

COMPUTER ENGINEERING

Faculty

Professors

Beal
Denenberg
Lyon, *chair*

Associate Professors

Govil
Mandello
Weiman

Senior Instructor

Reed

Bachelor of Science

In Computer Engineering, theoretical work is integrated with experiential learning and design activity. The program is accredited by ABET, the international Accreditation Board for Engineering and Technology.

The educational objectives of the Bachelor of Science degree program in Computer Engineering are as follows:

- **Domain Knowledge:** Graduates will be able to apply their in-depth understanding in areas of computer systems. They will be able to solve computer system-related problems with real-world constraints, (i.e., constraints on performance, budget and scheduling, etc.).
- **Professional Practice:** Graduates will develop their engineering design, problem-solving skills, and aptitude for innovation as they work on multi-disciplinary teams.
- **Lifelong Learning:** Graduates will become experts in their selected field and broaden their professional knowledge with continuing education.
- **Engineering Citizenship:** Graduates will practice the ethics of their profession consistent with a sense of social responsibility.



Computer engineering students obtain the background they need to take the lead in creating the next generation of computer technologies. They are immersed in computer science, digital design, electrical engineering, physics, mathematics, and the liberal arts.

Students learn about embedded systems, computer graphics, computer games, image processing, multimedia programming, visualization, and display techniques. Students become skilled in object-oriented design while using state-of-the-art facilities. Our close interactions with industry enable employment of our graduates in all sectors of industry, government, and academe. They are active in the areas of hardware and software design and information technologies, and take the lead in the research and development of new computer systems and applications. Demand for computer engineering graduates has been consistently strong and is expected to persist.

Computer Engineering Curriculum (132 credits)

| Year 1 – Fall Semester | | Credits |
|------------------------|--|---------|
| MA 125 | Calculus I | 3 |
| PS 15 | General Physics I | 3 |
| PS 15L | General Physics Lab I | 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 Lab II | 1 |
| EG 32 | Fundamentals of Engineering and Computer Science II | 3 |
| CS 132 | Computer Programming II | 3 |
| EN 12 | Introduction to Literature and Writing the Research Paper | 3 |
| Total | | 16 |

COMPUTER SCIENCE

A B.S. degree program in Computer Science is in preparation in the School of Engineering. This program will share some courses with the Computer Science program in the College of Arts and Sciences, but it will have a distinctly different focus through additional required and elective courses, such as CSE 368 Programming Languages, CSE 378 Algorithms Analysis, SW 201 Software Design, and CSE 390-391 Computer Science Senior Design Project I and II. For further information about this program contact the Dean's Office.

| Year 2 – Fall Semester | | Credits |
|-------------------------------|-----------------------------------|----------------|
| MA 227 | Calculus III | 3 |
| EE 213 | Introduction to Electric Circuits | 3 |
| EE 213L | Electric Circuits Lab | 1 |
| ME 201 | Engineering Statics | 3 |
| MA 231 | Discrete Mathematics | 3 |
| CS 232 | Data Structures | 3 |
| Total | | 16 |

| Year 2 – Spring Semester | | |
|---------------------------------|--|----|
| MA 228 | Calculus IV | 3 |
| CR 245 | Digital Design I | 3 |
| CR 245L | Digital Design I Lab | 1 |
| PH 10 | Introduction to Philosophy | 3 |
| HI 30 | Europe and the World in Transition | 3 |
| AH 10 | Origins and Transformations in Western Art | 3 |
| Total | | 16 |

| Year 3 – Fall Semester | | |
|-------------------------------|---------------------------------|----|
| MA 321 | Ordinary Differential Equations | 3 |
| CR 310 | Voice and Signal Processing | 3 |
| CR 246 | Digital Electronics Design II | 3 |
| CR 254 | Fiber Optic Communications | 3 |
| CR 254L | Fiber Optic Communications Lab | 1 |
| EE 346 | Microprocessor Hardware | 3 |
| EE 346L | Microprocessor Lab | 1 |
| Total | | 17 |

| Year 3 – Spring Semester | | |
|---------------------------------|-----------------------------------|----|
| CR 311 | Image Processing | 3 |
| CD 211 | Engineering Graphics I | 3 |
| RS 10 | Introduction to Religious Studies | 3 |
| EC 11 | Microeconomics | 3 |
| HI | History Elective | 3 |
| GEL | General Elective I | 3 |
| Total | | 18 |

| Year 4 – Fall Semester | | |
|-------------------------------|-------------------------------|----|
| CR 320 | Computer Networks Programming | 3 |
| CR 390 | Senior Project I | 3 |
| MA 351 | Probability and Statistics I | 3 |
| PH | Philosophy Elective | 3 |
| RS | Religious Studies Elective | 3 |
| Total | | 15 |

| Year 4 – Spring Semester | | |
|---------------------------------|-------------------------|----|
| CR 325 | Computer Graphics | 3 |
| CR 391 | Senior Project II | 3 |
| EN | English Elective | 3 |
| EL II | General Elective | 3 |
| AE 287 | Engineering Ethics | 3 |
| SS/EL | Social Science Elective | 3 |
| Total | | 18 |

Science Electives

Students who wish to expand their knowledge in the sciences may opt for

EE 321 Electromagnetic Fields
or any other approved Physics elective.