



# Department of Computer Science and Engineering

## **BS in Computer Science BS in Computer Engineering**

- Advising Information
- Core Curriculum
- Course Descriptions
- Degree Plan Information

UNT Discovery Park (NTDP) F201  
(940) 565-2767

[www.cse.unt.edu](http://www.cse.unt.edu)

Valid only for those on Catalog Year 2013-14

**ADVISING INFORMATION:**  
<http://www.cse.unt.edu/site/node/418>

UNIVERSITY *of* NORTH TEXAS

# Computer Science

# Computer Science

- A Minimum of 120 semester hours required for graduation.
- 42 advanced (3000-4000 level) hours required for degree (minimum of 24 must be taken at UNT).
- A minimum of 31 semester hours must be completed at UNT.

**THIS IS A SIMPLIFIED GUIDE TO SELECTING COURSES – PLEASE MEET WITH YOUR ADVISOR AND CHECK THE UNDERGRADUATE CATALOG FOR ALL COURSE OPTIONS IN EACH CATEGORY**

## Math, Science & Engineering Core

**Must earn at least a "C" in all courses and a 2.5 GPA**

### LABORATORY SCIENCES (16 Hours; 4 courses [with labs])

- PHYS 1710-1730 (4 hours) \_\_\_\_\_
- PHYS 2220-2240 (4 hours) \_\_\_\_\_
- CHEM 1410 or 1415 & lab \_\_\_\_\_
- BIOL 1710 / 1730, 1720 / 1740 \_\_\_\_\_

### MATHEMATICS (13 Hours)

- MATH 1710 – Calculus I (4 hours) \_\_\_\_\_
- MATH 1720 – Calculus II(3 hours) \_\_\_\_\_
- MATH 1780 – Probability (3 hours) \_\_\_\_\_
- MATH 2700 – Linear Algebra (3 hours) \_\_\_\_\_

### ORAL / ADVANCED WRITTEN COMMUNICATIONS (3 Hours)

- TECM 2700 \_\_\_\_\_ (satisfies second English requirement)

## CSE Department Required Courses

### COMPUTER SCIENCE

#### CSCE Required Courses (28 hours)

- CSCE 1030 – CS1 (4 Hrs) \_\_\_\_\_
- CSCE 1040 – CS2 (3 Hrs) \_\_\_\_\_
- CSCE 2100 – Foundations I (3 Hrs) \_\_\_\_\_
- CSCE 2110 – Foundations II (3 Hrs) \_\_\_\_\_
- CSCE 2610 – Comp. Org (3 Hrs) \_\_\_\_\_
- CSCE 3110 – Data Structures (3 Hrs) \_\_\_\_\_
- CSCE 3600 – Systems Prog (3 Hrs) \_\_\_\_\_
- CSCE 4010 - Ethics (3 Hrs) \_\_\_\_\_
- CSCE 4110 - Algorithms(3 Hrs) \_\_\_\_\_

#### CSCE Core Courses (9 hours)

- Choose 9 hours from CSCE 4115,4410,4430,4600,4610,4650,4999
- (3 Hours) \_\_\_\_\_ (advanced)
- (3 Hours) \_\_\_\_\_ (advanced)
- (3 Hours) \_\_\_\_\_ (advanced)

#### CSCE Breadth Courses (9 hours)

- Choose 9 hours from CSCE 3530,4210,4230,4310,4350,4444,4901
- (3 Hours) \_\_\_\_\_ (advanced)
- (3 Hours) \_\_\_\_\_ (advanced)
- (3 Hours) \_\_\_\_\_ (advanced)

#### CSCE Elective Courses (9 hours)

- Choose 9 hours of upper div. CSCE courses (not from above)
- (3 hours) \_\_\_\_\_ (advanced)
- (3 hours) \_\_\_\_\_ (advanced)
- (3 hours) \_\_\_\_\_ (advanced)

### ELECTRICAL ENGINEERING (3 Hours)

- EENG 2710 or ENGR 2720 \_\_\_\_\_ Digital Logic

### ADVANCED TECHNICAL WRITING (3 Hours)

- Any 4000 Level TECM Course. \_\_\_\_\_

### ELECTIVE COURSES

(To reach 120 Hrs with 42 Advanced Hrs.) Students should seek advanced core courses to satisfy the 45 advanced hours requirement within the 120 hour minimum.

## University Core

### ENGLISH (3 Hours)

- ENGL 1310,1311,1312, or 1313 \_\_\_\_\_
- Grade of "C" or better required
- Second English fulfilled by TECM 2700

### UNITED STATES HISTORY (6 Hours)

- HIST 2610 or 2620 \_\_\_\_\_
- HIST 4700 \_\_\_\_\_

**NOTE:** Honors equivalents or History 4700 (Texas History) or any advanced US-Topic History course(s) may substitute for either of the US History survey courses.

### POLITICAL SCIENCE (6 Hours)

- PSCI 1040 \_\_\_\_\_
- PSCI 1050 \_\_\_\_\_

**NOTE:** If you are transferring credit for either PSCI course, please check with your advisor. Do not assume that your "first" course elsewhere is the same as PSCI 1040. An out-of-state American Government course cannot be equivalent to PSCI 1040 but may be equivalent to PSCI 1050. Any advanced US- Topic Political Science course may substitute for PSCI 1050 only.

### SOCIAL AND BEHAVIORAL SCIENCES (3 Hours)

- \_\_\_\_\_

### VISUAL / PERFORMING ARTS (3 Hours)

- (MUMH 3000 or 3010 recommended) \_\_\_\_\_

### HUMANITIES (3 Hours)

- \_\_\_\_\_

### DISCOVERY (3 Hours)

- \_\_\_\_\_

### CAPSTONE (3 Hours)

CSCE 4010 Satisfies

TAKE UPPER DIVISION (3xxx & 4xxx) COURSES WHERE POSSIBLE

**NOTE: The student is required to maintain a 2.75 GPA in all upper division CSCE courses.**

#### Certificates:

CSCE 3530,4550, 4560 & pre-reqs = National Security Sys. Cert.

CSCE 4210, 4215, 4220, & 4250 = Game Programming Cert.

2<sup>nd</sup> & 3<sup>rd</sup> advanced Tech Writing = Tech Writing Certificate

Check with your advisor concerning elective courses

Max 6 hours of credit in CSCE 4890, 4920, 4940, or 4950.

In case of conflicting information, the catalog (catalog.unt.edu) prevails. This guide is for catalog year 2013-14 and does not apply to other catalog years.

# Prerequisite Structure BS in Computer Science

Special Problems / Directed Study  
See Undergraduate catalog for requirements

CSCE 4920  
Co-op      See Undergraduate catalog for requirements

CSCE 2900  
Special Problems      Elective credit only

CSCE 1010  
Intro to CS      Not for CSCE major credit

CSCE 4890      CSCE 4920

CSCE 4940      CSCE 4950

Maximum 6 hours credit in these courses

CSCE Core  
**Choose 9 hours from these courses**  
Pre-req's vary

CSCE 4600  
Intro. to Operating Sys

CSCE 4115  
Formal Languages

CSCE 4430  
Programming Languages

CSCE 4610  
Computer Architecture

CSCE 4650  
Intro Compil. Techniques

CSCE 4410  
Software Develop. I

CSCE 4999  
Senior Thesis

CSCE Electives  
**Choose 9 hours**  
Pre-req's vary

Any CSCE Upper Division (3\*\*\* or 4\*\*\*) Courses not required in another area.

CSCE Breadth  
**Choose 9 hours from these courses**  
Pre-req's vary

CSCE 4210  
Game Programming

CSCE 4444  
Software Engineering

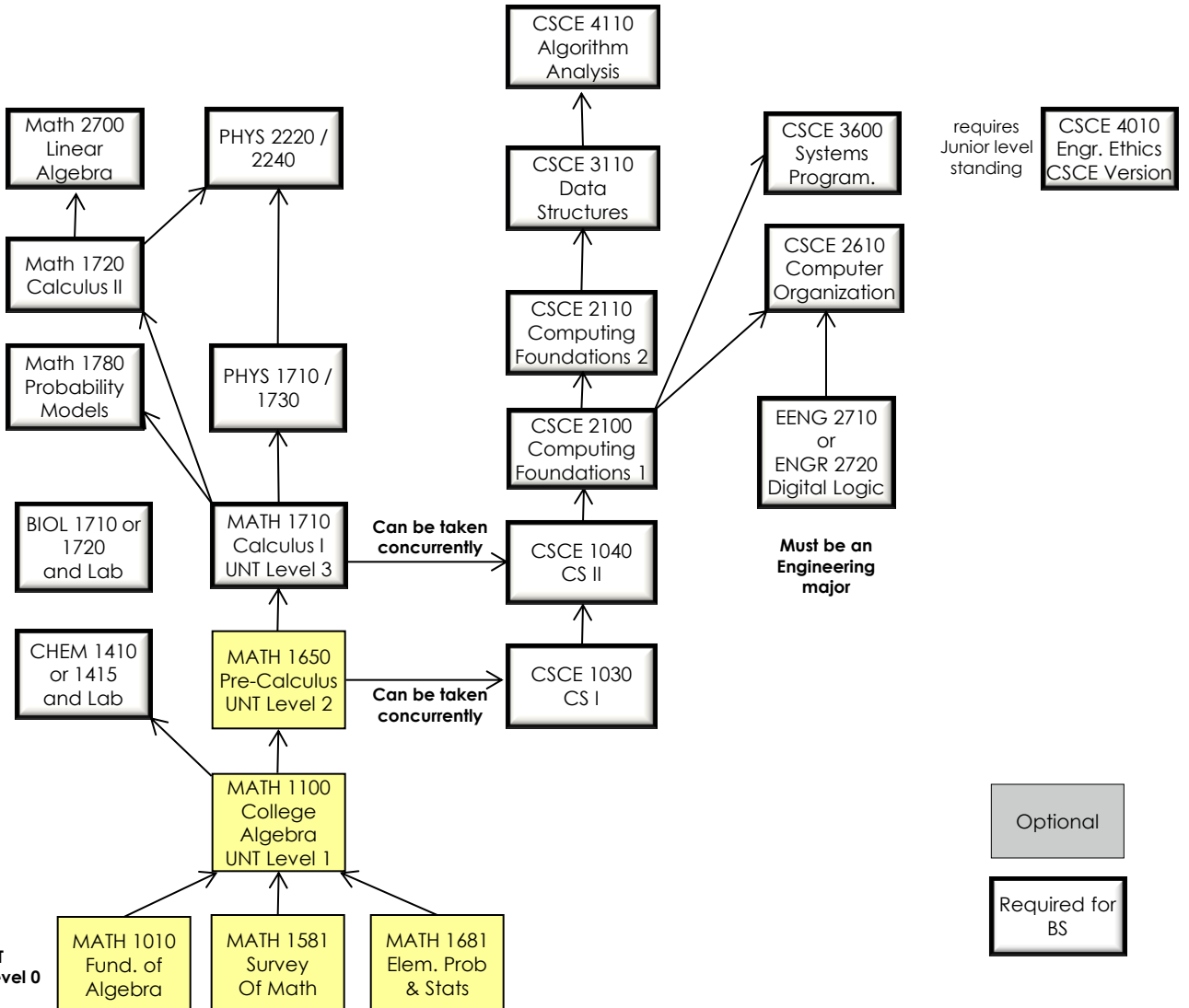
CSCE 4310  
Intro to AI

CSCE 3530  
Intro to Networks

CSCE 4230  
Computer Graphics

CSCE 4901  
CS Capstone

CSCE 4350  
Database Systems



See math department for placement before registering for your first math course

# Computer Engineering

# Computer Engineering

- A Minimum of 122 semester hours required for graduation.
- 45 advanced (3000-4000 level) hours required for degree (minimum of 24 must be taken at UNT).
- A minimum of 31 semester hours must be completed at UNT.

**THIS IS A SIMPLIFIED GUIDE TO SELECTING COURSES – PLEASE MEET WITH YOUR ADVISOR AND CHECK THE UNDERGRADUATE CATALOG FOR ALL COURSE OPTIONS IN EACH CATEGORY**

## Math, Science & Engineering Core

**Must earn at least a “C” in all courses and a 2.5 GPA**

### LABORATORY SCIENCES (12 Hours; 3 courses)

- PHYS 1710-1730 (4 hours) \_\_\_\_\_  
 PHYS 2220-2240 (4 hours) \_\_\_\_\_  
 CHEM 1410 or 1415 and lab(4 hours) \_\_\_\_\_

### MATHEMATICS (19 Hours)

- MATH 1710 – Calculus I (4 hours) \_\_\_\_\_  
 MATH 1720 – Calculus II (3 hours) \_\_\_\_\_  
 MATH 1780 - Probability (3 hours) \_\_\_\_\_  
 MATH 2700 – Linear Algebra(3 hours) \_\_\_\_\_  
 MATH 2730 – MultiVar Calc.(3 hours) \_\_\_\_\_  
 Adv. MATH or SCIENCE ELECTIVE \_\_\_\_\_

**Choose a 3000 or 4000 level course from Math, Physics, Chemistry, Biology, Geology, or Geography**

### ORAL / ADVANCED WRITTEN COMMUNICATIONS (3 Hours)

- TECM 2700 \_\_\_\_\_ (satisfies second English req.)

## CSE Department Required Courses

### COMPUTER SCIENCE and ENGINEERING

- CSC 1030 – CS1 (4 Hrs) \_\_\_\_\_  
 CSC 1040 – CS2 (3 Hrs) \_\_\_\_\_  
 CSC 2100 – Foundations I (3 Hrs) \_\_\_\_\_  
 CSC 2110 – Foundations II (3 Hrs) \_\_\_\_\_  
 CSC 2610 – Comp. Org (3 Hrs) \_\_\_\_\_  
 CSC 3010 – Signals & Sys (3 Hrs) \_\_\_\_\_ or EENG 2620  
 CSC 3020 – Comm Systems (3 Hrs) \_\_\_\_\_ or EENG 3810  
 CSC 3600 – Systems Progr (3 Hrs) \_\_\_\_\_  
 CSC 3612 – Embed Systems(3 Hrs) \_\_\_\_\_  
 CSC 3730 – Reconfig Logic (3 Hrs) \_\_\_\_\_  
 CSC 4011 – Engineering Ethics (3 Hrs) \_\_\_\_\_  
 CSC 4910 – Senior Design 1(3 Hrs) \_\_\_\_\_  
 CSC 4915 – Senior Design 2(3 Hrs) \_\_\_\_\_

- CSC Specialty Elective \_\_\_\_\_  
 CSC Specialty Elective \_\_\_\_\_  
 CSC Specialty Elective \_\_\_\_\_  
 See next page for details

- Advanced Technical Elective \_\_\_\_\_

Tech Electives may be any upper-division courses from the College of Engineering, College of Business, or the departments of Biology, Chemistry, Economics, Mathematics, or Physics. Advisor approval needed.

### ELECTRICAL ENGINEERING (9 Hours)

- EENG 2710 or ENGR 2720 \_\_\_\_\_ Digital Logic  
 EENG 3510 or ELET 3720 \_\_\_\_\_ Electronics I  
 EENG 2610 or ENGR 2405 \_\_\_\_\_ Circuit Analysis

### ELECTIVE COURSES (To reach 122 Hrs with 45 Advanced Hrs.)

It is strongly recommended that students take advanced courses in the core areas to satisfy the 45 advanced hours requirement within the 122 hour minimum.

## University Core

### ENGLISH (3 Hours)

- ENGL 1310,1311,1312, or 1313 \_\_\_\_\_  
 Grade of “C” or better is required  
 Second English fulfilled by TECM 2700

### UNITED STATES HISTORY (6 Hours)

- HIST 2610 or 2620 \_\_\_\_\_  
 HIST 4700 \_\_\_\_\_

**NOTE:** Honors equivalents or History 4700 (Texas History) or any advanced US-Topic History course(s) may substitute for either of the US History survey courses.

### POLITICAL SCIENCE (6 Hours)

- PSCI 1040 \_\_\_\_\_  
 PSCI 1050 \_\_\_\_\_

**NOTE:** If you are transferring credit for either PSCI course, please check with your advisor. Do not assume that your “first” course elsewhere is the same as PSCI 1040. An out-of-state American Government course cannot be equivalent to PSCI 1040 but may be equivalent to PSCI 1050. Any advanced US- Topic Political Science course may substitute for PSCI 1050 only.

### SOCIAL AND BEHAVIORAL SCIENCES (3 Hours)

- \_\_\_\_\_

### VISUAL / PERFORMING ARTS (3 Hours) \_\_\_\_\_ (MUMH 3000 or 3010 recommended)

### HUMANITIES (3 Hours) \_\_\_\_\_

### DISCOVERY (3 Hours) \_\_\_\_\_

### CAPSTONE (3 Hours) \_\_\_\_\_ CSC 4011 Satisfies

TAKE UPPER DIVISION (3xxx & 4xxx) COURSES WHERE POSSIBLE

**NOTE: The student is required to maintain a 2.75 GPA in all upper division CSC E courses.**

**Taking CSC 3530, CSC 4550, and CSC 4560 and pre-requisites earns a certificate in National Security Systems**

**Completing the four-course sequence CSC 4210, 4215, 4220, and 4250 earns a Certificate in Game Programming**

**Check with your advisor concerning elective courses**

**In case of conflicting information, the catalog (catalog.unt.edu) prevails. This guide is for catalog year 2013-14 and does not apply to other catalog years.**

## Computer Engineering Specialty Area Electives

### **Specialization Area: Real-time and Embedded Systems (choose 3 courses)**

ELET 3750: Digital Systems  
CSCE 4620: Real-Time Operating systems  
CSCE 4730: VLSI Design  
CSCE 4440: Real-Time Software Development  
CSCE 4610: Computer Systems Architecture  
CSCE 4890: Directed Study in a Real-Time / Embedded Topic

### **Specialization Area: VLSI and Electronics (choose 3 courses)**

CSCE 4730: VLSI Design  
CSCE 4750: VLSI Testing  
CSCE 4610: Computer Systems Architecture  
ELET 3750: Digital Systems  
PHYS 4500: Introduction to Solid State Physics  
CSCE 4890: Directed Study in a VLSI / Electronics Topic

### **Specialization Area: Communications and Networks (choose 3 courses)**

CSCE 3510: Introduction to Wireless Communication  
CSCE 3530: Introduction to Computer Networks  
CSCE 4520: Wireless Networks and Protocols  
CSCE 4530: Computer Network Design  
CSCE 4560: Secure e-Commerce  
CSCE 4550: Introduction to Computer Security  
CSCE 4890: Directed Study in a Networking Topic

### **Specialization Area: Computer Systems (choose 3 courses)**

CSCE 4650: Introduction to Compilation Techniques  
CSCE 4610: Computer Systems Architecture  
CSCE 3030: Parallel Programming  
CSCE 4600: Intro to Operating Systems  
CSCE 4620: Real-Time Operating Systems  
CSCE 4890: Directed Study in a Systems Topic

# Pre-requisite Structure BS in Computer Engineering

CSCSE 4920  
Co-op

See Undergraduate catalog for requirements

CSCSE 2900  
Special Problems

Elective credit only

CSCSE 1010  
Intro to CS

Not for CSCSE major credit

Special Problems and Topics /  
Directed Study  
See Undergraduate catalog for requirements

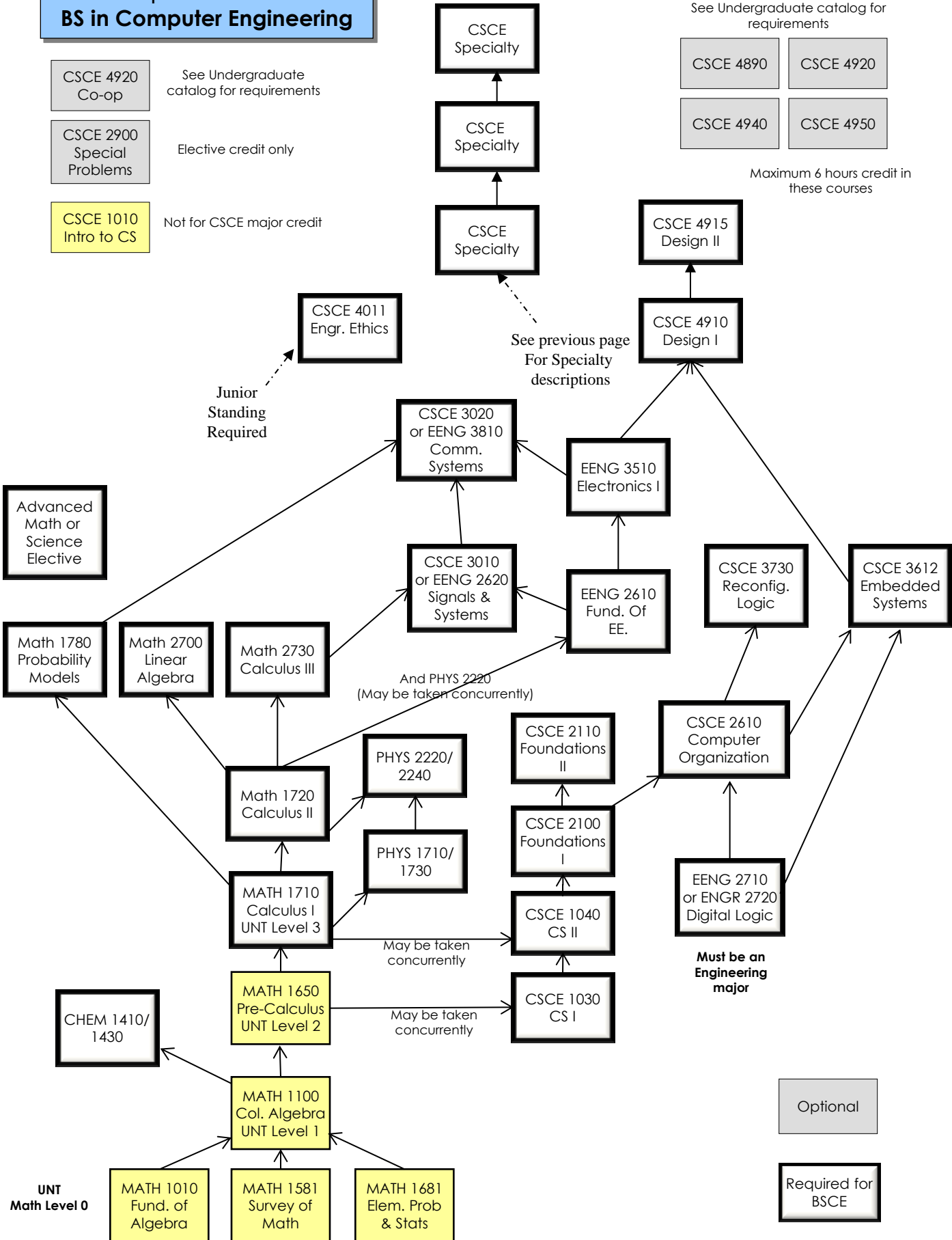
CSCSE 4890

CSCSE 4920

CSCSE 4940

CSCSE 4950

Maximum 6 hours credit in these courses



See math department for placement before registering for your first math course

## Course Offering for UNT Core Requirements

### ENGLISH COMPOSITION (3 Hours)

ENGL	1310, College Writing I
ENGL	1311, Honors Composition I
ENGL	1313, Computer Assisted College Writing I
ENGL	1315, Writing about Literature I
TECM	1312, Gram. & Comp. For International Students
TECM	1700, Intro. to Professional, Science, & Tech. Writing

### UNITED STATES HISTORY (6 Hours)

HIST	2610, US to 1865
HIST	2675, Honors US History to 1865
HIST	2620, US from 1865
HIST	2685, Honors US History from 1865
HIST	4700, Texas History Advanced (3*** or 4***) level U.S. History (Group A)

### POLITICAL SCIENCE (6 Hours)

PSCI	1040, American Government
	1041, Honors Am. Government
	1050, American Government
	1051, Honors Am. Government

### SOCIAL & BEHAVIORAL SCIENCES (3 Hours)

AGER	4560, Minority Aging
AGER	4800, Social Context of Aging
ANTH	1010, Intro. to Anthropology
ANTH	2300, Culture and Society
BEHV	2300, Behavior Principles I
CJUS	2100, Crime and Justice in the U.S.
COMM	2020, Interpersonal Comm.
DFST	1013, Human Development
EADP	4050, Special Pop. in Disasters
ECON	1100, Microeconomics
ECON	1110, Macroeconomics
HLTH	2200, Family Life & Human Sexuality
JOUR	1210, Mass Comm. & Society
MKTG	2650, Princ. of Global Marketing
PADM	2100, Diversity in Urban Gover.
PSYC	1630, General Psychology I
PSYC	1650, General Psychology II
RHAB	3100, Disability & Society
SOCI	1510, Individuals in Society
SOCI	2100, Crime & Justice in the U.S.

### VISUAL AND PERFORMING ARTS (3 Hours)

ART	1300, Art Appreciation
ART	1301, Honors Art Appreciation
ART	2350, Art History Survey I
ART	2360, Art History Survey II
COMM	2060, Performance of Literature
DANC	1200, Appreciation of Dance
DANC	2800, Survey of Dance
MUMH	1600, Music in Human Imagination
MUMH	2040, Music Appreciation
MUMH	3000, Nineteenth-Century Music
MUMH	3010, Twentieth-Century Music
THEA	1340, Aesthetics of the Theatre
THEA	2340, Theater Appreciation
THEA	3030, World Theatre to 1700
THEA	3040, World Theatre from 1700

### HUMANITIES (3 Hours)

AGER	2250, Images of Aging in Film & Lit.
ENGL	2210, World Literature I
ENGL	2211, Honors World Literature I
ENGL	2220, World Literature
ENGL	2221, Honors World Literature
ENGL	2322, British Literature to 1780
ENGL	2323, British Literature from 1780
ENGL	2327, American Literature to 1870
ENGL	2328, American Literature from 1870
FREN	3040, Adv. Reading French Culture
FREN	4070, French Culture & Lit. thru Film
FREN	4310, Contemp. French Civilization
MUET	3030, Music Cultures of the World
PHIL	1800, Philosophy of Self
PHIL	2070, Great Religions
PHIL	2100, Intro. To Judaism
PHIL	2310, Intro. To Ancient Philosophy
PHIL	2400, Religion in American Society
PHIL	2500, Contemp. Environ. Issues
PHIL	2600, Ethics in Science

### DISCOVERY (3 Hours)

ANTH	1100, World Cultures
ANTH	1150, World Cultures Through Film
ANTH	2070, Intro. to Race & Ethnic Studies
ANTH	2200, Gender Across Cultures
BCIS	3615, Visual Display of Business Info.
BIOL	1750/1755, Intro. Research Lab I & II
BUSI	1340, Managing Business Enterprise
COMM	1010, Intro. to Communication
COMM	1440, Honors Classical Argument
COMM	2040, Public Speaking
COUN	2620, Diversity & Cultural Awareness
DANC	1100, Stress Reduct. Thru Movement
DFST	2033, Parenting in Diverse Families
ENGR	1030, Technological Systems
FREN	1610, French Influence in North Am.
FREN	1620, French Language in Canada
GEOG	1170, Culture, Environment & Society
GEOG	1200, World Regional Geography
GEOG	1500, Geography of DFW Metroplex
HIST	1050, World History to 1500
HIST	1060, World History from 1500
HMGD	1450, Principles of Nutrition
HNRS	1100, The Good Society
HNRS	1500, Intro. to Research
INST	2100, Intro. to International Studies
LING	2050, Pop Culture, Tech. & Society
MDSE	2750, Consumers in a Global Market
MEEN	1000, Discover Mech. & Energy Engr.
MGMT	3330, Communicating in Business
MKTG	3010, Professional Selling
MUAG	1500, Occupational Health:
PHED	1000, Health Related Fitness
PHIL	1050, Introduction to Philosophy
PHIL	1400, Contemporary Moral Issues
PHIL	2050, Introduction to Logic
PSYC	1500, Mythbusting
RHAB	3000, Microcounseling
SOCI	2070, Race & Ethnic Relations
SOWK	4540, Human Diversity
TECM	1500, New Media for College Career
UCRS	1000, Freshman Seminar
WMST	2100, Women & Society

### CAPSTONE (3 Hours)

ELET	4790, Senior Design II
HNRS	4000, Honors Capstone Seminar
MEET	4790, Senior Design II
MUET	3020, Popular Music in Am. Culture
PHIL	3700, Science, Technology & Society
PHIL	3900, Philosophy of Food

\*Additional courses will be added for the 2012-2013 curriculum. If your degree program doesn't require a major course which double-dips for this core category, you should post-pone completing a course until the updated curriculum is released.\*

# Computer Science / Computer Engineering University of North Texas

## Transfer Student Guide

The tables below indicate the University Core, College of Engineering and Departmental course requirements that are available to take at area community colleges before transferring to UNT Denton or UNT Dallas. Courses that are taken at area community colleges after transferring to UNT Denton or UNT Dallas must be approved from a UNT advisor and may be different than what is listed on these tables.

### Core Classes

UNT Course	Title	DCCCD	CCCC	TCC	NCTC	Notes
ENGL 1310	Composition I	ENGL 1301	ENGL 1301	ENGL 1301	ENGL 1301	
TECM 2700	Technical Writing	ENGL 2311	ENGL 2311	ENGL 2311	ENGL 2311	
HIST 2610	US History I	HIST 1301	HIST 1301	HIST 1301	HIST 1301	
HIST 2620	US History II	HIST 1302	HIST 1302	HIST 1302	HIST 1302	
PSCI 1040	State and Local Govt.	GOVT 2301	GOVT 2301	GOVT 2306	GOVT 2306	
PSCI 1050	US Govt.	GOVT 2302	GOVT 2302	GOVT 2305	GOVT 2305	
Social & Behavioral Science	From approved list	From approved list	From approved list	From approved list	From approved list	
Visual/Performing Arts	From approved list	From approved list	From approved list	From approved list	From approved list	
Humanities	From approved list	From approved list	From approved list	From approved list	From approved list	
Discovery	From approved list	From approved list	From approved list	From approved list	From approved list	

Please see the College of Engineering Advisers in Discovery Park  
BEFORE enrolling in courses at another institution



College of Engineering Core  
**Grades of 'D' are not accepted**

UNT Course	Title	DCCCD	CCCC	TCC	NCTC	Notes
BIOL 1710/1730	General Biology I	BIOL 1406	BIOL 1406	BIOL 1406	BIOL 1406	
PHYS 1710/1730	Physics I – Mechanics	PHYS 2425	PHYS 2425	PHYS 2425	PHYS 2425	
PHYS 2220/2240	Physics II – Electricity and Magnetism	PHYS 2426	PHYS 2426	PHYS 2426	PHYS 2426	
CHEM 1410/1430	Gen Chemistry I	CHEM 1411	CHEM 1411	CHEM 1411	CHEM 1411	
BIOL 1720/1740	Gen Biology II	BIOL 1407	BIOL 1407	BIOL 1407	BIOL 1407	
MATH 1710	Calculus I	MATH 2413	MATH 2413	MATH 2413	MATH 2413	
CSCE 2100 or CSCE 2110 if CS2100 complete	Discrete Mathematics / Computing Foundations	MATH 2305	MATH 2305	MATH 2305	MATH 2305	

UNT Course	Title	DCCCD	CCCC	TCC	NCTC	Notes
CSCE 1030	Programming Fundamentals I	COSC 1436	COSC 1436	COSC 1436	COSC 1436	
CSCE 1040	Programming Fundamentals II	COSC 1437	COSC 1437	COSC 1437	COSC 1437	
CSCE 2100 or CSCE 2110 if CS2100 complete	Programming Fundamentals III / Computing Foundations	COSC 2436	COSC 2436	COSC 2436	COSC 2436	
CSCE 2610	Computer Organization	COSC 2425	COSC 2425	COSC 2425	COSC 2425	