.0
BMT 111	Introduction to Biomedical Field	2.0
BMT 112	Hospital Safety Standards	3.0
BMT 120	Biomedical Anatomy & Physiology	3.0
BMT 212	BMET Instrumentation I	6.0
BMT 213	BMET Instrumentation II	3.0
BMT 223	Imaging Techniques/Laser Fundamentals	4.0
BMT 225	Biomedical Trouble Shooting	3.0
DFT 154	Intro to Solid Modeling	3.0
ELC 131	Circuit Analysis I	4.0
ELN 131	Analog Electronics I	4.0
ELN 133	Digital Electronics	4.0
SEC 110	Security Concepts	3.0
WBL 122	Work-Based Learning II	2.0
WBL 125	Work-Based Learning Seminar II	1.0
Select 2 courses from the Networking Electives below:		
CTI 120	Network and Security Foundation	3.0
NET 125	Introduction to Networks	3.0
	or NET 126 Switching and Routing	
Select 3 credits from the following:		3.0
ATR 112	Introduction to Automation	
CTI 130	Operating Systems and Device Foundation	
ELC 213	Instrumentation	
ELC 229	Applications Project	
ELN 232	Introduction to Microprocessors	
ELN 233	Microprocessor Systems	
ELN 260	Prog Logic Controllers	
NET 225	Enterprise Networking	
NET 226	Network Programmability	
PCI 170	DAQ and Control	
PCI 173	Programmable Systems	
SEC 150	Secure Communications	
SEC 160	Security Administration I	
WBL 111 and WBL 115 count as 1 course		
WBL 111	Work-Based Learning I	
& WBL 115	and Work-Based Learning Seminar I	
WBL 112 and WBL 115 count as 1 course		

WBL 112 Work-Based Learning I
& WBL 115 and Work-Based Learning Seminar I

Total Credits **70**

No diplomas are offered in Biomedical Equipment Technology.

Biomedical Equipment Technology Certificate (C50100)

Biomedical Equipment Technology Certificate Specialization in Biomedical Equipment Technology Pathway (C50100-C1)

Major Requirements

ELC 131	Circuit Analysis I	4.0
MAT 121	Algebra/Trigonometry I	3.0
BMT 111	Introduction to Biomedical Field	2.0
BMT 120	Biomedical Anatomy & Physiology	3.0
Total Credits		12

The following is the suggested plan for when to take each course to complete the Associate in Applied Science degree, based on the program requirements of the 2022-2023 catalog. This is only a recommendation — you may take courses in another order upon consultation with your advisor. This plan is based on you starting with college-level math and English courses, starting your program in the fall, and attending full-time. You can also follow this sequence if you attend part-time. Speak with an advisor about the plan and any questions. This program might also offer diplomas or certificates; visit the catalog or contact the program for details.

Biomedical Equipment Technology suggested course sequence

BMT 111. Introduction to Biomedical Field. 2.0 Credits. Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0

This course introduces the fundamental concepts of the health care delivery system. Topics include hospital organization and structure, BMET duties and responsibilities, and the professional and social interrelationships between services. Upon completion, students should be able to demonstrate an understanding of hospital organization as related to BMET duties.

BMT 112. Hospital Safety Standards. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0

This course covers national, state, and local standards pertaining to hospital safety. Topics include electrical safety, gas safety, SMDA reporting, and JCAHO and FPA compliance. Upon completion, students should be able to conduct PM and safety inspections in compliance with safety regulations.

BMT 120. Biomedical Anatomy & Physiology. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0

This course provides a basic study of human anatomy and physiology with emphasis on biomonitoring of body systems. Topics include homeostasis; cells and tissues; and the structure, function, and monitoring of body systems. Upon completion, students should be able to demonstrate a basic understanding of the structure, function, and biomedical monitoring of human body systems.

BMT 212. BMET Instrumentation I. 6.0 Credits. Class-3.0. Clinical-0.0. Lab-6.0. Work-0.0

This course covers theory of operation, circuit analysis, troubleshooting techniques, and medical applications for a variety of instruments and devices. Topics include electrodes, transducers, instrumentation amplifiers, electrocardiographs, monitors, recorders, defibrillators, ESU units, and related equipment used in clinical laboratories, intensive care units, and research facilities. Upon completion, students should be able to calibrate, troubleshoot, repair, and certify that instrumentation meets manufacturer's original specifications.

Prerequisites: Take ELC 131

BMT 213. BMET Instrumentation II. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0

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.

Prerequisites: Take BMT 212

BMT 223. Imaging Techniques/Laser Fundamentals. 4.0 Credits.

Class-3.0. Clinical-0.0. Lab-2.0. Work-0.0

This course covers techniques associated with X-Ray, CT Scan, Magnetic Resonance Imaging and ultrasound, along with fundamental concepts and applications of medical lasers. Topics include radiation interaction with matter, X-Ray emissions, beam restricting devices, laser energy generation, and laser usage in surgery and other related medical procedures. Upon completion, students should be able to understand the operation of imaging devices, evaluate, calibrate, align, and provide safety instruction in usage of medical lasers.

BMT 225. Biomedical Trouble Shooting. 3.0 Credits. Class-1.0.

Clinical-0.0. Lab-4.0. Work-0.0

This course is designed to provide students with basic problem solving skills, and to track down and identify problems 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 specifications.

Prerequisites: Take BMT 212