Texas A&M University -- College of Engineering -- Department of Computer Science & Engineering
Undergraduate Degree Plan in **Computer Science** (CPSC)

Valid for Fall 2014 Catalog (137)

COMPUTER SCIENCE [1]

CSCE 181 (1) [3]
121 (4) [3]
222 (3)
221 (4) [3]
312 (4)
314 (3)
313 (4)
315 (3)
481 (1) [2]
482 (3)

TECH ELEC (21 HRS)

CSCE 411 (3)

3 CSCE courses; one from systems, software, info. tracks (see next page)

_____ (9)

3 additional CSCE courses from upper level tracks

_____ (9)

SUPPORTING AREA
(concentration electives)

12 hours required; requires approval of advising office

_____ (3)
_____ (3)
_____ (3)
_____ (3)

MATH & STAT

MATH 151 (4) [3]
152 (4) [3]
304 (3)
MATH (3)
251 *or* 302 *or* 308

STAT 211 (3)

SCIENCE

_____ (4) [3]
_____ (4) [3]
_____ (4)
_____ (4)

AMERICAN HISTORY

HIST _____ (3) [5, 6]
HIST _____ (3) [5, 6]

GOVT/POLITICAL SCI

POLS 206 (3) [8]
POLS 207 (3) [8]

GENERAL ELECTIVE

(an extra course that could fill another degree plan category)

_____ (3)

COMMUNICATION

ENGL 104 (3) [3]

_____ (3)
One of:
ENGL 210,
COMM 203, or
COMM 205

LANG, PHIL & CULT

ENGR/ PHIL 482 (3) [7]

CREATIVE ARTS ELECTIVE

_____ (3) [5, 6]

SOC & BEHAV SCI ELECTIVE

_____ (3) [5, 6]

INTERNATIONAL AND CULTURAL DIVERSITY

_____ (3) [4]
_____ (3) [4]

TOTAL HOURS 126

NOTES:

1. Courses inside box must be completed with grade of C or better
2. CSCE 481 should be taken in the student's Junior year
3. In-major courses that should be taken first
4. Courses taken for ICD credit may be courses taken to meet another requirement
5. See http://core.tamu.edu/ for classes.
6. At least two of these classes should also be ICD if possible.
7. Writing intensive section of ENGR 482 required; transfer courses ar unlikely to meet this requirement.
8. Additional courses may be approved in the future for this requirement. See core.tamu.edu

4/19/14

CPSC Upper Level Track

Track 1: Algorithms and Theory

✓	CSCE 411	Analysis of Algorithms
( )	CSCE 433	Formal Languages and Automata
( )	CSCE 440	Quantum Algorithms
( )	CSCE 442#	Scientific Programming

Track 2: Systems

( )	CSCE 410***	Operating Systems
( )	CSCE 456#	Real-Time Computing
( )	CSCE 462	Microcomputer Systems
( )	CSCE 463	Networks & Distributed Prog.
( )	CSCE 464	Wireless and Mobile Systems
( )	CSCE 465	Computer & Network Security
( )	CSCE 469#	Advanced Computer Architecture

Track 3: Software

( )	CSCE 431	Software Engineering
( )	CSCE 432*	Programming Language Design
( )	CSCE 434	Compiler Design
( )	CSCE 435	Parallel Computing
( )	CSCE 438	Distributed Objects Programming

Track 4: Information and intelligent Systems

( )	CSCE 310**	Database Systems
( )	CSCE 420	Artificial Intelligence
( )	CSCE 436	Computer-Human Interaction
( )	CSCE 441	Computer Graphics
( )	CSCE 443	Game Development
( )	CSCE 444#	Structures of Interactive Information
( )	CSCE 445	Computers and New Media
( )	CSCE 452	Robotics and Spatial Intelligence
( )	CSCE 470	Information Storage and Retrieval

Notes:

- Students must take CSCE 411 and six additional courses from the list above.
- At least one course from each track must be taken.
- The remaining three courses can be from any track.
- The seventh course also may be from outside of the track for approved options. Options for the seventh course include CSCE 491 (independent research) or co-op/EPICS credits (co-op: ENGR 385; EPICS: ENGR 270, or 470). If co-op/EPICS credits are used exactly 3 credits are required. Fewer than 3 cannot be used and excess credits above 3 cannot be used.
- The required course CSCE 411 (Analysis of Algorithms) counts as one of the courses from the Algorithms and Theory track.
- Prerequisites will still prevail for all courses. Consult the undergraduate catalog for details.
- Approved special topics course (CSCE 489) and graduate courses may be used to fulfill these requirements; each such course will be classified with respect to the tracks; see advisor.
- *This course number is not yet finalized and may change. See the advising office.
- ***CSCE 410 taken before Spring 2009 will not fill this requirement.
- #This course is not being taught on a regular basis.

Department of Computer Science and Engineering
Dwight Look College of Engineering
Texas A&M University

Computer Science (CPSC)

Catalog 137, 2014-15

FRESHMAN YEAR

First Semester	(Th-Pr)	Cr	Second Semester	(Th-Pr)	Cr
CSCE 121 Intro. Prog. Design and Concepts	(3-2)	4	CSCE 221 Data Struct. and Algo.	(3-2)	4
CSCE 181 Intro. to Computing	(1-0)	1	CSCE 222 Discrete Struct. for Computing	(3-0)	3
ENGL 104 Comp. and Rhetoric	(3-0)	3	MATH 152 Engineering Mathematics II	(3-2)	4
MATH 151 Engineering Mathematics I	(3-2)	4	Science elective[2]		4
Science elective[2]		4			
		16			**15**

SOPHOMORE YEAR

First Semester			Second Semester		
CSCE 312 Computer Organization	(3-2)	4	CSCE 313 Intro. To Computer Systems	(3-2)	4
CSCE 314 Programming Languages	(3-0)	3	CSCE 315 Programming Studio	(2-2)	3
MATH 304 Linear Algebra	(3-0)	3	STAT 211 Principles of Statistics I	(3-0)	3
Concentration area elective[4]		3	Speech and writing skills elective[6]		3
University Core Curriculum elective[1]		3	University Core Curriculum elective[1]		3
		16			**16**

JUNIOR YEAR

First Semester			Second Semester		
CSCE 481 Seminar	(0-2)	1	Computer Science electives[7]		6
Computer Science electives[7]		6	Concentration area elective[4]		3
Concentration area elective[4]		3	Science elective[2]		4
Mathematics elective[5]		3	Elective[3]		3
Science elective[2]		4			
		17			**16**

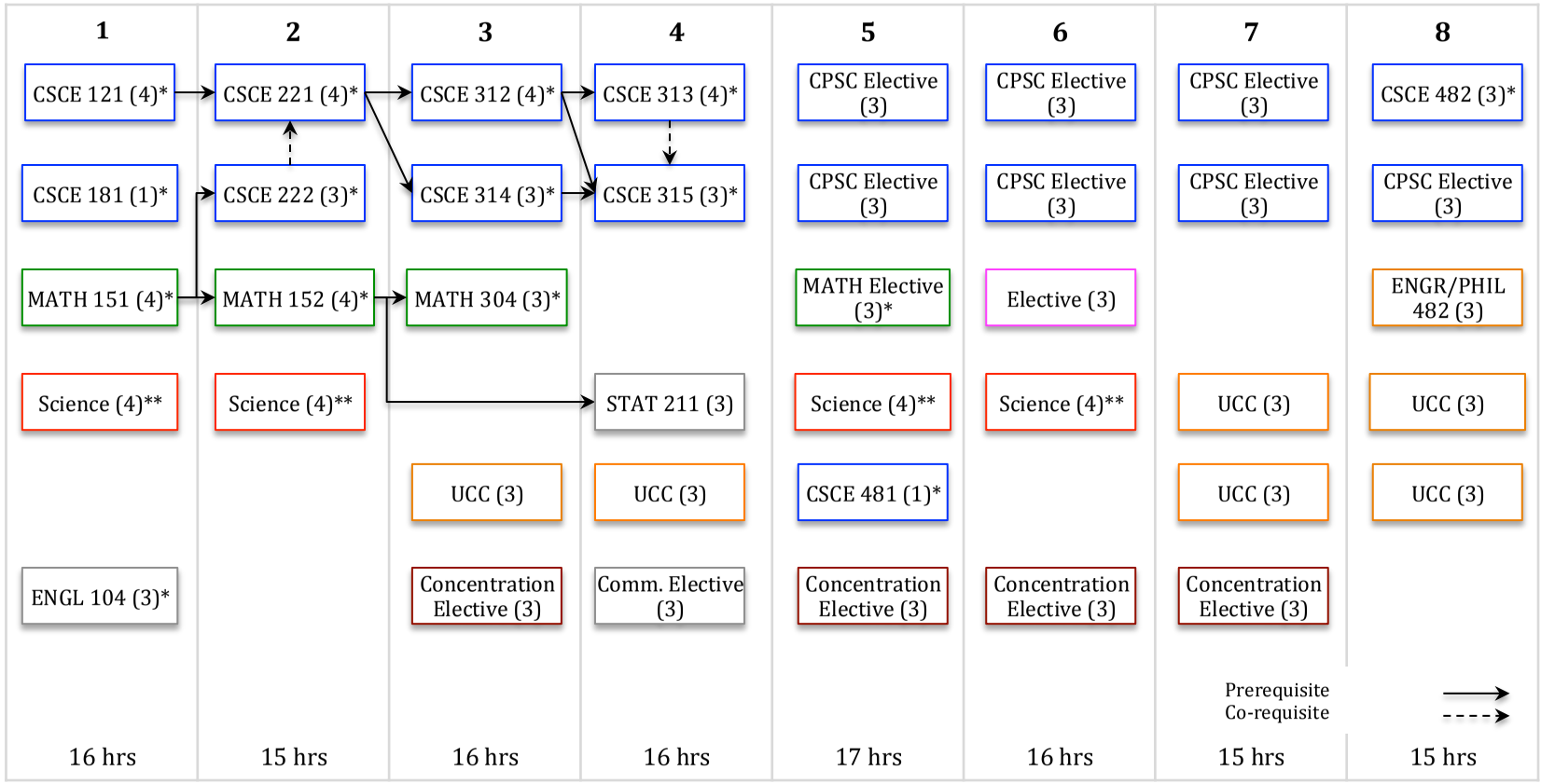
SENIOR YEAR

First Semester		Second Semester		
Computer Science electives[7]	6	CSCE 482 Senior Capstone	(1-6)	3
Concentration area elective[4]	3	ENGR 482 Ethics and Engineering	(2-2)	3
University Core Curriculum electives[1]	6	Computer Science elective[7]		3
		University Core Curriculum electives[1]		6
	15			**15**

NOTES: Grade Requirements: A grade of C or better will be required for CSCE 181, CSCE 121, CSCE 221, CSCE 222, CSCE 312, CSCE 313, CSCE 314, CSCE 315, CSCE 411, CSCE 481 and CSCE 482; MATH 151, MATH 152 and MATH 304; MATH 251 or MATH 302 or MATH 308; ENGL 104; and at least two science electives.

1. To be selected from the University Core Curriculum. Of the 18 hours shown as University Core Curriculum electives, 3 must be from creative arts, 3 from social and behavioral sciences, 6 from American history, and 6 from Government and Political Science. The required 6 hours from international and cultural diversity may be met by courses satisfying the creative arts, social and behavioral sciences, and the history requirements if they are also on the approved list of international and cultural diversity courses.
2. Science courses must be taken from two areas. See advisor for list of acceptable courses.
3. Three hours of coursework to be approved by student's advisor.
4. The concentration area should be chosen only after consultation with a departmental advisor who will help the student arrange a program appropriate to his or her plans following graduation. Students should file a degree plan before taking minor courses to ensure their use in the degree plan.
5. Mathematics elective must be selected from MATH 251 or MATH 302 or MATH 308.
6. Select from ENGL 210 or COMM 203 or COMM 205.
7. Computer science electives are to be selected from tracks. See advisor for list of acceptable course choices.

Undergraduate Degree Plan in **Computer Science (CPSC),** Catalog 137 (2014-2015)
Department of Computer Science and Engineering, College of Engineering, Texas A&M University



NOTES

- Courses marked with an asterisk (*) must be completed with grade of C or better. At least two science electives (marked with **) must be completed with a grade of C or better
- CSCE 481 should be taken in the student's junior year.
- Writing intensive section of ENGR 482 required; transfer courses must be approved.
- UCC: University core curriculum elective; 3 must be from creative arts, 3 from social and behavioral sciences, 6 from American history, and 6 from Government and Political Science.
- *Comm. Elective*: one of ENGL 210 or COMM 205 or COMM 243
- Science courses must be taken from two areas. See advisor for list of acceptable courses.
- *Elective*: Three hours of coursework to be approved by student's advisor.
- *Concentration Electives*: The concentration area should be chosen only after consultation with a departmental advisor who will help the student arrange a program appropriate to his or her plans following graduation. Students should file a degree plan before taking minor courses to ensure their use in the degree plan.
- **Additional Requirements:** 6 hrs of International and Cultural Diversity courses (can be used to satisfy another requirement).

DEGREE PLAN INSTRUCTIONS FOR COMPUTER SCIENCE MAJORS

2014-2015 Academic year

The instructions contained in this packet are to be used as a guide in preparing the Department of Computer Science and Engineering (CSCE) Degree Plan Form for the Bachelor's Degree in Computer Science (CPSC). A degree plan is required to be filed in Howdy by the student's third semester at the University.

Degree audits are produced by the Registrar's Office and can be viewed on-line at howdy.tamu.edu. The audits should be carefully reviewed by the student with his/her advisor, to determine the progress toward a degree.

Hours & Technical Electives

The total hours on the degree plan must be at least **126.** Note that the 126 hours **does not** include the two International and Cultural Diversity courses. This is because these classes can be used to satisfy both the International and Cultural Diversity requirement **and** another requirement on the degree plan—see the advising office for a list of the courses that can be used in this way. This is the **only** place where one course can be used in two places on the degree plan. **Please note that the 126 total hours do not include a required foreign language. It is the student's responsibility to meet the University's foreign language requirement.**

Comments and Observations

Before visiting the Undergraduate Advisor about a degree plan, the student should make as many decisions as possible. One problem area is transfer credits, in that it is sometimes difficult to know which courses may be used. Efforts are made to allow 'reasonable' substitutions. A student **must** submit a copy of his/her transcript evaluation along with the degree plan form if credit for transferred courses is desired. To approve courses that transfer "By Title" to TAMU documentation of the courses content, such as a catalog description, will be required.

It is the **student's responsibility** to have a degree plan meet minimum requirements. Everyone involved will check, but if a graduating senior's degree plan is not acceptable (e.g. only 125 hours), the student will not graduate.

Computer Science Courses

Thirty (30) hours of CSCE classes are required **to be passed with a grade of at least "C"** as follows: **CSCE 121-4, 181-1, 221-4, 222-3, 312-4, 313-4, 314-3, 315-3, 481-1, and 482-3. CSCE 411-3** is also required for all majors but does not require C or better. Upper division electives follow a track system; see the separate description. Other non-CSCE courses in the degree plan also require grades of C or better (14 hours of Math; 8 hours of science; ENGL 104).

Please note that courses are not necessarily taken in strict numerical order. For example, CSCE 221 requires CSCE 222 as a co-requisite; CSCE 312 and 314 are generally taken together in the semester preceding CSCE 313 and 315.

Supporting Area

Completion of the supporting field (called the "concentration area" in the online degree plan) requires 12 hours in a single area **approved by a CSCE advisor** that is not otherwise used on the major's degree plan. With certain exceptions, the supporting area classes must include 300 and 400 level classes and are generally selected from the physical sciences, engineering, mathematics, business, or liberal arts. There must be a clear connection to computing and the classes must be selected from a *single academic area*.

Here are some ***examples*** of commonly selected options. If you wish to suggest a different set of classes, see an advisor:

Math: Twelve hours beyond those used in the other parts of the CSCE degree plan are required. These 12 hours are to be selected from 400-level math electives (not including MATH 403, which cannot be used), except that at most six hours can be selected from the classes in the MATH 251, 302, 308 grouping that have not been used to fill that 3 hour degree plan requirement. CSCE 442 (when offered) can also be used here, but in this case MATH 417 cannot be used (in this case, CSCE 442 could *not* also be used as a technical elective). Note that these requirements are beyond those required by the Math minor—the Math minor does *not* provide enough credits to meet the supporting field's requirements but the supporting area *does* provide enough credits to also fill the Math minor's credits (assuming grades of C or better).

Business: Take classes towards the official Business minor. We do not require that this minor be completed but encourage students to do so as there are only two classes beyond those that can be used here in the degree plan to take. The following classes from the minor will be used to fill the supporting area requirement: ACCT 209, FINC 409, MGMT 309 and MKTG 409. MGMT 209 can be used towards the degree plan's General Elective. The remaining class needed to complete the official Business minor (ISYS 209) is not used on the Computer Science degree plan.

Art: Complete the Minor in Art offered by the Department of Visualization. The minor should follow the traditional media emphasis if the student intends to apply to the Visualization department's master's program.

Foreign languages: 12 hours of foreign language classes are allowed. A special exception is made here to allow language training classes, which generally are entirely at the 100 and 200 level. This is distinct from the degree's foreign language requirement, which usually has already been met with high school classes.

University-recognized minor: Complete an official university recognized minor in an **AREA APPROVED BY A CPSC ADVISOR.** The student will be required to complete the courses mandated by the department offering the **MINOR,** which will likely require **15+ credits** to complete. **NOT ALL OFFICIAL MINORS** can be used to complete the supporting field requirement and not all classes in approvable minors are usable. At least 12 usable credits not otherwise used on the CPSC degree plan are required for completion of the supporting field. Please note that this means that the Math minor does *not* provide enough credits to meet the supporting field requirement—additional Math classes will be required beyond the minor's requirements (see above for details about using Math courses).

Note: An official minor will be noted on your transcript; the 12 hour supporting area will not. Taking the first 12 credits of an official minor does not automatically satisfy the 12 hour requirement for the supporting area.

If you are seeking a double major or a double degree, courses from your other major are used to fill the supporting area requirement.

Mathematics and Statistics

Fourteen hours of Mathematics and three hours of Statistics are required. The courses listed inside the box must each be passed with a grade of at least "C". The elective mathematics course must be either MATH 251, 302, or 308. The choice of a supporting area often dictates this elective.

NOTE: MATH 151 has a prerequisite of algebra, trigonometry and analytical geometry and requires a sufficient grade on the math placement exam. If MATH 150, 102, 103, or 104 are taken to meet these requirements, they may not be used for credit on the degree plan's requirement of 126 hours.

Science Courses

16 hours of science coursework are required; choose from any two of the following four options. Only ONE option B may be used to satisfy this requirement.

1. Chemistry: CHEM 101/111 and 102/112
2. Physics: PHYS 218 and 208
3. Life Sciences:
    i. Option A: BIOL 111 and BIOL 112
    ii. Option B: any two of: BIOL 111, BIOL 101, BIOL 107
4. Earth Sciences:
    i. Option A: GEOL 101 and GEOL 106
    ii. Option B: any two of: GEOG 203, ATMO 201/202, RENR 205/215. Note: beginning in Fall 2014, GEOG 203/213 may be necessary to reach 4 credits.

General Elective Course

Three (3) hours of general electives are required and should be chosen after consultation with the Academic Advisors.

University Core Curriculum Courses (and other University general requirements)

Refer to core.tamu.edu for information on the core curriculum courses. The following degree-specific adjustments to the core curriculum should be noted:

Communication: the Communication requirement must be filled by taking two courses:

- ENGL 104
- One of the following: ENGL 210, COMM 203, COMM 205

Mathematics: the Mathematics requirements must be filled by the courses specified in the degree plan.

Life and Physical Sciences: the requirement must be filled by the courses specified in the degree plan.
Language, Philosophy, and Culture: the requirement must be filled by ENGR 482 (or PHIL 482), which is a required course. You must take a writing intensive section (a "900" section) of this course.

The University's core curriculum requirements are unchanged in the following areas: Creative Arts; American History; Government/Political Science; and Social and Behavioral Sciences. The International and Cultural Diversity requirement is unchanged from the University's requirements. Follow the University's instructions in these areas.

Foreign Language Requirement

Proficiency in a foreign language is also required to graduate from Texas A&M University. This requirement can be met by:

Completing two units (two full years) of high school course work in the same foreign language.

Completing two semesters (one full year) of course work at the college level in the same foreign language, or

Demonstrating proficiency in a foreign language by examination. See catalog for additional requirements under graduation requirements and Foreign Language.