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

Valid only for those on Catalog Year 2013-14

ADVISING INFORMATION:
http://www.cse.unt.edu/site/node/418
CORE CURRICULUM FOR BS IN 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, 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

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 4210, 4215, 4220, & 4250 = Game Programming Cert.
- 2nd & 3rd 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

CSCE 4110
Intro to CS
Not for CSCE major credit

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

CSCE 4115
Formal
Languages
CSCE 4430
Programming
Languages
CSCE 4650
Intro Compil.
Techniques
CSCE 4410
Software
Develop. I
CSCE 4499
Senior Thesis
CSCE 4600
Intro. to
Operating Sys
CSCE 4610
Computer
Architecture

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 4230
Computer
Graphics
CSCE 4410
Software
Develop. II
CSCE 4310
Intro to AI
CSCE 4901
CS Capstone
CSCE 4350
Database
Systems

Math 2700
Linear
Algebra
Math 1720
Calculus II
Math 1780
Probability
Models
BIOL 1710 or
1720 and Lab
CHEM 1410 or
1415 and Lab

MATH 1100
College
Algebra

MATH 1650
Pre-Calculus
UNT Level 2

MATH 1710
Calculus I
UNT Level 3

MATH 2220 / 2240
PHYS 1710 / 1730

MATH 1040
CS II

MATH 3110
Data
Structures

CSCE 4110
Algorithm
Analysis

MATH 1010
Fund. of
Algebra
MATH 1581
Survey
Of Math
MATH 1681
Elem. Prob &
Stats

CSCE 1030
CS I

EENG 2710
or
ENGR 2720
Digital Logic

CSCE 2610
Computer
Architecture

PHYS 2220 / 2240

CSCE 2900
Special
Problems
Elective credit only

Special Problems / Directed Study
See Undergraduate catalog for
requirements

CSCE 4890
CSCE 4920
CSCE 4940
CSCE 4950

Maximum 6 hours credit in
these courses

CSCE 3530
Into to
Networks

CSCE 2100
Computing
Foundations 1

CSCE 2101
Computing
Foundations 2

CSCE 2110
Computer
Organization

CSCE 3600
Systems
Program.

CSCE 4010
Engr. Ethics
CSCE Version

CSCE 4200
CSCE 4800
CSCE 4900
CSCE 4910
CSCE 4920
CSCE 4930
CSCE 4940
CSCE 4950

Optional
Required for
BS

UNT
Math Level 0

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

See Undergraduate catalog for requirements

Can be taken concurrently

Can be taken concurrently

Must be an Engineering major

requires Junior level standing

Pre-req’s vary
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

**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 – Multi Var 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**
- CSCE 1030 – CST (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 2090 – Signals & Sys (3 Hrs) or EENG 2620
- CSCE 3020 – Comm Systems (3 Hrs) or EENG 3810
- CSCE 3600 – Systems Progr (3 Hrs)
- CSCE 3612 – Embed Systems (3 Hrs)
- CSCE 3730 – Reconfig Logic (3 Hrs)
- CSCE 4011 – Engineering Ethics (3 Hrs)
- CSCE 4910 – Senior Design 1 (3 Hrs)
- CSCE 4915 – Senior Design 2 (3 Hrs)

- CSCE Specialty Elective
- CSCE Specialty Elective
- CSCE 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)
- CSCE 4011 Satisfies

TAKING UPPER DIVISION [3xxx & 4xxx] COURSES WHERE POSSIBLE

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

Taking CSCE 3530, CSCE 4550, and CSCE 4560 and prerequisites earns a certificate in National Security Systems.

Completing the four-course sequence CSCE 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

Required for BSCE
CSCE 1030 CS I
CSCE 1040 CS II
Foundations I
CSCE 2100 Foundations I
EENG 2710 or ENGR 2720 Digital Logic

Optional
CSCE 4915 Design II
CSCE 4990
CSCE 4920
CSCE 4940
CSCE 4950
CSCE 3612 Embedded Systems

Elective credit only
Not for CSCE major credit
See Undergraduate catalog for requirements

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

Maximum 6 hours credit in these courses

Advanced Math or Science Elective
Math 1780 Probability Models
Math 2700 Linear Algebra
Math 2730 Calculus III

Math 1720 Calculus II
Math 1710 Calculus I UNT Level 3
MATH 1650 Pre-Calculus UNT Level 2

MATH 1100 Col. Algebra UNT Level 1
MATH 1010 Fund. of Algebra
MATH 1581 Survey of Math
MATH 1681 Elem. Prob & Stats

CHEM 1410/1430
UNT Math Level 0
See math department for placement before registering for your first math course

CSCE 4011 Engr. Ethics
See previous page for Specialty descriptions

Junior Standing Required

CSCE 3020 or EENG 3810 Comm. Systems
CSCE 3010 or EENG 2620 Signals & Systems
EENG 3510 Electronics I
EENG 2610 Fund. Of EE.
CSCE 3730
CSCE 2900 Special Problems

CSCE 4910 Design I
CSCE 4915 Design II
CSCE 2900 Special Problems

CSCE 2110 Foundations II
CSCE 2100 Foundations I
CSCE 1040 CS II
CSCE 1030 CS I

CSCE 2610 Computer Organization
EENG 2710 or ENGR 2720 Digital Logic

Must be an Engineering major

May be taken concurrently

May be taken concurrently

(Elective credit only)
Not for CSCE major credit
See Undergraduate catalog for requirements

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

Maximum 6 hours credit in these courses

Required for BSCE

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

Maximum 6 hours credit in these courses
Course Offering for UNT Core Requirements

**ENGLISH COMPOSITION (3 Hours)**
- ENGL 1310, College Writing I
- ENGL 1311, Honors Composition
- ENGL 1313, Computer Assisted College Writing
- 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
- PSCI 1041, Honors Am. Government
- PSCI 1050, American Government
- PSCI 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 2200, Interpersonal Comm.
- DFST 1013, Human Development
- EAP 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
- HUMN 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
- BCS 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 1040, World History to 1500
- HIST 1050, World History from 1500
- HIST 1450, Principles of Nutrition
- HNS 1100, The Good Society
- HNS 1500, Intro. to Research
- INST 2100, Intro. to International Studies
- LING 2000, Pop. Culture, Tech. & Society
- MDS 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, Microcounselling
- SOCIO 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
- MUSI 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.*

Revised April 15, 2011
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

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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*

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