

B.S. in Engineering Technology, Electrical and Computer Engineering Technology

The Electrical and Computer Engineering Technology (ECET) program emphasizes the application of electrical/electronics principles and devices and computer hardware and software. Graduates of the ECET program are involved in product development and improvement, system development, management, manufacturing and engineering operational functions, in a wide variety of companies in the computer, telecommunications, medical electronics and other technical fields. Graduates also have positions in technical sales and customer service, and a significant percentage continue their studies and earn graduate degrees in engineering or management.

The placement of graduating students has been excellent. ***This program is accredited by The Engineering Technology Accreditation Commission (ETAC of ABET), <http://www.abet.org>***

Graduates of this program are eligible to sit for the Professional Engineer's examination in New Jersey with the appropriate experience, as determined by the New Jersey Board of Professional Engineers and Land Surveyors (<http://www.njconsumeraffairs.gov/pels/>). Graduates of the program are also eligible to pursue graduate degrees in biomedical engineering, electrical and computer engineering, engineering management, management or related areas and students may participate in the BS/MS Program (<http://www.njit.edu/graduatestudies/program-options/bs-ms/index.php> (<http://www.njit.edu/graduatestudies/program-options/bs-ms/>)). The full four-year curriculum for the program is shown below. Students who wish to enter the program as a transfer student are typically students with an A.A.S. degree in Electrical Engineering Technology and should have completed most or all of the courses, or their equivalents, in the first two years of the program as shown below. In the case of all students, both four-year and transfer, a minimum of 120 credits is required for graduation.

Program Educational Objectives

- Our graduates will establish productive careers in technology-based organizations in such diverse positions as design, manufacturing, teaching, management, system engineering and sales.
- Our graduates will participate in lifelong learning activities including graduate school and other professional education.

Student Outcomes

- an ability to select and apply the knowledge, techniques, skills, and modern tools of their disciplines to broadly-defined engineering technology activities
- an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies
- an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes
- an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives
- an ability to function effectively as a member or leader on a technical team
- an ability to identify, analyze, and solve broadly-defined engineering technology problems
- an ability to apply written, oral and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature;
- an understanding of the need for and an ability to engage in self-directed continuing professional development
- an understanding of and a commitment to address professional and ethical responsibilities including a respect for diversity
- a knowledge of the impact of engineering technology solutions in a societal and global context
- a commitment to quality, timeliness, and continuous improvement
- the application of digital and analog circuit design, computer software, and embedded systems to the development of electrical and computer systems;
- the ability to analyze and develop communications, control, computer, or power systems
- the ability to apply project management techniques to computer and electrical systems.
- the ability to utilize statistics/probability, transform methods and differential equations in support of electrical and computer systems
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(120 credits minimum)

First Year

1st Semester		Credits
MATH 138	General Calculus I	3
PHYS 102	General Physics	3
PHYS 102A	General Physics Lab	1
CS 106	Roadmap to Computing for Engineers	3
ENGL 101	English Composition: Introduction to Academic Writing	3
MET 103	Engineering Graphics and Intro. to CAD	2
ET 101	Introduction to Engineering Technology	0
FYS SEM	First-Year Student Seminar	0

Term Credits	15
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2nd Semester

MATH 238	General Calculus II	3
PHYS 103	General Physics	3
PHYS 103A	General Physics Lab	1
ECET 201	Circuits I	3
ECET 215	Introduction to Digital Electronics	3
ENGL 102	English Composition: Introduction to Writing for Research	3

Term Credits	16
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Second Year**1st Semester**

ECET 202	Circuits II	3
Technical Elective (200 level or higher) ¹		3
ECON 201	Economics	3
ECET 211	Computer Architecture	2
Select one of the following:		3
HUM 211	The Pre-Modern World	
HUM 212	The Modern World	
HIST 213	The Twentieth-Century World	

Term Credits	14
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2nd Semester

ECET 205	Fundamentals of Analog Electronics	3
ECET 214	Introduction to Communications	3
Technical Elective (200 level or higher) ¹		3
Free Elective (200 level or higher) ²		3

Term Credits	12
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Third Year**1st Semester**

MATH 309	Mathematical Analysis for Technology	4
ECET 303	Circuit Measurements	2
ECET 311	Embedded Systems I	3
ECET 365	Digital Logic and Circuit Design	3
COM 313	Technical Writing	3

Term Credits	15
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2nd Semester

MATH 322	Differential Equations for Applications	3
ECET 411	Embedded Systems II	3
ECET 300	Circuit Analysis: Transform Methods	3
ECET 305	Integrated Circuit Applications	3
ECET 344	Numerical Computing for Engineering Technology	3
Free Elective (300 level or higher) ²		3

Term Credits	18
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Fourth Year**1st Semester**

MNET 414	Industrial Cost Analysis	3
MATH 305 or MNET 315	Statistics for Technology or Industrial Statistics	3
PHIL 334	Engineering Ethics and Technological Practice: Philosophical Perspectives on Engineering	3
ECET Technical Elective ³		3
ECET Technical Elective ³		3
Term Credits		15

2nd Semester

ECET 400	Senior Project	3
CHEM 301	Chemical Technology	3
Humanities and Social Science Senior Seminar GER (http://catalog.njit.edu/undergraduate/academic-policies-procedures/general-education-requirements/hss-capstone/)		3
ECET Technical Elective ³		3
Technical Elective (300 level or higher) ¹		3
Term Credits		15
Total Credits		120

¹ Tech Electives: Any course with a technical subject matter. Lower division must be 200 level or higher, upper division must be 300 level or higher. Excludes CPT 310.

² Free Electives: Any course offered by the university, may be technical or non-technical. Lower division must be 200 level or higher, upper division must be 300 level or higher

³ ECET Electives: ECET 350,412,414,415,416,418,419,430,440, and 444. ECE Bridge Courses may also be used to fill these ECET Elective courses.

⁴ Alternates for Eng 352: ENG 340

ECET Technical Electives

ECET Technical electives are 300 and 400 level courses offered by the ECET program that are not previously required courses within the program. All ECET students are required to take at least two of these courses for their degree. ECET elective courses taken in addition to the two required can fill any of the elective requirements. Note: ECET 329 is not considered an ECET Technical Elective course as it is only for non-ECET majors and cannot be used towards the ECET degree.

Code	Title	Credits
ECET 350	Computerized Industrial Controls	3
ECET 412	Power Generation and Distribution	3
ECET 415	Fundamentals of Telecommunications	3
ECET 416	Networking Applications	3
ECET 418	Transmission Systems	3
ECET 440	Clinical Internship	3
ECET 444	Technology Applications of Object-Oriented Programming	3

Technical Electives

Technical electives can be satisfied only by courses with a technical subject matter; this excludes Humanities, History, Economics, Social Sciences, Literature, and any other non-technical subject. In general, the following subjects qualify as Technical Electives: ARCH, BIO, BIOL, BME, CE, CET, CHEM, CPT, CS, ECE, EM, ENGR, IE, IS, IT, MATH, ME, MECH, MET, MIS, MNET, OPSE, PHYS, and SET. Except CPT 310 Computer Design Fundamentals for Computer Technology or MATH 305 Statistics for Technology or MATH 309 Mathematical Analysis for Technology or MATH 322 Differential Equations for Applications or CHEM 301 Chemical Technology or MNET 315 Industrial Statistics or MNET 414 Industrial Cost Analysis. Additionally, any course required for the ECET degree cannot be used as a technical elective, in the case where a class has been substituted in place of a required course, the originally required course cannot be used as an elective.

Free Electives

Free electives may be satisfied by any course offered at the university. The ECET program contains two free electives, one 3 credit course, 200 or higher level and one 3 credit course, 300 or higher level.

Co-op Work Experience (Internship)

Co-op Work Experience is not required as part of the ECET program, although it is highly recommended. Students can participate in a sixteen-week paid internship at a variety of local companies. Students who pass Co-op can use the credit to fulfill any of the six non-ECET required electives.

To apply for Co-op students must first visit the Career Development Services office at NJIT and fill out a Co-op application. The application will be sent to your academic advisor for approval and you will be notified of the decision.

Co-op Classes

The ECET Co-op classes are ECET 395 Co-op Work Experience I and ECET 495 Co-op Work Experience II.

This curriculum represents the maximum number of credits per semester for which a student is advised to register. A full-time credit load is 12 credits.

First-year students are placed in a curriculum that positions them for success which may result in additional time needed to complete curriculum requirements. Continuing students should consult with their academic advisor to determine the appropriate credit load.