Biomedical Equipment and Information Systems Technology (BMET)

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The Biomedical Equipment and Information Systems Technology graduate is welcomed in hospitals and companies wherever medical equipment is designed, tested, installed, and operated because of strong basic coursework in electronics. Biomedical studies open doors to hospitals where the graduate assumes the challenging tasks of healthcare technology management, maintaining multi-million dollar equipment, such as MRI, CT, sonogram, X-ray, and other medical equipment. Graduates also have a strong background in electronics and information systems.

The BMET curriculum provides students with an effective mechanism to transfer into a BMET or EET bachelor's degree program.

The Biomedical Equipment and Information Systems Technology program is accredited by the Engineering Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202-4012, phone (410) 347-7700.

Biomedical Equipment and Information Systems Technology (BMET)

All degree-seeking students must complete a First Year Experience (FYE) course as part of the first 12 credit hours taken at Cincinnati State.

Semester 1		**Lec**	**Lab**	**Credits**
ENG 101	English Composition 1	3	0	3
EET 121	Digital Systems 1	2	2	3
CIT 190	Career Preparation: Engineering and Information Technologies	1	0	1
EET 131	Circuit Analysis 1	3	2	4
MAT XXX Mathematics Elective 1				4
BMT 151	Biomedical Instrumentation 1	3	3	4
Semester 2				
MAT XXX Mathematics Elective 2				4
PHY XXX Physics Elective				3
ENG 10X English Composition Elective				3
EET 122	Digital Systems 2	3	2	4
EET 132	Circuit Analysis 2	3	2	4
Semester 3				
BMT 291	Full-Time Cooperative Education 1: Biomedical Equipment and Information Systems Technology	1	40	2
Semester 4				
BIO 117	Human Body in Health and Disease	3	0	3
EET 251	Electronics	3	3	4
BMT 252	Biomedical Instrumentation 2	3	2	4
NETC 121	Network Communications 1	2	2	3
Semester 5				
COMM 110	Public Speaking	3	0	3
CULT 110	Social Issues in Technology	3	0	3
ECO 1XX Economics Elective				3
BMT 253	Biomedical Instrumentation 3	3	2	4
XXX XXX Technical Elective				3
Semester 6				

BMT 292	Full-Time Cooperative Education 2: Biomedical Equipment and Information Systems Technology	1	40	2
Total Credits:		40	100	71

Electives

English Composition Electivee		
ENG 102	English Composition 2: Contemporary Issues	3
ENG 103	English Composition 2: Topics in Literature	3
ENG 104	English Composition 2: Technical Communication	3
ENG 105	English Composition 2: Business Communication	3
Economics Elective		
ECO 105	Principles of Microeconomics	3
ECO 110	Principles of Macroeconomics	3
Physics Elective		
PHY 122	Technical Physics 2	3
PHY 151	Physics 1: Algebra and Trigonometry-Based	4
Mathematics Elective		
Take one of the following series:		
MAT 125 & MAT 126	Algebra and Trigonometry and Functions and Calculus	
Or		
MAT 251 & MAT 252	Calculus 1 and Calculus 2	
Technical Elective		
EET 220	Microprocessor Systems	4
EMET 240	Programmable Logic Controllers, Motors, Motor Controls, and Kinematics	3

BMT Courses

BMT 151 Biomedical Instrumentation 1
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on the role of the biomedical engineering technician. Topics include: hospital organization and regulations, professional certifications, safety, and medical devices.
Prerequisites: AFM 090 or appropriate placement test score

BMT 191 Part-Time Cooperative Education 1: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

BMT 192 Part-Time Cooperative Education 2: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 191

BMT 193 Part-Time Cooperative Education 3: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 192

BMT 194 Part-Time Cooperative Education 4: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 193

BMT 195 Part-Time Cooperative Education 5: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 194

BMT 196 Part-Time Cooperative Education 6: Biomedical Equipment and Information Systems Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 195

BMT 198 First Year Special Topics in Biomedical Equipment and Information Systems Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Biomedical Equipment and Information Systems Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Instructor Approval

BMT 199 First Year Independent Project in Biomedical Equipment and Information Systems Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Biomedical Equipment and Information Systems Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Biomedical Equipment and Information Systems Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval

BMT 252 Biomedical Instrumentation 2
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A continuation of BMT 151. Topics include: medical device maintenance, technology management, patient and surgical monitoring, and test equipment.
Prerequisites: BMT 151, EET 122, and EET 132

BMT 253 Biomedical Instrumentation 3
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A continuation of BMT 252. Topics include: complex medical devices, imaging equipment, medical technology management, equipment malfunction, and globalization.
Prerequisites: BMT 252 and EET 251

BMT 291 Full-Time Cooperative Education 1: Biomedical Equipment and Information Systems Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

BMT 292 Full-Time Cooperative Education 2: Biomedical Equipment and Information Systems Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 291

BMT 293 Full-Time Cooperative Education 3: Biomedical Equipment and Information Systems Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 292

BMT 294 Internship 1: Biomedical Equipment and Information Systems Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 151 and CIT 190

BMT 295 Internship 2: Biomedical Equipment and Information Systems Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: BMT 294

BMT 298 Second Year Special Topics in Biomedical Equipment and Information Systems Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Biomedical Equipment and Information Systems Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Instructor Approval

BMT 299 Second Year Independent Project in Biomedical Equipment and Information Systems Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Biomedical Equipment and Information Systems Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Biomedical Equipment and Information Systems Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval

EET Courses

EET 100 Introduction to Electrical Engineering Technology
2 Credits. 1 Lecture Hour. 2 Lab Hours.
An introduction to concepts and measuring skills for the electronics field. Topics include: current, voltage, power, Ohm's law, series circuits, meter reading, software simulation use, and circuit construction.
Prerequisites: AFM 090 or appropriate placement test score

EET 101 Electronic Fundamentals 1
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on electrical fundamentals for non-electrical majors. Topics include: DC and AC circuit theory, electrical motors and controls, electromagnetic devices, and transformers.
Prerequisites: AFM 095 or MAT 120, and AFL 085, or appropriate placement test scores

EET 102 Electronic Fundamentals 2
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A continuation of EET 101. Topics include: number systems, codes, Boolean algebra, and combinational and sequential logic systems; digital circuits including comparators, decoders, and counters; diodes, bipolar junction transistors, and operational amplifiers; circuit construction; and troubleshooting.
Prerequisites: EET 101

EET 121 Digital Systems 1
3 Credits. 2 Lecture Hours. 2 Lab Hours.
A course on analyzing, designing, and troubleshooting digital logic circuits. Topics include: basic gates and PLDs, number systems and codes, Boolean algebra, circuit simplification, functions of logic circuits, latches, flip-flops, counters, timers, and memory.
Prerequisites: MAT 120 or appropriate placement test score

EET 122 Digital Systems 2
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A continuation of EET 121. Topics include: counter design and cascading, shift registers, PLD applications, microprocessor registers, I/O, busses, DMA, memory expansion, and assembly language programming.
Prerequisites: EET 121

EET 131 Circuit Analysis 1
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A course on DC electric circuits. Topics include: current, voltage, resistance, and power; laws applied to series, parallel, and series-parallel circuits; Thevenin's, Superposition, and Norton's theorems; steady state and transient behavior of capacitive and inductive devices; and magnetic properties.
Prerequisites: Take either MAT 121, MAT 122, MAT 123, MAT 125, MAT 126 or appropriate placement test score

EET 132 Circuit Analysis 2
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A continuation of EET 131. Topics include: sinusoidal wave characteristics; complex numbers; phasors; transformers; RC, RL, and RLC networks; filter networks; three-phase and poly-phase systems; and power factor analysis.
Prerequisites: EET 131, MAT 125

EET 191 Part-Time Cooperative Education 1: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their first part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

EET 192 Part-Time Cooperative Education 2: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their second part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 191

EET 193 Part-Time Cooperative Education 3: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their third part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 192

EET 194 Part-Time Cooperative Education 4: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their fourth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 193

EET 195 Part-Time Cooperative Education 5: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their fifth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 194

EET 196 Part-Time Cooperative Education 6: Electronics Engineering Technology
1 Credit. 1 Lecture Hour. 20 Lab Hours.
Students seeking an associate's degree participate in their sixth part-time field learning experience related to their degree. Students are expected to register for academic courses during the same semester. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 195

EET 198 First Year Special Topics in Electronics Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Electronics Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Instructor Approval

EET 199 First Year Independent Project in Electronics Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Electronics Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electronics Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval

EET 220 Microprocessor Systems
4 Credits. 3 Lecture Hours. 2 Lab Hours.
A course on designing, programming, and troubleshooting microprocessor systems and applications. Topics include: assembly language programming, interrupt and polled I/O, interrupt service routines, parallel ports, timer functions, serial interfaces, A/D converters, and external hardware interfaces.
Prerequisites: EET 122

EET 251 Electronics
4 Credits. 3 Lecture Hours. 3 Lab Hours.
A course on semiconductor and amplifier theory and application. Topics include: diode circuits and basic power supplies; bipolar transistor, FET, thyristor, and operational amplifier theory; inverters; circuit construction; and troubleshooting.
Prerequisites: EET 132

EET 290 Electronics Engineering Technology Capstone Project
4 Credits. 2 Lecture Hours. 4 Lab Hours.
Students design a system using analog and digital electronics concepts, and prepare and deliver a professional presentation of their completed project. Topics include: design theory, feasibility study, engineering economics, and presentation skills.
Prerequisites: EET 122, EET 251

EET 291 Full-Time Cooperative Education 1: Electronics Engineering Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their first full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: None

EET 292 Full-Time Cooperative Education 2: Electronics Engineering Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their second full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 291

EET 293 Full-Time Cooperative Education 3: Electronics Engineering Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their third full-time field learning experience related to their degree. Students must follow cooperative education policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 292

EET 294 Internship 1: Electronics Engineering Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their first unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 131 and CIT 190

EET 295 Internship 2: Electronics Engineering Technology
2 Credits. 1 Lecture Hour. 40 Lab Hours.
Students seeking an associate's degree participate in their second unpaid field learning experience related to their degree. Students must follow applicable policies and procedures to earn credit. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: EET 294

EET 298 Second Year Special Topics in Electronics Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to Electronics Engineering Technology, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Instructor Approval

EET 299 Second Year Independent Project in Electronics Engineering Technology
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to Electronics Engineering Technology that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by Electronics Engineering Technology faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Instructor Approval

ENG Courses

ENG 100 English Principles: Grammar and Structure
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A comprehensive review of writing principles for business and professional communication. Topics include: grammar, punctuation, word usage, and techniques for reviewing and revising various business-related documents.
Prerequisites: AFL 085 or appropriate placement test score

ENG 101 English Composition 1
3 Credits. 3 Lecture Hours. 0 Lab Hour.
An introduction to college writing focusing on understanding the writing process. Topics include: identifying audiences; developing a strong thesis; providing sufficient evidence for claims; and writing essays with grammatical, mechanical, and stylistic correctness.
Prerequisites: AFL 085 or appropriate placement test score

ENG 102 English Composition 2: Contemporary Issues
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A continuation of ENG 101. Topics include: critical reasoning; argumentation; the research process and the research paper; and reading, synthesizing, and responding critically to policy-driven research.
Prerequisites: ENG 101

ENG 103 English Composition 2: Topics in Literature
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A continuation of ENG 101. Topics include: critical reading, argumentation, the research process and the research paper; and reading, synthesizing, and responding critically to literature.
Prerequisites: ENG 101

ENG 104 English Composition 2: Technical Communication
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A continuation of ENG 101. Topics include: audience analysis; planning, preparing, and revising technical and professional documents used for reference, persuasion, or instruction; using and reporting on research; and integrating visuals with text.
Prerequisites: ENG 101, and 8 credit hours in technical courses

ENG 105 English Composition 2: Business Communication
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A continuation of ENG 101. Topics include: planning, preparing, and revising business documents such as formal and informal business letters, emails, proposals, and reports; and using and reporting on research.
Prerequisites: ENG 101

ENG 131 Creative Writing: Poetry
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A workshop-oriented poetry writing course. Topics include: the invention process, revision, poetic form, and critical response to works of literature and student work.
Prerequisites: 6 Credit Hours of English Composition

ENG 132 Creative Writing: Fiction
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A workshop-oriented fiction writing course. Topics include: the invention process, revision, form of fiction, and critical response to works of literature and student work.
Prerequisites: 6 credit hours of English Composition

ENG 134 Creative Writing: Writing for Children
3 Credits. 3 Lecture Hours. 0 Lab Hour.
A workshop-oriented course on writing picture books, chapter books, and middle grade novels. Topics include: the invention process, revision, form of children's literature, and critical response to works of literature and student work.
Prerequisites: 6 credit hours of English Composition

ENG 198 First Year Special Topics in English
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to English, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Vary by section

ENG 199 First Year Independent Project in English
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to English that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by English faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Vary by section

ENG 205 Scriptwriting: Short
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on developing scripts for short form electronic media messages such as commercials and public service announcements. Topics include: analyzing audiences and products; applying basic concepts of marketing; conducting research; preparing copy platforms, scripts, and storyboards; and persuasively presenting concepts.
Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 210 Scriptwriting: Long
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on developing scripts for long form electronic media messages such as instructional and promotional video and documentaries. Topics include: analyzing audiences and products; conducting research; preparing documentation, scripts, and storyboards; and persuasively presenting concepts.
Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 215 Copywriting
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on developing promotional messages for print and online distribution. Topics include: analyzing audiences and products, conducting research, developing concepts, preparing copy platforms, selecting writing styles and formats, and designing materials.
Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 230 Writing Online Content
3 Credits. 2 Lecture Hours. 3 Lab Hours.
A course on developing content for websites and web-supported publishing such as blogs and e-newsletters. Topics include: analyzing audiences and goals, choosing writing styles, creating and revising content, and applying best practices for online and digital document design.
Prerequisites: 6 credits of English Composition (minimum grade C)

ENG 298 Second Year Special Topics in English
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A course on selected topics related to English, which gives students opportunities to study information not currently covered in other courses. Grades issued are A, B, C, D, or F.
Prerequisites: Vary by section

ENG 299 Second Year Independent Project in English
1-9 Credits. 0 Lecture Hour. 0 Lab Hour.
A project related to English that is completed by one or more students to meet specific educational goals. Projects must have prior approval and supervision by English faculty. Grades issued are Satisfactory or Unsatisfactory.
Prerequisites: Vary by section