At the time of graduation, students in the ECE computer engineering program will have:

a. An ability to apply knowledge of mathematics, science, and engineering.  
b. An ability to design and conduct experiments, as well as to analyze and interpret data.  
c. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.  
d. An ability to function on multidisciplinary teams.  
e. An ability to identify, formulate, and solve engineering problems.  
f. An understanding of professional and ethical responsibility.  
g. An ability to communicate effectively.  
h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.  
i. A recognition of the need for, and an ability to engage in lifelong learning.  
j. A knowledge of contemporary issues.  
k. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.  

The individual holding this degree will have advanced knowledge in his or her field of engineering interest and in addition will have a university educational background involving mathematics, the physical sciences, and the humanities and social sciences. Completion of this curriculum will enable the graduate to enter employment in positions involving computer hardware design and applications, computer software design and development, microcomputer based applications, and computer networking. The program also leads to the preparation for graduate work in computer engineering, computer science or electrical engineering.

Major Department Admission

General Requirements

Advisement

Upon entry into the program, each student will be assigned a faculty academic advisor. It is required that the student meets with the advisor prior to each class registration period and that all courses to be applied toward the degree be selected with the advice and approval of the advisor. Students are expected to have their academic records reviewed and obtain approval from the department prior to application to the University registrar for award of the degree in order to insure that all curricular requirements will be satisfied by the time of intended graduation.

Curriculum

Because of the rapid developments in the field of computer engineering, the curricular requirements are continually reviewed and upgraded to reflect technological advances. Curricular sequence and course descriptions contained herein are intended to serve as general guidelines. Contact the department for information on any changes to the requirements that are currently in effect but not listed in this catalog. Currently enrolled students are expected to modify their programs to take advantage of such revisions. Students who do not maintain continuous progress toward the degree through enrollment in applicable course work will be considered as new students upon reentering the computer or electronics engineering curriculum sequence and will be subject to the requirements of the curriculum current at the time of their reentry. Certain courses may not be valid as prerequisites or as credit toward the degree after two academic years; the student’s academic advisor should be consulted regarding applicability.

The department maintains a high standard of excellence in meeting its objective of providing the student with extensive experience in the fields of computer engineering and electronics engineering. The development of both hardware and software and the knowledge of the interrelationship of these areas is enhanced through the extensive use of laboratory
equipment. The applicable University catalogs and College academic policies must be followed to ensure that the student satisfies the campus general education requirements.

**Capstone**
The capstone requirement provides a unique and challenging opportunity for the undergraduate student to demonstrate his/her ability to apply the knowledge gained in the course work sequence to the planning, design, execution, testing and reporting of a significant project in the applications of engineering principles. The initiative and responsibility expected of the student executing the senior thesis parallel the expectations of the employer of the program graduate.

**Electives**
Computer engineering, electrical engineering and electronic engineering courses which are described in the catalog but are not shown as requirements in the semester sequences are offered as the need arises to provide co-interest areas wherein the students may broaden their background in the applications of computer engineering or electronics engineering. In addition, appropriate specified technical electives will be selected to augment the student's particular area of interest. The applicability of transfer course work with engineering content toward credit in the curriculum is determined on a case-by-case basis by the department.

**Special Interest Areas**
Opportunities are provided for the development of areas of special interest through enrollment in the Individual Study in Computer and Electronics Engineering courses which are offered at the freshman through senior level for the student who may wish to develop a topic under the guidance of a department faculty member. Enrollment is by permission after approval of a written proposal. Special Topics in Computer and Electronics Engineering classes also are offered by the department as the need arises to cover topics needing emphasis as a result of the rapidly developing fields of computer engineering and electronics engineering. Academic advisors should be consulted regarding the particular topics to be covered and the necessary prerequisites for each offering of this course.

Students who expect to continue their education at the graduate level after the award of the baccalaureate degree should consult their advisor regarding course selections that would enhance that objective.

Students are encouraged to develop their professional and leadership potential through participation in student chapters of related professional organizations and in University extracurricular activities. Participation in the University Honors Program is encouraged for those who qualify.

**College Requirements**

**College Admission**

**College Entrance Requirements**
Students must have high school credit for (one unit is equal to one high school year):

1. 4 units of mathematics: 2 of algebra, 1 of geometry, 1 of precalculus and trigonometry.
2. 4 units of English.
3. 3 units of natural science that must include 1 unit of physics and 1 unit of chemistry (chemistry requirement waived for students in construction management).
4. 2 units of a single foreign language.
5. 3 units of social studies.

6. Students having a composite ACT score of 28 or greater (or equivalent SAT score) will be admitted to the College of Engineering even if they lack any one of the following: trigonometry, chemistry, or physics.
7. Students having an ACT score of 19 or less in English (or equivalent SAT score) must take ENGL 150 Writing and Inquiry or ENGL 151 Writing and Argument.

A total of 16 units is required for admission.

Students must have an ACT (enhanced) score of 24 or greater (or equivalent SAT). Students who lack entrance requirements may be admitted based on ACT scores, high school rank and credits, or may be admitted to pre-engineering status in the Exploratory and Pre-Professional Advising Center. Pre-engineering students are advised within the College of Engineering.

Students for whom English is not their language of nurture must meet the minimum English proficiency requirements of the University.

Students who lack entrance units may complete precourse training by Independent Study through the UNL Office of On-line and Distance Education, in summer courses, or as a part of their first or second semester course loads while in the Exploratory and Pre-Professional Advising Center or other Colleges at UNL.

Students should consult their advisor, their department chair, or Engineering Student Services if they have questions on current policies.

**Other Admission Requirements**
Students who transfer to the University of Nebraska–Lincoln from other accredited colleges or universities and wish to be admitted to the College of Engineering (COE) must meet COE freshman entrance requirements and have a minimum cumulative GPA of 2.5 for Nebraska residents or 3.0 for non-residents, and be calculus-ready. Students not meeting either of these requirements must enroll in the Explore Center or another UNL college until they meet COE admission requirements.

The COE accepts courses for transfer for which a C or better grade was received. Although UNL accepts D grades from the University of Nebraska at Kearney and at Omaha, not all majors in the COE accept such low grades. Students must conform to the requirements of their intended major and, in any case, are strongly encouraged to repeat courses with a grade of C- or less.

All transfer students must adopt the curricular requirements of the undergraduate catalog current at the time of transfer to the COE—not that in use when they entered UNL. Upon admission to UNL, students wishing to pursue degree programs in the COE will be classified and subject to the policies defined in the subsequent section.

**College Degree Requirements**

**Grade Rules**

**Grade Appeals**
In the event of a dispute involving any college policies or grades, the student should appeal to his/her instructor, and appropriate department chair or school director (in that order). If a satisfactory solution is not achieved, the student may appeal his/her case through the College Academic Appeals Committee on his/her campus.

**Catalog Rule**
Students must fulfill the requirements stated in the catalog for the academic year in which they are first admitted at UNL. In consultation with advisors, a student may choose to follow a subsequent catalog.
for any academic year in which they are admitted to and enrolled as a degree-seeking student at UNL in the College of Engineering. Students must complete all degree requirements from a single catalog year. The catalog which a student follows for degree requirements may not be more than 10 years old at the time of graduation.

Major Requirements

Requirements for the Degree

First Semester
- ECEN 103 Electrical and Computer Engineering Fundamentals 4
- CSCE 155A Computer Science I 3
- or CSCE 155E Computer Science I: Systems Engineering Focus
- MATH 106 Calculus I 5
- ACE Elective SLO 5 3

Credit Hours Subtotal: 15

Second Semester
- ECEN 106 Microprocessor Applications 3
- ECEN 194 Special Topics in Electrical and Computer Engineering I 1
- ECEN 225 Electrical and Computer Engineering Seminar 1
- CSCE 156 Computer Science II 4
- MATH 107 Calculus II 4
- PHYS 211 General Physics I 4

Credit Hours Subtotal: 17

Third Semester
- ECEN 213 Electrical Circuits I 3
- ECEN 218 Electrical Circuits Laboratory 1
- MATH 221 Differential Equations 3
- PHYS 212 General Physics II 4
- PHYS 222 General Physics Laboratory II 1
- COMM 109 Fundamentals of Human Communication 3

Credit Hours Subtotal: 15

Fourth Semester
- ECEN 222 Electronic Circuits I 4
- ECEN 313 Switching Circuits Theory 4
- JGEN 300 Technical Communication II 3
- MATH 208 Calculus III 4
- ECEN 217 Electrical Circuits III 1

Credit Hours Subtotal: 16

Fifth Semester
- ECEN 310 Digital Design and Interfacing 4
- ECEN 332 Assembly Language Programming 1
- CSCE 310 Data Structures and Algorithms 3
- MATH 314 Linear Algebra 3
- MATH 380 / STAT 380 Statistics and Applications 3

Credit Hours Subtotal: 14

Sixth Semester
- ECEN 325 Communications Systems 4
- ECEN 433 Microprocessor System Design 4
- ENGR Electives 6

ACE Elective SLO 6 3
Credit Hours Subtotal: 17

Seventh Semester
- ECEN 435 Embedded Microcontroller Design 4
- ECEN 496 Capstone I 2
- ENGR 469 Technology, Science and Civilization (UNO) 3
- ENGR Electives 3
- ACE Elective SLO 7 3

Credit Hours Subtotal: 15

Eighth Semester
- ECEN 499 Capstone II 3
- ENGR Electives 6
- ACE Electives SLO 8 & 9 6

Credit Hours Subtotal: 15

Total Credit Hours 124

Calculus II is a 5-credit course on the Omaha Campus. Students taking Calculus II on the Lincoln Campus will need to obtain an additional 1 credit hour of math or science.

NOTE: Three hours of the engineering electives can be chosen from a list of approved non-ECEN courses.

Additional Major Requirements

Grade Rules
All course work must be of C grade level or higher to be credited toward graduation requirements or to be valid as a prerequisite for another course.

Career Information

The following represents a sample of the internships, jobs and graduate school programs that current students and recent graduates have reported.

Jobs of Recent Graduates

- Software Engineer 1, Garmin - Olathe KS
- Software Developer, Spreetail - Lincoln NE
- Jr. Project Engineer, Union Pacific - Omaha NE
- Product Manager, Hudl - Lincoln NE
- Embedded Systems Engineer, Lockheed Martin - Denver CO
- Software Developer, IBM - Rochester MN
- Computer Engineer, United States Department of Defense - San Antonio TX
- Software Developer in Test, Amazon - Seattle WA
- Software Developer Engineer, Microsoft - Seattle WA
- System Integration Specialist, Sandhills Publishing - Lincoln NE

Internships

- System Intern, Sandhills Publishing - Lincoln NE
- Software Engineering Intern, Garmin International - Olathe KS
- Software Engineer Intern, Microsoft - Redmond WA
- Simulation Lab Intern, University of Nebraska Medical Center - Omaha NE
- Hardware Engineer, Springbok Inc - Omaha NE
- Software Development Intern, Epic Systems - Madison WI
- Software Engineering Intern, Firespring - Lincoln NE
• Applications Developer Intern, Gallup - Omaha NE
• Design Engineering Intern, Communication Systems Solutions - Lincoln NE
• Network Design Intern, Union Pacific - Omaha NE

Grad Schools
• Master of Computer Science, University of Nebraska-Lincoln - Lincoln NE
• Ph.D. in Computer Science, University of Colorado - CO
• Robotics Engineering, Northwestern University - Evanston IL
• Masters of Science in Visualization, Texas A&M University - College Station TX
• Electrical Engineering, University of Nebraska - Lincoln - Lincoln NE
• Masters in Information Technology, University of Texas-Austin - Austin TX
• Medical Sciences Interdepartmental Areas, University of Nebraska Medical Center - Omaha NE