

UNIVERSITY OF  
**Nebraska**  
Lincoln

*Pioneering new frontiers.*

Bachelor of Science in  
**Computer Science**

Advising Brochure  
**2009 – 2010**

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

256 Avery Hall

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<http://cse.unl.edu>

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## 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	4
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>
			<u>45</u>

### 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, 255, 351**
- 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	
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	s
432	High-Performance Processor Architectures	fo
434	VLSI Design	fo
435	Cluster & Grid Computing	fo
437	File & Storage Systems	so
455	Distributed Operatings Systems	fe
456	Parallel Algorithms & Programming	fe
458	Real-Time Systems	
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	s
399H	Honors Thesis	fssu
425	Compiler Construction	s
★ 451	Operating System Principles	se
457	Systems Administration	fe
491 & 498	Internship & Computer Problems	fssu
★ <b>Deficiencies for the graduate program!</b>		

## Recent CSCE 496 Special Topics Electives

<b>Title</b>	<b>Focus Area</b>
Data and Network Security (se)	Networking & High End
Embedded Systems (s)	Networking & High End
Self-Managing Comp Sys (fo)	
Steganography	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)	45
Mathematics	16
Natural Science	12
Focus (optional)	9

The focus is earned by taking 3 courses in any one area (see page 3) in addition to all other major requirements.

### II. Minor Area of Study:

Only MATH 208 is needed for a Mathematics minor. A second minor is suggested.

### 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 (in Raikes and hopefully in major)	–
9. Human Diversity	3
10. Integrated Knowledge (all in major)	–

### IV. College Distribution (CD) Requirements:

(In addition to and distinct from ACE)

1. Written Communication	3
2. Math and Science (all in major)	–
3. Humanities/History	
– Department 1	3
– Department 2	3
4. Social Sciences	3
5. Foreign Language	0-16 *

\* Must complete 2 semesters of 200 level **or** 4 years high school **or** have English as a second language.

**Total hours for graduation:** 125, of which typically 73 are in the major, 4 in the Math minor, and 33–49 in the General Studies (ACE and CD), leaving 0–15 as pure electives.

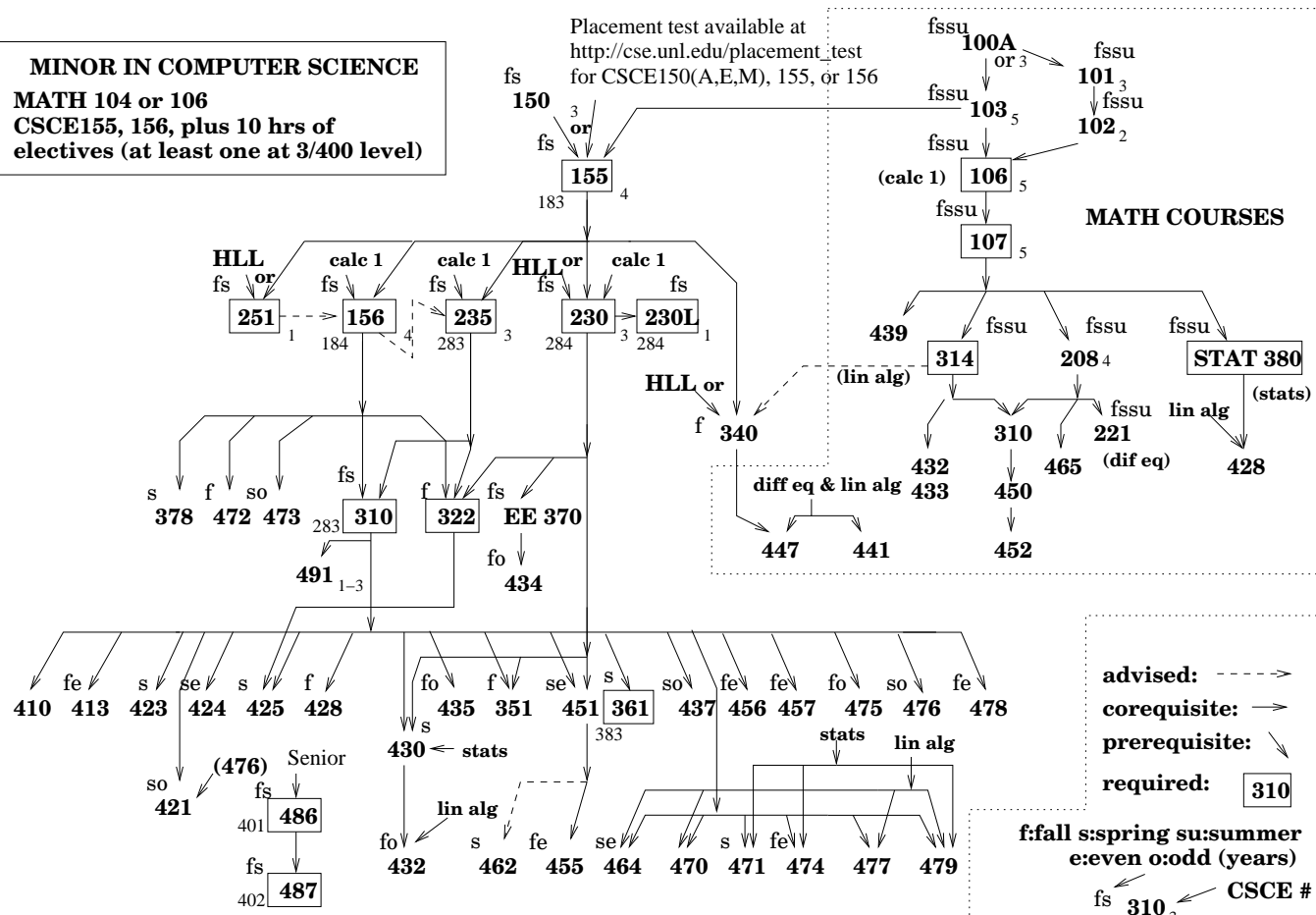
## Example Eight Semester Schedule - 125 hrs

<b>Fall 1</b>				<b>Spring 1</b>			
CSCE	155	CS I	4	CSCE	156	CS II	4
CSCE	251	Unix	1	CSCE	230	Comp Org	3
MATH	106	Calc I	5	CSCE	230L	Lab	1
		ACE 1	3	MATH	107	Calc II	5
Lang	201	Language	3	Lang	202	Language	3
			16				16
<b>Fall 2</b>				<b>Spring 2</b>			
CSCE	235	Discrete	3	CSCE	310	Algos	3
MATH	314	Matrix	3	STAT	380	Stats	3
		CD 1	3	NatSci		(with lab)	4
NatSci		(with lab)	4	Elect		MATH 208?	4
		ACE 2	3				
			16				14
<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?)	3
Elect		(focus?)	3				
			17				15

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

**MINOR IN COMPUTER SCIENCE**  
**MATH 104 or 106**  
**CSCE155, 156, plus 10 hrs of**  
**electives (at least one at 3/400 level)**

Placement test available at  
[http://cse.unl.edu/placement\\_test](http://cse.unl.edu/placement_test)  
 for CSCE150(A,E,M), 155, or 156



## COMPUTER SCIENCE PROGRAM

### Computer Science & Engineering and Supporting Courses

**advised:** - - - - ->  
**corequisite:** ->  
**prerequisite:** ↘  
**required:** [ 310 ]

**f:**fall **s:**spring **su:**summer  
**e:**even **o:**odd (years)

fs 310 ← CSCE #  
 Raik # → 283 ← hours

**HLL:** any High Level Language