UNIVERSITY OF Nebraska Lincoln

Pioneering new frontiers.

Bachelor of Science in

Computer Science

Advising Brochure

2012 − 2013

Department of

Computer Science & Engineering
College of Arts & Sciences

256 Avery Hall

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http://cse.unl.edu/advising

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

rev: June 1, 2012

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 ___	*Technical Elective*	301	3
CSCE 3/4 ___	*Technical Elective*	302	3
CSCE 3/4 ___	*Technical Elective*	401	3
	(Raikes only - HCI)	378H	(3)
			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	3
		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/**103L**, **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
Informatics focus options:		
410	Information Retrieval Systems	
413	Database Systems	fe
464	Internet Systems & Programming	
470	Computer Graphics	
471	Bioinformatics	so
472	Digital Image Processing	f
473	Computer Vision	s
474	Data Mining	fo
Artificial Intelligence focus options:		
421	Foundations of Constraint Sat Theory	so
475	Multiagent Systems	fo
476	Artificial Intelligence	se
478	Machine Learning	fe
479	Neural Networks	
Networking & High-End Computing:		
430	Computer Architecture (grad school def.)	f
432	High-Performance Processor Architectures	fo
434	VLSI Design	
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
Foundations focus options:		
340	Numerical Analysis	f
421	Foundations of Constraint Sat Theory	so
423	Design & Analysis of Algorithms	s
424	Computational Complexity Theory	fe
428	Automata, Computation, & Formal Languages	f
477	Cryptography & Computer Security	
Additional Choices:		
351	Operating System Kernels	f
378	Human Computer Interaction	s
399H	Honors Thesis	fssu
425	Compiler Construction	fe
451	Operating System Principles	s
457	Systems Administration	fe
491 & 498	Internship & Computer Problems	fssu

Recent CSCE 496 Special Topics Electives

Title	Focus Area
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

Recent Changes in the Program

Many students currently under earlier bulletin years in which ACE has been in effect (since 2009-10) may wish to switch to this new bulletin year, 2012-13. Two important changes have been made. First, the number of hours for the degree has dropped from 125. Second, the College Distribution (CD) Requirement has dropped the second course in History/Humanities, replacing it wth a broader choice from any of areas B, C, and D. Any of our required MATH courses easily covers it.

Beginning in 2013-14, there will be a new restriction placed on the choices for technical electives. At least 6 of the 15 hours will need to be in lecture-based courses. This will limit the number of internship, indedendent study, and Design Studio courses that can apply.

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)

A.	Written Communication (another ACE 1)	3
B.	Math and Science (all in major)	–
C.	Humanities/History (CLAS,ENGL,HIST,PHIL,RELG)	3
D.	Social Sciences (ANTH,COMM,GEOG,POLS,PSYC,SOCI)	3
E.	Foreign Language $101_5, 102_5, 201_3, 202_3$	0-16 $\star$
F.	Additional CD not from CSCE	–

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

Total hours for graduation: 120, of which typically 72 are in the major, 4 in the Math minor, and 27–43 in the General Studies (ACE and CD), leaving up to 17 as pure electives.

Example Eight Semester Schedule - 125 hrs

Fall 1				Spring 1			
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

Fall 2				Spring 2			
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 A	3
			15				16

Fall 3				Spring 3			
CSCE	322	Lang Conc	3	CSCE	3/4XX	elective	3
CSCE	361	Soft Engr	3	CSCE	3/4XX	elective	3
NatSci			4			CD C	3
		ACE 5	3			CD D	3
		ACE 6	3			ACE 7	3
			16				15

Fall 4				Spring 4			
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
Elect			4	Elect			4
Elect			3				13
			15				

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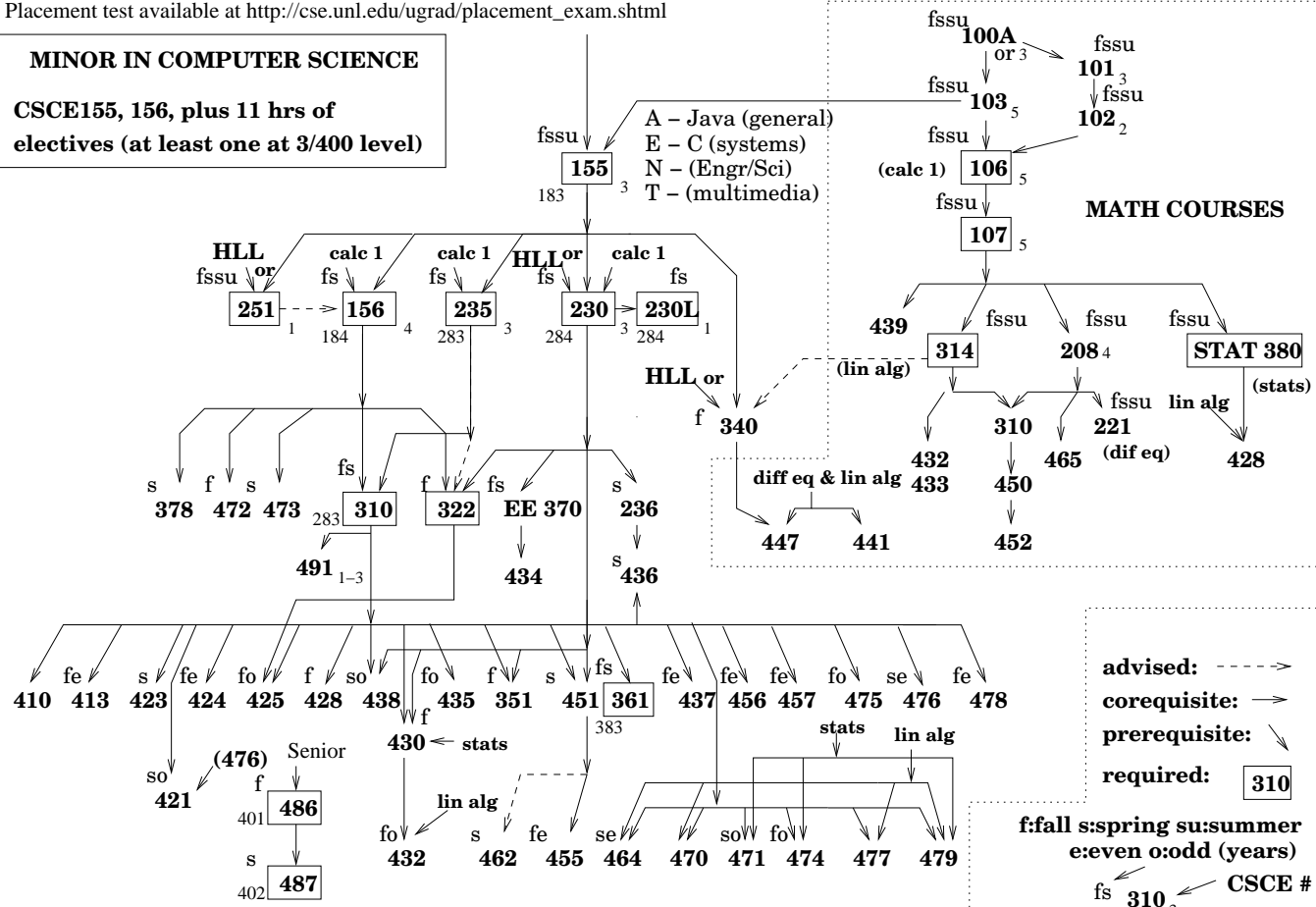For assistance with general college requirements, contact the
Arts & Sciences Advising Center, 107 Oldfather Hall, 472-4190,
http://ascweb.unl.edu/advise.html

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

MINOR IN COMPUTER SCIENCE

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

A – Java (general)
E – C (systems)
N – (Engr/Sci)
T – (multimedia)

fssu
155 3
183

fssu **100A**
or 3
fssu
101 3
fssu
102 2

fssu
fssu **103** 5

fssu
(calc 1) **106** 5

MATH COURSES

fssu
107 5

439
(lin alg)
fssu **314**
fssu **208** 4
fssu **STAT 380**
(stats)

HLL **calc 1** **calc 1** **HLL or** **calc 1**
fssu or fs fs fs fs
251 **156** **235** **230** **230L**
1 184 4 283 3 284 3 284 1

HLL or
f **340**

diff eq & lin alg

310 fssu **221** lin alg
432 **465** (dif eq) **428**
433 **450**
452

s f s fs f fs s
378 472 473 **310** **322** **EE 370** **236**
283

491 1–3
434 s **436**

fe s fe fo f so fo f s fs fe fe fe fo se fe
410 413 423 424 425 428 438 435 351 451 361 437 456 457 475 476 478
383

f
430 ← stats

so **(476)** Senior
421 f
401 **486**

fo s fe se so fo
432 462 455 464 470 471 474 477 479
lin alg
stats lin alg

s
402 **487**

advised: - - - - →
corequisite: →
prerequisite: ↘
required: **310**

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

HLL: any High Level Language

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

rev 5/31/2012