

UNIVERSITY OF
Nebraska
Lincoln

Pioneering new frontiers.

Bachelor of Science in
Computer Engineering

Advising Brochure
2011 – 2012

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

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<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: September 30, 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	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.

Computer Engineering Focus Areas, 15 hours

Embedded Systems and Robotics

		Course Title	Frequency
ELEC	416	1 Mat & Dev for Comp Mem/Log/Disp	
CSCE	430	2 Computer Architecture	s
	436	3 Embedded Systems	s
	496	4 Spec. Top.: Sensor Networks	fe
		5 Robotics OR	
MECH	453	Robotics: Kinematics & Design	fs

VLSI Design

		Course Title	Frequency
ELEC	416	1 Mat & Dev for Comp Mem/Log/Disp	
	417	2 Integrated Circuits OR	fs
	475	Digital Systems	s
	421	3 Princ of Semiconductor Mat & Def	f
CSCE	430	4 Computer Architecture	s
	434	5 VLSI Design OR	fe
ELEC	470	Digital & Analog VLSI Design	s

Signal Processing & Communications

		Course Title	Frequency
ELEC	462	1 Communication Systems	f
	463	2 Digital Signal Processing	s
	465	3 Intro to Data Compression	s
Plus two of the following:			
	464	Digital Communication Systems	s
CSCE	472	Digital Image Processing	f
	473	Computer Vision	so

High Performance Computing

		Course Title	Frequency
CSCE	430	1 Computer Architecture	s
	432	2 High-Performance Processor Architectures	fo
	437	3 File & Storage Systems	so
	455	4 Distributed Operatings Systems	fe
	435	5 Cluster & Grid Computing OR	fo
	456	Parallel Algorithms & Programming	fe

Customized Focus (or No Focus)

With approval of CSE Department Chair, select from above and/or Additional Technical Electives (on a later page) for a Custom Focus. Alternatively no focus is necessary - just take 15 hours from any listed elective.

Additional Technical Electives

		Course Title	Frequency
CSCE	322	Programming Language Concepts	f
	378	Human Computer Interaction	se
	399H	Honors Thesis (max 3 hours)	fssu
	410	Information Retrieval Systems	
	413	Database Systems	fe
	421	Foundations of Constraint Sat Theory	so
	425	Compiler Construction	fo
	451	Operating System Principles	se
	457	Systems Administration	fe
	464	Internet Systems & Programming	se
	470	Computer Graphics	
	471	Bioinformatics	se
	474	Data Mining	fe
	475	Multiagent Systems	fo
	476	Artificial Intelligence	so
	477	Cryptography & Computer Security	
	478	Machine Learning	fe
	479	Neural Networks	
	491	Internship (case by case, max 3 hours)	fssu
	496	Data and Network Security	se
	496	Self-Managing Computer Systems	fo
	496	Software Architecture	
	496	Steganography	su
498	Computer Problems (case by case, max 3 hr)	fssu	
RAIK		301,302,401,402 Design Studio	fs
ELEC	306	Electromagnetic Field Theory	fs
	417	Integrated Circuits	fs
	469	Analog Integrated Circuits	f

ACE Student Learning Outcomes

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) |

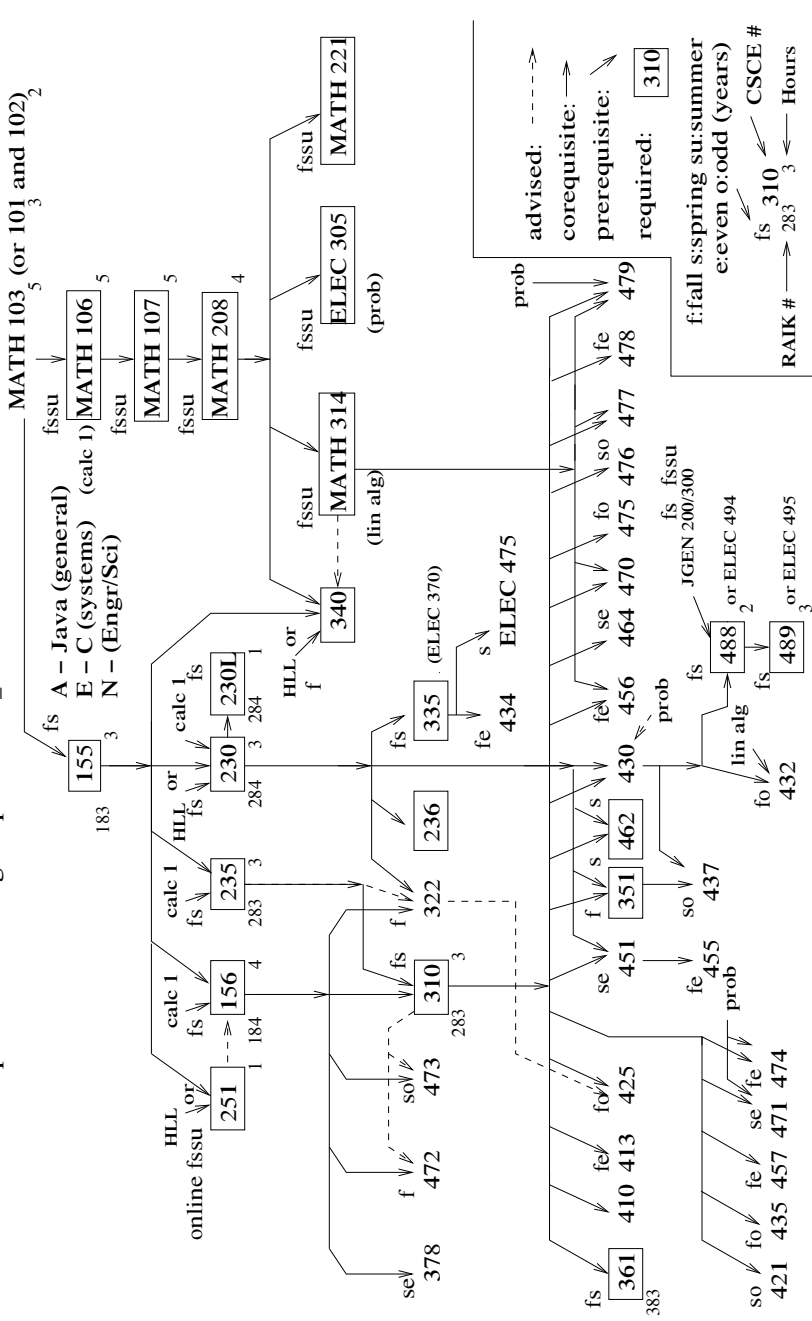
Example Eight Semester Schedule - 126 hrs

Fall 1					Spring 1			
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
			<u>15</u>		PHYS	212	Gen Phys II	4
								<u>17</u>
Fall 2					Spring 2			
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					<u>16</u>
			<u>16</u>					
Fall 3					Spring 3			
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		ELEC	361	Adv Elec	3
		free elec	3					<u>15</u>
			<u>17</u>					
Fall 4					Spring 4			
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
			<u>14</u>					<u>15</u>

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/>

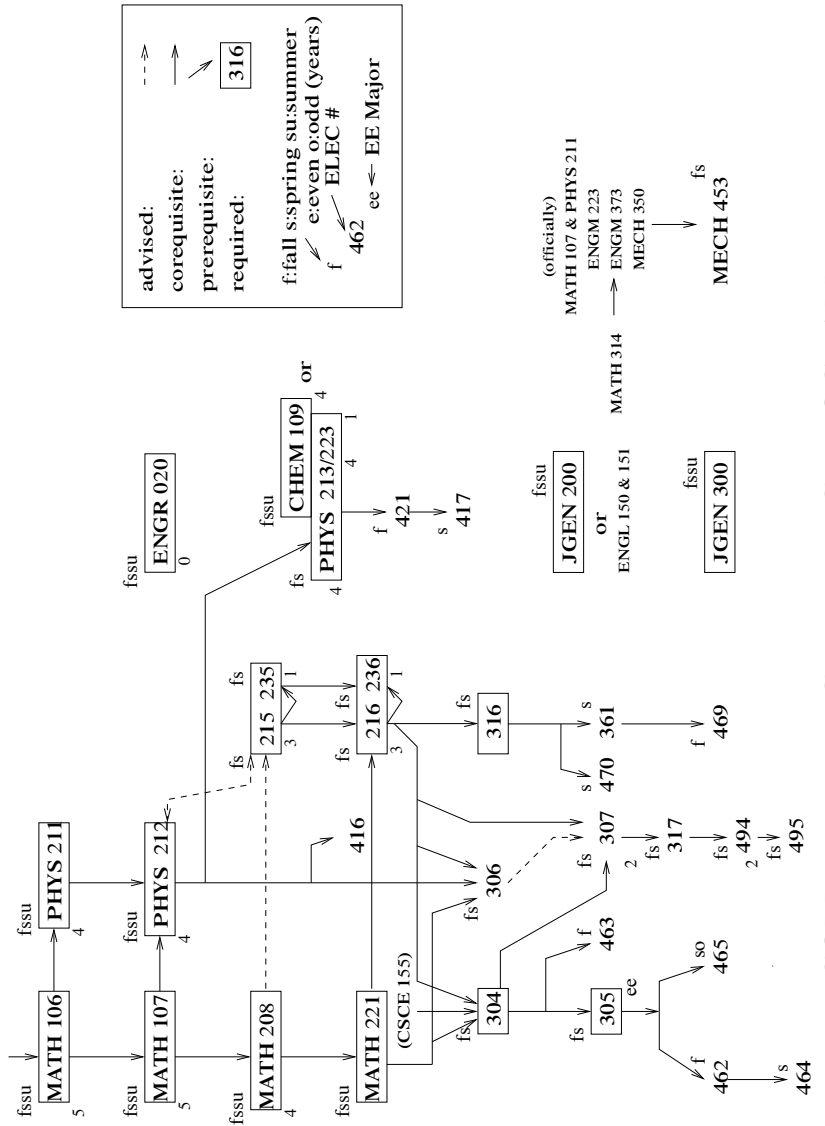
Placement test: http://cse.unl.edu/ugrad/placement_exam.shtml



COMPUTER ENGINEERING PROGRAM

Computer Science & Engineering and Supporting Courses

rev 6/18/2011



COMPUTER ENGINEERING PROGRAM

Electrical Engineering and Supporting Courses