

ELECTRICAL AND COMPUTER ENGINEERING

Faculty

Professors

Beal
 Botosani
 Denenberg
 Lyon
 Sergent, *chair*
 Taylor

Associate Professors

Govil
 Tsacoyeanes

Assistant Professors

Mandello
 Munden
 Wojna

Senior Instructor

Craciun

Bachelor of Science

The computer engineering program and the electrical engineering program are administered under the Department of Electrical and Computer Engineering. The two undergraduate programs share many courses and both programs have a strong design component. Students learn the theory in the classroom and put it into practice in the laboratory, resulting in an electrical or computer engineering graduate that is ready to put these skills into practice in an industrial environment. The Bachelor of Science degree programs in both Electrical Engineering and Computer Engineering are accredited by the Accreditation Board for Engineering and Technology (ABET). The programs blend theoretical knowledge with hands-on experiential learning in a rich menu of topics. The educational objectives of the two programs are as follows:

- **Domain Knowledge:** Graduates of the BSEE and BSCE programs will apply their technical skills to design/analyze/manage electrical/computer systems in their chosen discipline in the field of electrical engineering. They will exercise technical, quality, schedule, and cost constraints in the design process.
- **Professional Practice:** They will practice the profession of electrical/computer engineering as either an individual contributor to their discipline or as a member of an interdisciplinary team in a competent and efficient manner.
- **Lifelong Learning:** They will maintain membership in professional societies as part of being committed to lifelong learning about their profession and its relationship to society.



- **Engineering Citizenship:** They will practice in an ethical and professional manner and will constantly be aware of the impact of their efforts on social welfare, safety, and the environment. They will promote justice in all matters and be of service to their community.

For the first year of study, these programs place major emphasis on the fundamentals of engineering and computer science, mathematics, and the basic sciences to provide the background for later engineering science and design courses. Following preparatory work, the fundamentals of electrical, computer, mechanical, and materials engineering concepts are developed. Advanced courses in electrical and computer engineering further develop knowledge in these engineering disciplines. The programs place increasing emphasis on design assignments. Students may specialize in a specific area of interest to them, and in accord with their specific career objectives, by taking two elective courses that provide depth in this area.

Computer Engineering Computer Engineering Curriculum (133 Credits)

Year 1 – Fall Semester		Credits
MA 125	Calculus I	3
PS 15	General Physics I	3
PS 15L	General Physics I Lab	1
EG 31	Fundamentals of Engineering and Computer Science I	3
CS 131	Computer Programming I	3
EN 11	Composition and Prose Literature	3
Total		16
Year 1 – Spring Semester		Credits
MA 126	Calculus II	3
PS 16	General Physics II	3
PS 16L	General Physics II Lab	1
EG 32	Fundamentals of Engineering and Computer Science II	3
CS 132	Computer Programming II	3
EN 12	Introduction to Literature	3
Total		16

Year 2 – Fall Semester		Credits
MA 227	Calculus III	3
MA 231	Discrete Mathematics	3
EE 213	Introduction to Electric Circuits	3
EE 213L	Electric Circuits Lab	1
CS 232	Data Structures	3
PH 10	Introduction to Philosophy	3
Total		16

Year 2 – Spring Semester		
MA 321	Ordinary Differential Equations	3
SW 327	Distributed Operating Systems	3
CR 246	Digital Design II	3
CR 246L	Digital Design Lab II	1
EE 231	Introduction to Electronics Circuits and Devices	3
EE 231L	Electronics Circuits Lab	1
HI 30	Europe and the World in Transition	3
Total		16

Year 3 – Fall Semester		
MA 321	Ordinary Differential Equations	3
SW 327	Distributed Operating Systems	3
CR 246	Digital Design II	3
CR 246L	Digital Design Lab II	1
EE 231	Introduction to Electronics Circuits and Devices	3
EE 231L	Electronics Circuits Lab	1
HI 30	Europe and the World in Transition	3
Total		17

Year 3 – Spring Semester		
EE 346	Embedded Microcontrollers	3
EE 346L	Microcontrollers Laboratory	1
CR 320	Computer Networks	3
EC 11	Introduction to Microeconomics	3
AH	Art History Elective	3
PH	Philosophy Elective	3
Total		16

Year 4 – Fall Semester		
CR 390	Senior Design Project I	3
EG 351	Probability and Random Processes	3
CD 211	Engineering Graphics I	3
EN	English Elective	3
HI	History Elective	3
RS	Religious Studies Elective	3
Total		18

Year 4 – Spring Semester		
CR 391	Senior Design Project II	3
CR	Major Elective	3
AE	Applied Ethics Elective	3
SSE	Social Science Elective	3
GE	General Elective I	3
GE	General Elective II	3
Total		18

Electrical Engineering

Electrical Engineering Curriculum

(134 credits)

Year 1 – Fall Semester		Credits
MA 125	Calculus I	3
PS 15	General Physics I	3
PS 15L	General Physics I Lab	1
EG 31	Fundamentals of Engineering and Computer Science I	3
CS 131	Computer Programming I	3
EN 11	Composition and Prose Literature	3
Total		16

Year 1 – Spring Semester		
MA 126	Calculus II	3
PS 16	General Physics II	3
PS 16L	General Physics II Lab	1
EG 32	Fundamentals of Engineering and Computer Science II	3
EN 12	Introduction to Literature	3
HI 30	Europe and the World in Transition	3
Total		16

Year 2 – Fall Semester		
MA 227	Calculus III	3
EE 213	Introduction to Electric Circuits	3
EE 213L	Electric Circuits Lab	1
CH 11	General Inorganic Chemistry	3
CH 11L	General Inorganic Chemistry Lab	1
ME 201	Engineering Statics	3
RS 10	Introduction to Religious Studies	3
Total		17

Year 2 – Spring Semester		
MA 228	Calculus IV	3
EE 221	Frequency Domain Circuit Analysis	3
EE 245	Digital Design I	3
EE 245L	Digital Design I Lab	1
PH 10	Introduction to Philosophy	3
AH	Art History Elective	3
Total		16



Electrical and Computer Engineering Electives

Year 3 – Fall Semester		Credits
MA 321	Ordinary Differential Equations	3
EE 231	Introduction to Electronics Circuits and Devices	3
EE 231L	Electronics Circuits Lab	1
EE 301	Signals and Systems I	3
ME 241	Principles of Thermodynamics	3
EN	English Elective	3
HI	History Elective	3
Total		19

Year 3 – Spring Semester		
EE 331	Analog Electronics Design	3
EE 331L	Analog Electronics Lab	1
EE	Major Elective I	3
CD 211	Engineering Graphics I	3
EC 11	Introduction to Microeconomics	3
PH	Philosophy Elective	3
Total		16

Year 4 – Fall Semester		
EE 321	Electromagnetic Fields	4
EE 390	Senior Design Project I	3
EG 351	Probability and Random Processes	3
EE	Major Elective 2	3
RS	Religious Studies Elective	3
Total		16

Year 4 – Spring Semester		
MC 300	Feedback and Control Systems	3
EE 391	Senior Design Project II	3
GE	General Elective I	3
GE	General Elective II	3
AE	Applied Ethics Elective	3
SSE	Social Science Elective	3
Total		18

Biomedical Engineering		Credits
ECE 431	Biomedical Signal Processing	3
ECE 432	Biomedical Imaging	3
EG 233	Biomedical Visualization	3

Communications		
EE 350	Communication Systems	3
EE 354	Electro-Optical Communications	3
EE 354L	Electro-Optical Communications Lab	1
ECE 475	Microwave Structures	3
ECE 480	Wireless Systems	3

Computer Engineering		
CR 310	Voice and Signal Processing	3
CR 311	Image Processing	3
CR 320	Computer Networks	3

Design		
EE 346	Embedded Microcontrollers	3
EE 346L	Microcontroller Lab	1
EE 382	Advanced Electrical Project	3

Digital Signal Processing		
EE 304	Signals and Systems II	3
EE 350	Communication Systems	3
ECE 485	Digital Communications	3

Microelectronics		
ECE 445	Digital Integrated Circuit Design	3
ECE 447	Analog Integrated Circuit Design	3
EE 335	Microelectronics	3
ECE 405	Electronic Materials	3

Power Systems		
EE 360	Power Electronics	3
EE 360L	Power Electronics Lab	1
ECE 495	Power Generation and Distribution	3

Systems and Controls		
ECE 415	Engineering Applications of Numerical Methods	3
ECE 465	Nonlinear Control Systems	3
MF 361	Automation and Robotics I	3