

# COMPUTER SCIENCE & ENGINEERING

# IOWA

Engineering Student Development Center  
Academic and Career Advising  
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## FOCUS AREAS at IOWA:

Big Data/Data Mining/Machine Learning	Computer Networks
Bioinformatics	Signal & Image Processing
Business	Software Engineering
Computer Breadth	Sustainability
Computer Hardware	

## CAREERS

- **Database engineer:** Manage flow of information, design and maintain a database that provides informative and relevant data to users.
- **Information security engineer:** Protect networks and computer systems from any security threats or attacks, is responsible for establishing and implementing security solutions that can defend the networked systems.
- **Network systems and data communications engineer:** Plan, implement and oversee the computer networks that support smooth data services.
- **Software engineer:** Design, develop, test and maintain software.
- **Hardware engineer:** Design, test, analyze, manufacture and manage hardware systems.
- **Web developer:** Develop World Wide Web applications.
- **Application engineer in almost every area:** medicine, finance, business, sport, entertainment, media, defense, agriculture, healthcare, retail, manufacturing, telecommunication and others.

\*Some of these positions may require an advanced degree.

## SPECIALIZATIONS WITHIN THE FIELD

- Artificial Intelligence (AI) Engineer
- Augmented Reality (AR) Engineer
- Blockchain Developer/Engineer
- Big Data Scientist
- Bioengineer
- Computer Hardware Engineer
- Cloud Computing Engineer
- Cryptography Expert
- Database Administrator
- Data Scientist/Analyst
- Deep Learning Engineer
- Design Engineer
- Embedded Systems Engineer
- Engineering Manager
- Full-stack Developer
- Healthcare Systems Developer
- High Speed Computing
- Imaging Processor
- Information Technology Specialist
- Information Security Analyst
- Internet of Things (IoT) Developer
- Machine Learning Engineer
- Manufacturing Automator
- Medical Technologies Developer
- Mobile Application Designer or Developer
- Network Architect
- Professor
- Project Manager
- Quantum Computing Engineer
- Research and Development (R&D) Scientist
- Security Officer
- Signal Processor
- Software Developer
- Software Quality Assurance Manager
- Software Tester
- Systems Analyst
- Test Engineer
- User Interface Designer
- Virtual Reality (VR) Engineer
- Web Developer

## EMPLOYERS

- Alliant Energy
- Amazon
- Apple
- Boeing
- Caterpillar
- Cerner
- Collins Aerospace
- DuPont Pioneer
- Design Engineers
- Emerson-Fisher Controls
- Facebook
- Firemon
- GE Healthcare
- Google
- Hologic
- IBM
- Intel
- Innomatix
- Innovative Software Engineering
- Intermec
- John Deere
- Lockheed Martin
- MODUS
- Motorola
- Microsoft
- Northrup Grumman
- Oracle
- Pariveda
- Raytheon
- Schneider Electric
- Samsung

<https://careers.uiowa.edu/post-graduation-data#employment-report>

# IOWA

College of  
Engineering

# COMPUTER SCIENCE & ENGINEERING

Department of Electrical and Computer Engineering



## Sample Four-Year Plan

### First Year

1st Semester	sh	2nd Semester	sh
F/S <b>MATH:1550 Engineering Calculus I</b> (P: ALEKS score $\geq 75$ or MPT Level 3 score $\geq 9$ )	4	ALL <b>RHET:1030 Rhetoric: Writing and Communication</b>	4
F/S <b>CHEM:1110 Principles of Chemistry I</b> (P: ALEKS score $\geq 55$ or MPT Level 3 score $\geq 9$ )	4	F/S <b>PHYS:1611 Introductory Physics I</b> (C: MATH:1550)	4
F <b>ENGR:1100 Intro to Engineering Problem Solving</b>	3	F/S <b>MATH 1560 Engineering Calculus II</b> (P: MATH:1550)	4
F/S <b>ENGR:1300 Intro to Engineering Computing</b> (C: MATH:1550)	3	F/S <b>MATH:2550 Engineering Matrix Algebra</b> (P: MATH:1550)	2
		ALL <b>CS:1210 Computer Science I, Fundamentals</b> (C: MATH:1550)	4
	<b>14</b>		<b>18</b>

### Second Year

3rd Semester	sh	4th Semester	sh
ALL <b>General Education Course</b>	3	F/S <b>General Education Course</b>	3
F/S <b>MATH:2560 Engineering Differential Equations</b> (P: MATH:1560 & MATH:2550)	3	ALL <b>CS:2210 Discrete Structures</b>	3
ALL <b>PHYS:1612 Introductory Physics II</b> (P: PHYS:1611; C: MATH:1560)	4	ALL <b>CS:2230 Computer Science II, Data Structures</b> (P: ENGR:2730 minimum C- or CS:1210 minimum C-)	4
ALL <b>ENGR:2120 Electrical Circuits</b> (C: MATH:2560)	3	F/S <b>ECE:2400 Linear Systems I</b> (P: ENGR:2120 & MATH:2560)	3
F/S <b>ENGR:2730 Computers in Engineering</b> (P: ENGR:1300)	3	F/S <b>ECE:2410 Principles of Electronic Instrumentation</b> (P: PHYS:1612, ENGR:2120, & MATH:2560)	4
	<b>16</b>		<b>17</b>

### Third Year

5th Semester	sh	6th Semester	sh
ALL <b>General Education Course</b>	3	ALL <b>General Education Course</b>	3
F/S <b>STAT:2020 Probability &amp; Statistics For Engr &amp; Phys Sci</b> (P: MATH:1560)	3	ALL <b>CS:3330 Algorithms</b> (P: CS:2230 minimum C-, CS:2210, minimum C-, & MATH:1550)	3
F <b>ECE:3320 Introduction to Digital Design</b> (Sophomore Status)	3	F/S <b>CS:3820 Programming Language Concepts</b> (P: CS:2100, CS:2230, & ECE:3330)	3
F/S <b>ECE:3330 Introduction to Software Design</b> (P: ENGR:2730)	3	S <b>ECE:3350 Computer Architecture and Organization</b> (P: ECE:3320 & ENGR:2730)	3
ALL <b>Elective: Technical, CS</b>	3	F/S <b>ECE:3360 Embedded Systems</b> (P: ENGR:2730 & ECE:3320; C: ECE:2410)	3
F <b>ECE:3000 Professional Seminar</b> (Junior Status)	1	ALL <b>Elective: Focus Area, Minor, Certificate, etc. (minimum 2 sh)</b>	2
	<b>16</b>		<b>17</b>

### Fourth Year

7th Semester	sh	8th Semester	sh
F/S <b>CS:3620 Operating Systems</b> (P: CS:2210 minimum C-, CS:2230 minimum C-, & ECE:3350 minimum C-)	3	ALL <b>General Education Course</b>	3
F <b>ECE:3540 Communication Networks</b> (C: STAT:2020)	3	F/S <b>ECE:4890 ECE Design</b> (P: ECE:4880 and 3 of: ECE:3330, ECE:3350, ECE:3360, ECE:3400, ECE:3410, ECE:3500, ECE:3600, CS:3330)	3
F/S <b>ECE:4880 Principles of ECE Design</b> (P: Senior Status; ECE:2410, & ENGR:2730)	3	ALL <b>Elective: Theory</b>	3
ALL <b>Elective: Focus Area, Minor, Certificate, etc.</b>	3	ALL <b>Elective: Advanced, CS</b>	3
ALL <b>Elective: Technical, ECE</b>	3	ALL <b>Elective: Advanced, ECE</b>	3
	<b>15</b>		<b>15</b>