

UNIVERSITY OF  
**Nebraska**  
Lincoln

*Pioneering new frontiers.*

Bachelor of Science in  
**Computer Science**

Advising Brochure  
**2011 – 2012**

Department of  
**Computer Science & Engineering**  
**College of Arts & Sciences**

256 Avery Hall

info@cse.unl.edu  
<http://cse.unl.edu>

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

rev: September 30, 2011

## Computer Science Major Requirements

### Computer Science & Engineering Courses:

*up to 6 hrs P/N with permission and at least 13 hrs of 400 level CSCE (if not in Raikes School)*

Course	Title	RAIK	Hrs
CSCE 155	Introduction to Comp Sci I	183	3
CSCE 156	Introduction to Comp sci II	184	4
CSCE 230	Computer Organization	284	3
CSCE 230L	Computer Organization Lab	(284)	1
CSCE 235	Introduction to Discrete Struct	(283)	3
CSCE 251	Unix Programming		1
CSCE 310	Data Structures & Algos	283	3
CSCE 322	Programming Lang Concepts		3
CSCE 361	Intro to Software Engineering	383	3
CSCE 486	CS Professional Development	381&2	2
CSCE 487	CS Senior Design Project	402	3
CSCE 351 or 451	OS Kernels or OS Principles		3
CSCE 423 or 428	Des & An Algos or Automata		3
CSCE 3/4 _____	<i>Technical Elective</i>	301	3
CSCE 3/4 _____	<i>Technical Elective</i>	302	3
CSCE 3/4 _____	<i>Technical Elective</i>	401	3
	(Raikes only - AI or HCI)	496	<u>(3)</u>
			44

### Mathematics Courses:

MATH 106	Analytic Geom & Calculus I	5
MATH 107	Analytic Geom & Calculus II	5
MATH 314	Linear Alg (Matrix Theory)	3
STAT 380	Statistics & Applications	<u>3</u>
		16

### Natural Science Courses:

12

Must include two labs (**bold face**) from one area. Choose from the following areas:

- CHEM **109, 110, 221** or CHEM **113, 114/116**
- PHYS **211/221, 212/222, 213/223, ASTR 204/224**
- BIOS **102, 103, 109, 111, 112/112L, 206/112L, 206/205, 207**
- GEOL **101, 103, 210, 212**
- METR **200, 205, 370**
- ANTH **242/242L**

## CSCE Technical Electives

CSCE	Course Title	Frequency
<b>Informatics focus options:</b>		
410	Information Retrieval Systems	
413	Database Systems	fe
464	Internet Systems & Programming	se
470	Computer Graphics	
471	Bioinformatics	se
472	Digital Image Processing	f
473	Computer Vision	so
474	Data Mining	fe
<b>Artificial Intelligence focus options:</b>		
421	Foundations of Constraint Sat Theory	so
475	Multiagent Systems	fo
476	Artificial Intelligence	so
478	Machine Learning	fe
479	Neural Networks	
<b>Networking &amp; High-End Computing:</b>		
430	Computer Architecture (grad school def.)	s
432	High-Performance Processor Architectures	fo
434	VLSI Design	fe
435	Cluster & Grid Computing	fo
436	Advanced Embedded Systems	s
437	File & Storage Systems	so
438	Sensor Networks	fe
455	Distributed Operatings Systems	fe
456	Parallel Algorithms & Programming	fe
462	Communication Networks	s
<b>Foundations focus options:</b>		
340	Numerical Analysis	f
421	Foundations of Constraint Sat Theory	so
423	Design & Analysis of Algorithms	s
424	Computational Complexity Theory	se
428	Automata, Computation, & Formal Languages	f
477	Cryptography & Computer Security	
<b>Additional Choices:</b>		
351	Operating System Kernels	f
378	Human Computer Interaction	se
399H	Honors Thesis	fssu
425	Compiler Construction	so
451	Operating System Principles	se
457	Systems Administration	fe
491 & 498	Internship & Computer Problems	fssu

## Recent CSCE 496 Special Topics Electives

<b>Title</b>	<b>Focus Area</b>
Data and Network Security (se)	Networking & High End
Self-Managing Comp Sys (fo)	
Software Architechure (fe)	Informatics

## Math Courses as Technical Electives

MATH 428	Principles of Operations Research	s
MATH 432	Linear Optimization	fe
MATH 433	Nonlinear Optimization	so
MATH 439	Math Models in Biology	s?
MATH 441	Approximation of Functions	f?
MATH 447	Numerical Analysis II	f
MATH 450	Combinatorics	fo
MATH 452	Graph Theory	se

# Computer Science Degree Requirements

## I. Major Area of Study:

Computer Science (C or higher required in CSCE)	44
Mathematics	16
Natural Science	12
Choose 3 technical elective courses in one area for an optional “focus”!	

## II. Minor Area of Study: MATH 208 for Mathematics!

## III. ACE Student Learning Outcomes:

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

1. Written Communication (in Raikes)	3
2. Oral Communication (in Raikes)	3
3. Math & Computation (all in major)	–
4. Natural Sciences (all in major)	–
5. Humanities/History	3
6. Social Sciences (in Raikes)	3
7. Fine Arts	3
8. Ethics (all in major)	–
9. Human Diversity	3
10. Integrated Knowledge (all in major)	–

See <http://ace.unl.edu/certifiedcourses.shtml> for listing.

## IV. College Distribution (CD) Requirements:

(In addition to and distinct from ACE)

1. Written Communication (another ACE 1)	3
2. Math and Science (all in major)	–
3. Humanities/History (CLAS,ENGL,HIST,PHIL,RELG)	
– Department 1	3
– Department 2	3
4. Social Sciences (ANTH,COMM,GEOG,POLS,PSYC,SOCI)	3
5. Foreign Language 101 <sub>5</sub> , 102 <sub>5</sub> , 201 <sub>3</sub> , 202 <sub>3</sub>	0-16 *

\* 2 semesters at 200 level **or** 4 years H.S. **or** English second language.

**Total hours for graduation:** 125, of which typically 72 are in the major, 4 in the Math minor, and 33–49 in the General Studies (ACE and CD), leaving 0–16 as pure electives.

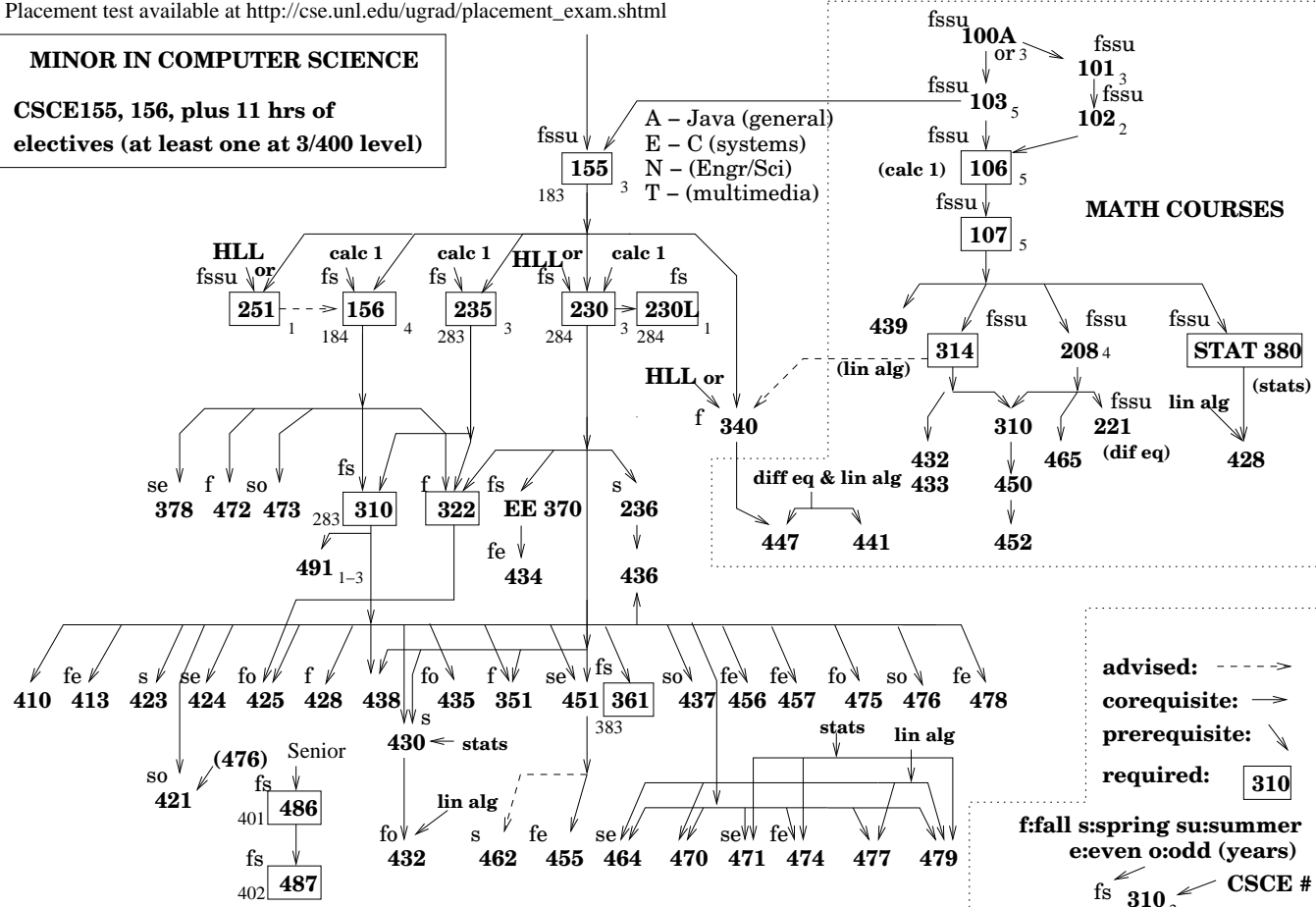
## Example Eight Semester Schedule - 125 hrs

<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
		ACE 1	3		CSCE	251	Unix	1
Lang	201	Language	3		MATH	107	Calc II	5
			14		Lang	202	Language	3
								16
<b>Fall 2</b>					<b>Spring 2</b>			
CSCE	230	Comp Org	3		CSCE	310	Algos	3
CSCE	230L	Lab	1		STAT	380	Stats	3
Elect		MATH 208?	4		MATH	314	Lin Alg	3
NatSci		(with lab)	4		NatSci		(with lab)	4
		ACE 2	3				CD 1	3
			15					16
<b>Fall 3</b>					<b>Spring 3</b>			
CSCE	322	Lang Conc	3		CSCE	3/4XX	elective	3
CSCE	361	Soft Engr	3		CSCE	3/4XX	elective	3
NatSci			4				CD 3 (1st)	3
		ACE 5	3				CD 3 (2nd)	3
		ACE 6	3				CD 4	3
			16					15
<b>Fall 4</b>					<b>Spring 4</b>			
CSCE	351	or 428	3		CSCE	423	or 451	3
CSCE	3/4XX	elective	3		CSCE	487	CS Sen Des	3
CSCE	486	CS Prof	2				ACE 9	3
		ACE 7	3		Elect		(focus?)	3
Elect		(focus?)	3		Elect		(open?)	4
Elect		(focus?)	3					16
			17					

For assistance with general college requirements, contact the  
*Arts & Sciences Advising Center*, 107 Oldfather Hall, 472-4190,  
<http://ascweb.unl.edu/advise.html>

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

**MINOR IN COMPUTER SCIENCE**  
**CSCE155, 156, plus 11 hrs of**  
**electives (at least one at 3/400 level)**



advised: - - - ->  
 corequisite: <- - ->  
 prerequisite: <- ->  
 required: [ 310 ]

f:fall s:spring su:summer  
 e:even o:odd (years)  
 fs 310 ← CSCE #  
 Raik # → 283<sub>3</sub> ← hours

**COMPUTER SCIENCE PROGRAM**  
**Computer Science & Engineering**  
**and Supporting Courses**