

UNIVERSITY OF  
**Nebraska**  
Lincoln

*Pioneering new frontiers.*

Bachelor of Science in  
**Computer Engineering**

Advising Brochure  
**2012 – 2013**

Department of  
**Computer Science & Engineering**  
**College of Engineering**  
256 Avery Hall

[info@cse.unl.edu](mailto:info@cse.unl.edu)  
<http://cse.unl.edu>

The B.S. Degree in Computer Engineering is accredited  
by the Engineering Accreditation Commission of ABET.  
<http://www.abet.org>

rev: November 16, 2011

## Computer Engineering Program – 126 hours

### Computer Science & Engineering Courses:

Course	Title	RAIK	Hrs
CSCE 155,156	Intro to Comp Sci I,II	183,184	7
CSCE 230,230L	Computer Organization, Lab	284	4
CSCE 235	Introduction to Discrete Struct	(283)	3
CSCE 236	Intro to Embedded Systems		3
CSCE 251	Unix Programming		1
CSCE 310	Data Structures & Algos	283	3
CSCE 335	Digital Logic Design		3
CSCE 340	Numerical Analysis I		3
CSCE 351	Operating System Kernels		3
CSCE 361	Intro to Software Engineering	383	3
CSCE 462	Communication Networks		3
CSCE 488	CE Professional Development	381	2
CSCE 489	CE Senior Design Project	402?	<u>3</u>
			41

### Electrical Engineering Courses:

ELEC 215,235	Electronics & Circuits I, Lab		4
ELEC 216,236	Electronics & Circuits II, Lab		4
ELEC 304	Cont Time Signals & Systems		3
ELEC 305	Probability Theory		3
ELEC 316	Electronics & Circuits III		<u>3</u>
			17

### Mathematics Courses:

MATH 106,107,208	Analytic Geom & Calc I,II,III		14
MATH 221	Differential Equations		3
MATH 314	Linear Alg (Matrix Theory)		<u>3</u>
			20

### Other Supporting Courses:

PHYS 211,212	General Physics I,II		8
CHEM 109	General Chemistry		4
<i>OR</i> PHYS 213/223	General Physics III		5
JGEN 200,300	Technical Writing I,II	287/8,187/8	6
ENGR 020	Sophomore Engr Seminar		0
CSCE/ELEC	Technical Electives	301/2,401/2	15
	Free Elective		3
ACE	LO's 5, 6, 7, 9	182,282	<u>12</u>
			48

## Formal Admission to Computer Engineering

### Required prior to taking upper level engineering courses!

Typically done around the end of the sophomore year, constraints are Cumulative and Semester GPA at least 2.500, Grade of C+ or higher in MATH through 208, PHYS through 212, ELEC through 215/235, CSCE through 156, 230, and 235 (or RAIK 183, 184, 283). The process is automatic for qualifying students. Others will be notified concerning deficiencies.

## Technical Electives Requirements - 15 hours

Technical electives may include Focus courses, 300- and 400-level CSCE, RAIK, and ELEC courses that are not already required.

Completing 9 hours or more in a Focus area with a grade of at least C results in receiving a Focus. By completing all 15 hours in one focus (including associated required course, if listed), the following conditions for Technical Electives are waived:

- I. 9 hours minimum of CSCE and/or cross-listed RAIK (384H, 376H, 378H, 301H, 302H, 401H, 402H).
- II. 9 hours minimum at 400-level.
- III. CSCE 390 and 490 Special Topics are NOT allowed (designated as not applying to major/minor).
- IV. 3 hours maximum of independent study (CSCE 399, 498, ELEC 399, 499).
- V. 6 hours maximum of internship/practicum (CSCE 491, RAIK 301H, 302H, 401H, 402H).
- VI. ELEC 494 and 495 Senior Design are NOT allowed (but may substitute for CSCE 488 and 489).

## ACE Student Learning Outcomes - 12 hours

Maximum of 9 hrs in any one department for ACE 4-10.

Asterisk (\*) indicates those not built in the major.

Complete listing at <http://www.unl.edu/ous/ace/certifiedcourses.shtml>

- |     |                       |   |
|-----|-----------------------|---|
| 1.  | Written Communication | JGEN 200, RAIK 287/288 (in major)       |
| 2.  | Oral Communication    | JGEN 300, RAIK 187/188 (in major)       |
| 3.  | Math & Computation    | CSCE 155, RAIK 183 (in major)           |
| 4.  | Natural Sciences      | CHEM 109, PHYS 211/212 (in major)       |
| 5.* | Humanities/History    | 3 hours elective                        |
| 6.* | Social Sciences       | 3 hours elective or RAIK 182            |
| 7.* | Fine Arts             | 3 hours elective                        |
| 8.  | Ethics                | Distrib in major or RAIK 282            |
| 9.* | Human Diversity       | 3 hours elective                        |
| 10. | Integrated Knowledge  | CSCE 489, RAIK 402, ELEC 495 (in major) |

## Computer Engineering Focus Areas - 9-15 hours

### Embedded Systems and Robotics

		Course Title	Frequency
CSCE	430	Computer Architecture	s
	436	Embedded Systems	s
	438	Sensor Networks	fe
	496	Robotics <b>OR</b>	
MECH	453	Robotics: Kinematics & Design	fs

### VLSI Design

		Course Title	Frequency
ELEC	416	Mat & Dev for Comp Mem/Log/Disp	f
	421	Princ of Semiconductor Mat & Def	f
	475	Digital Systems	s
CSCE	430	Computer Architecture	s
	<u>434</u>	<u>VLSI Design</u> <b>OR</b>	fe
<u>ELEC</u>	<u>470</u>	<u>Digital &amp; Analog VLSI Design</u> (Phys 213/223 also required)	s fs

### Signal Processing & Communications

		Course Title	Frequency
ELEC	463	Digital Signal Processing	s
	465	Intro to Data Compression	s
CSCE	438	Sensor Networks	fe
	472	Digital Image Processing	f
	473	Computer Vision	so

### High Performance Computing

		Course Title	Frequency
<u>CSCE</u>	<u>430</u>	<u>Computer Architecture</u>	s
	432	High-Performance Processor Architectures	fo
	435	Cluster & Grid Computing	fo
	437	File & Storage Systems	so
	455	Distributed Operatings Systems	fe
	456	Parallel Algorithms & Programming	fe

### Customized Focus

With approval of CSE Department Chair, select from above and/or any other technical electives for a Custom Focus.

**Notes: The Focus is optional.  
Grade of C or higher is required for a Focus.  
Underlining means course is required for the Focus.**

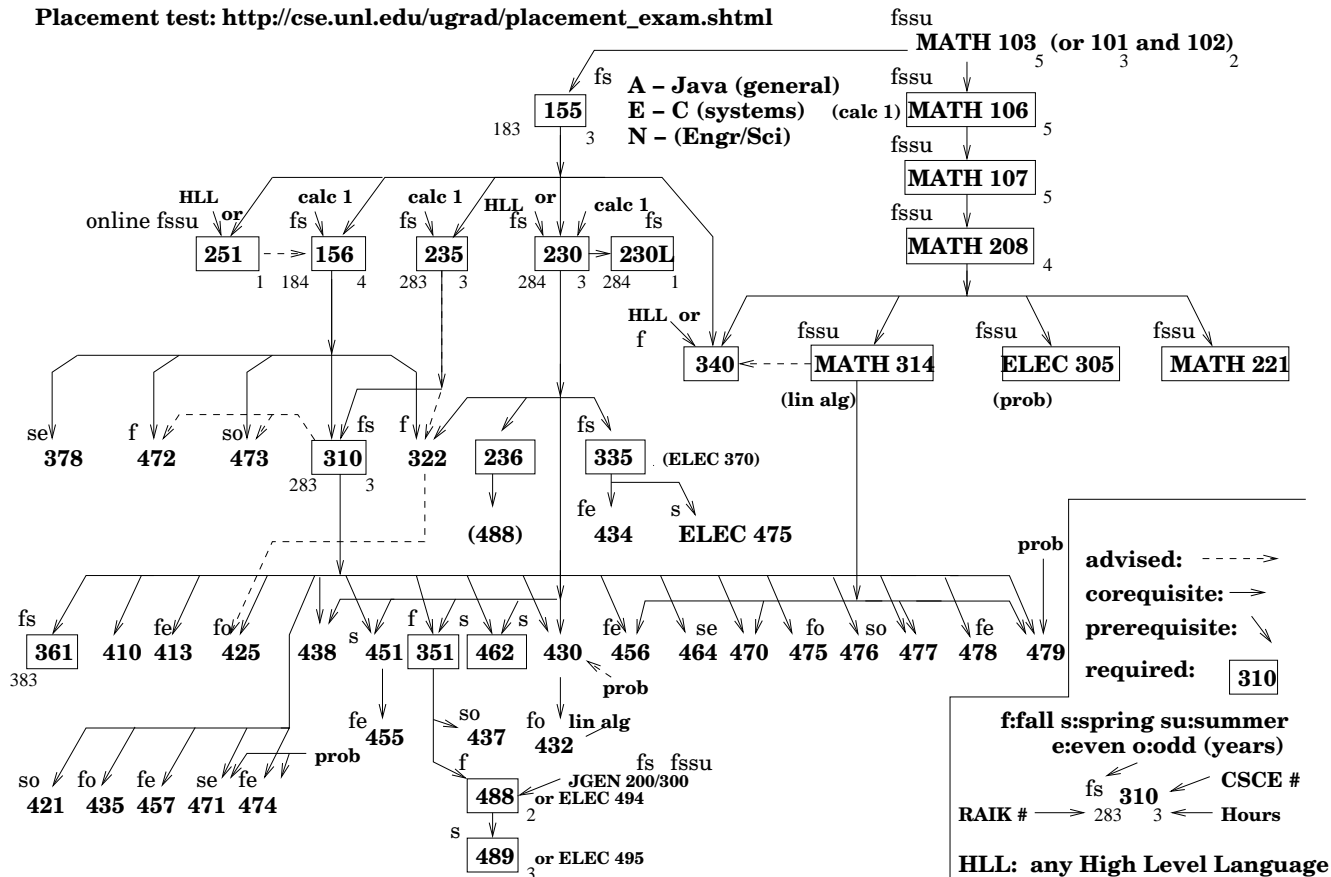
## Example Eight Semester Schedule - 126 hours

<b>Fall 1</b>				<b>Spring 1</b>			
CSCE	155	CS I	3	CSCE	156	CS II	4
MATH	106	Calc I	5	CSCE	235	Discrete	3
PHYS	211	Gen Phys I	4	CSCE	251	Unix	1
		ACE 5	3	MATH	107	Calc II	5
			15	PHYS	212	Gen Phys II	4
							17
<b>Fall 2</b>				<b>Spring 2</b>			
CSCE	230	Comp Org	3	CSCE	236	Intr Em Sys	3
CSCE	230L	Lab	1	CSCE	310	Algos	3
MATH	208	Calc III	4	MATH	221	Diff Eq	3
CHEM	109	Gen Chem I	4	ELEC	216,236	Circuit II	4
ELEC	215,235	Elec Circ I	4	JGEN	200	Tech Comm I	3
ENGR	020	Seminar	0				16
			16				
<b>Fall 3</b>				<b>Spring 3</b>			
CSCE	351	Op Sys Ker	3	CSCE	335	Dig Logic	3
CSCE	361	Soft Engr	3	CSCE	462	Comm Net	3
ELEC	304	Sig & Sys	3	MATH	314	Linear Alg	3
ELEC	316	Circuit III	3	ELEC	305	Prob Th	3
		ACE 6	3	CS/EE		Tech Elec	3
		free elec	3				15
			17				
<b>Fall 4</b>				<b>Spring 4</b>			
CSCE	340	Num Anal	3	CSCE	489	CE Sr Des	3
CS/EE		Tech Elec	3	CS/EE		Tech Elec	3
CSCE	488	CE Prof	2	CS/EE		Tech Elec	3
JGEN	300	Tech Comm II	3	CS/EE		Tech Elec	3
		ACE 7	3			ACE 9	3
			14				15

For assistance with major advising, contact the Chief Undergraduate Advisor,  
 Prof. Charles Riedesel, 259 Avery Hall, 472-3486, riedesel@cse.unl.edu,  
<http://cse.unl.edu/~riedesel> (follow link to appointments for open times).

For assistance with general college requirements, contact the  
*Engineering College Dean's Office*, 114 Othmer Hall, 472-3181,  
<http://engineering.unl.edu/specialty-units/eHelp/>

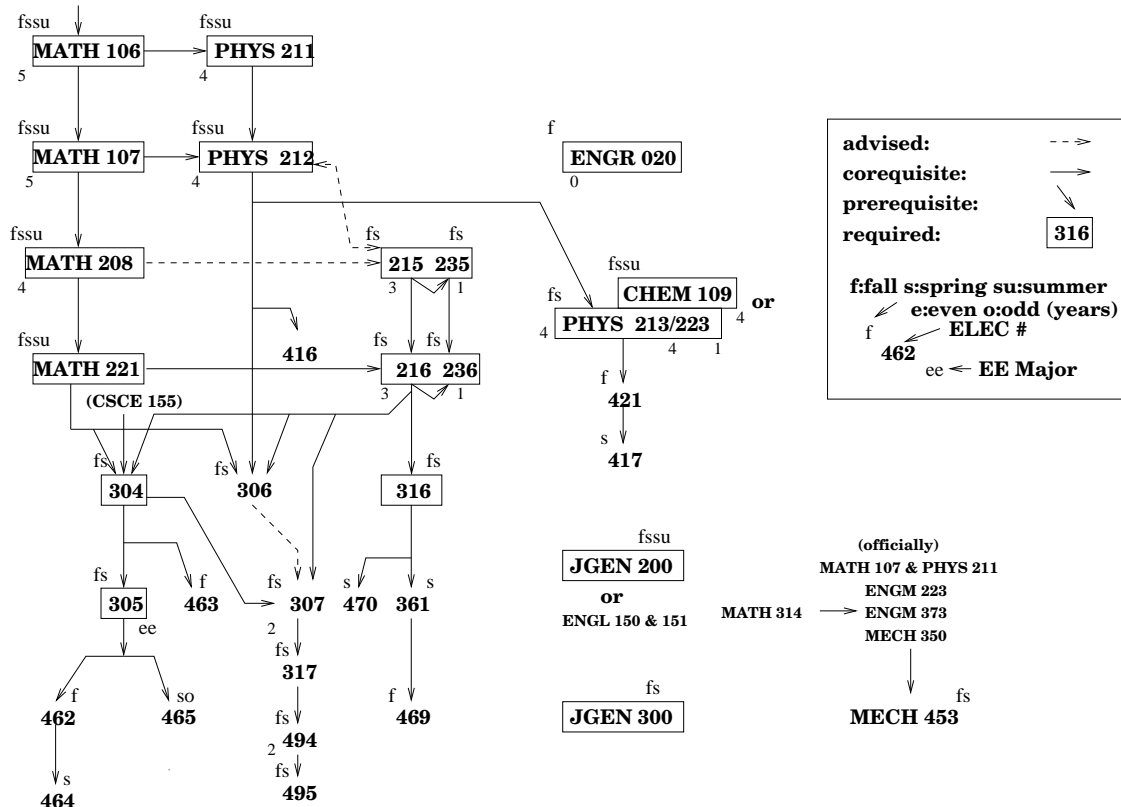
Placement test: [http://cse.unl.edu/ugrad/placement\\_exam.shtml](http://cse.unl.edu/ugrad/placement_exam.shtml)



# COMPUTER ENGINEERING PROGRAM

## Computer Science & Engineering and Supporting Courses

rev 11/16/2011



**COMPUTER ENGINEERING PROGRAM**  
**Electrical Engineering and Supporting Courses**