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

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

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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	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

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	3
	(CLAS,ENGL,HIST,PHIL,RELG)	
D.	Social Sciences	3
	(ANTH,COMM,GEOG,POLS,PSYC,SOCI)	
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
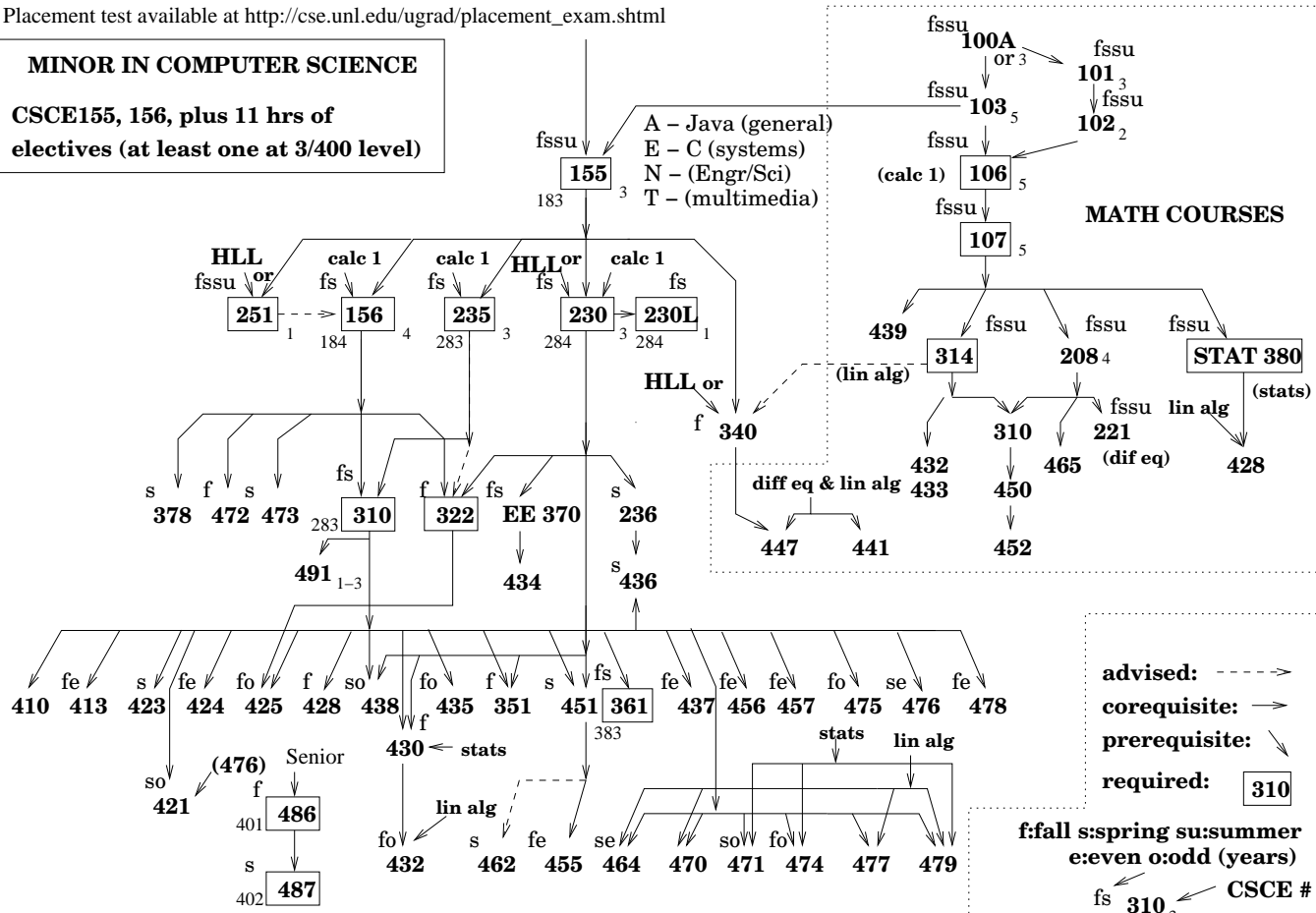For assistance with general college requirements, contact the
Arts & Sciences Advising Center, 107 Oldfather Hall, 472-4190,
http://ascweb.unl.edu/advise.html

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 **103** 5
fssu **102** 2
(calc 1) fssu **106** 5
fssu **107** 5

MATH COURSES

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

HLL or
f **340**

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

fssu **310** fssu **221** lin alg
432 **465** (dif eq) **428**
diff eq & lin alg **433** **450**
447 **441** **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 stats lin alg
421 f
401 **486** lin alg
fo s fe se so fo
s **432** **462** **455** **464** **470** **471** **474** **477** **479**
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

COMPUTER SCIENCE PROGRAM
Computer Science & Engineering
and Supporting Courses

HLL: any High Level Language

rev 5/31/2012