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

Valid for Catalog 136 (2013-2014)

Student ID No. | Student name | Date

Student's local address | Local phone number

Student's permanent address | Permanent phone

COMPUTER SCIENCE [1]

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

CSCE 411 (3)

TECHNICAL ELECTIVES

_____ (18)

6 additional courses from upper level track (Mark on next page)

SUPPORTING AREA
(12 Hrs. required; requires approval of advising office)

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

MATH & STAT [1]

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

STAT 211 (3)

SCIENCE

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

CITIZENSHIP

HIST _____ (3)
HIST _____ (3)
POLS 206 (3)
POLS 207 (3)

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

_____ (3)

ENGL, COMM, & WRITING [1]

ENGL 104 (3) [3]

_____ (3)
One of:
ENGL 210, ENGL 301
COMM 203, or
COMM 205

HUMANITIES

ENGR/ PHIL 482 (3) [6]

VISUAL & PERFORMING ARTS ELECTIVE

_____ (3)

SOCIAL SCIENCE ELECTIVE

_____ (3)

INTERNATIONAL AND CULTURAL DIVERSITY

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

PHYSICAL EDUCATION

KINE 198 (1) [5]
KINE 199 (1) [5]

TOTAL HOURS 128

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. Grade average for CBK courses must be 2.75 or higher for upper level
4. Courses taken for diversity credit may be courses taken to meet another requirement
5. KINE 199 must be taken S/U. KINE 198 may be taken S/U.
6. Writing intensive section of ENGR 482 required; transfer courses must be approved.

Student's signature and date | Undergraduate advisor approval

Must be signed by both student and advisor to be valid

4/30/13

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.
- At least three courses from one track (of the student's choosing) must be taken.
- The seventh course can be from any track.
- 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.

COMPUTER SCIENCE UNDERGRADUATE PROGRAM
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
TEXAS A&M UNIVERSITY

CURRICULUM. The curriculum in computer science is designed to prepare students to enter into the rapidly expanding computer field. It is based upon the IEEE Computer Society and Association for Computing Machinery recommendations for curricula and courses. A major in computer science at Texas A&M University includes a 12-hour supporting field in another department of the University. This allows students to design a course of study that takes advantage of opportunities offered by other departments within the colleges of the University.

The four-year undergraduate curriculum in computer science includes a sound preparation in science, mathematics, English, statistics and computing. Students select three senior electives from twelve courses. The most popular are offered in multiple sections and semesters. Elective courses are available in the areas of: languages and compilers; software systems; computer systems and architecture; artificial intelligence and cognitive modeling; graphics and robotics; and computational science and engineering. Graduate courses in these areas may be taken by advanced undergraduates.

FACILITIES. The Department of Computer Science and Engineering has significant computer resources of its own, shares resources with other departments, and makes use of University systems. The department has 180 workstations available to students around the clock in instructional and open access laboratories and maintains numerous servers from that are available to our students. All students have access to several web servers and the department's multiprocessor computational servers. These include three multiprocessor Sun servers running Solaris and a multiprocessor Linux server running Red Hat Enterprise. In addition, each student is allocated storage on the department's 10 TB file server. Wireless network access is provided throughout the department as is remote access via VPN.

UNIVERSITY AND AREA. Texas A&M University is located in the Bryan/College Station area (population estimated in 2010 to be 211,096) and is about 100 miles north of Houston. The Bryan/College Station area has been recognized as one of the leading growth areas in the nation. A growing industrial base, excellent housing, strong public school systems, and many recreational and entertainment activities characterize the area.

Texas A&M University, a land-grant, sea-grant, and space-grant university, was established in 1876 as the state's first public institution of higher education. The campus covers 5,142 acres and is within easy driving distance of the four largest cities in Texas. Enrollment is more than 48,000 students, and Texas A&M University has one of the largest enrollments in the nation in engineering, veterinary medicine as well as architecture and environmental design.

FINANCIAL AID. Presently, the Computer Science and Engineering Department's scholarship funds are limited to returning undergraduates. The main application deadlines are in the Spring semester, although other opportunities may be announced. Additionally, there are many sources of support through the TAMU Financial Aid Office for students enrolled in Texas A&M University. Furthermore, university research projects often require the assistance of programmers, and many Computer Science students are hired to fill these jobs. The Computer Services Center hires some students as student operators, programmers, and analysts. Texas A&M University also has an active Co-operative Education Program with many openings for Computer Science students.

DEGREE PLAN INSTRUCTIONS FOR COMPUTER SCIENCE MAJORS

2013-2014 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). After the student completes filling out the degree plan **FROM** the **Web Page (http://www.cse.tamu.edu/academics/undergraduate)**, it is to be submitted to the Computer Science Undergraduate Advisor for approval. When the degree plan is approved by the Undergraduate Advisor, it will be returned to the student via an email message and a copy will be placed in the Computer Science Undergraduate Student's file in the Advising Office.

Courses in the Department of Computer Science and Engineering (CSCE) at the 300 level or above are designated as upper level courses. Students are admitted into the lower division (CPSL). On successful completion of the CBK courses, upper division standing (CPSC) needs to be requested by the student and approved by the undergraduate advisor **prior** to enrollment in upper division computer science courses. The normal way to request upper division evaluation is through the department's course force request system. Students enrolling in upper division courses who do not have a major designation of CPSC/CECN will be removed from the courses.

Degree audits are produced by the Registrar's Office and once the student is in upper division 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 **128.** Note that the 128 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 128 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 127 hours), the student will not graduate.

Computer Science Courses

Thirty (30) hours are required **and must 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. Upper division electives follow a track system; see the separate description.

Please note that courses are not necessarily taken in strict numerical order. For example, CSCE 221 requires CSCE 222 as a co-requisite.

Supporting Area

Completion of the supporting field 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.

Here are some examples of commonly selected options:

Math: Complete the required MATH sequence shown on the degree plan taking both MATH 304 and 308 (MATH 304 will be used in the degree plan and MATH 308 will be used in the supporting area). Nine (9) hours are also required from 400-level MATH electives (not including MATH 403, which is not allowed). MATH 251 can be used instead of one of those electives. CSCE 442 (when offered) can also be used instead of an elective, 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 the minor be completed but encourage students to do so as there are only one or two classes beyond those that can be used 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 "General Elective."

Art: Complete the Minor in Art offered by the Department of Visualization. The minor should follow the traditional media emphasis if the student is intended 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. At least 12 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 below).

Note: An official minor (A) will be noted on your **transcript**, the 12 hour supporting area (B) will not. Taking the first 12 credits of an official minor does not automatically satisfy the 12 hour requirement in (B).

You should consult with the CPSC advisor if you wish to explore other options.

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 304 or 308. The choice of a supporting area often dictates this elective.

NOTE: MATH 151 has a prerequisite of algebra, trigonometry and analytical geometry. 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 130 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 from the approved list from the Academic Advisors.

DIRECTED ELECTIVES

Humanities Elective Course

ENGR 482 (PHIL 482) is a required course. (You must take a writing intensive section of this class.)

Visual and Performing Arts

Three (3) hours of visual and performing arts electives must be selected from the list of College of Engineering directed electives for visual and performing arts - please refer to page 18 of the undergraduate catalog.

Social Science Elective Course

Three (3) hours of social science electives are required which must be selected from the list of College of Engineering directed electives for social science courses - please refer to Page 18 of the undergraduate catalog.

Cultural and International Diversity Courses:

Six hours (two courses) of cultural and international diversity are required. The list of courses that satisfy this requirement can be found on page 19 of the catalog. There are some courses on this list that also satisfy the social science (e.g., ANTH 210) or Visual and Performing Arts (e.g., ARTS 150) requirements. If you select such courses you may satisfy two requirements with a single course. The total of 128 hours for this degree is based on the assumption that students will choose courses that satisfy two requirements to avoid the additional six hours of course work.

Citizenship: History Courses

Six (6) hours of American history are required of which three hours may be in Texas history and three semester hours in American history, or the entire six hours may be in American history. Students in ROTC may substitute 6 hours of advanced military science courses for 3 hours of American history.

Citizenship: Political Science Courses

Six (6) credit hours of political science are required which should include **POLS 206-3** and **207-3**. Students in ROTC may substitute 6 hours of advanced military science courses for POLS 207.

Physical Education Courses

Two (2) hours of KINE courses are required. One (1) hour of **KINE 198 -- Health and Fitness** (these courses may be taken pass/fail or for a grade); and one (1) hour of **KINE 199 -- Activity** (these courses must be taken pass/fail).

English, Speech and Writing Courses

Six (6) hours of English, Speech and Writing courses are required which includes **ENGL 104-3** and one of **ENGL 210-3, 301-3**, **COMM 203-3, or 205-3**. Students transferring into the program having already taken other English courses may be allowed to use them as approved by the Undergraduate Advisor. Texas A&M University no longer teaches ENGL 210, but credit for this

class can be obtained from other institutions (ENGL 2311), so it remains on the approved list. English 104 must be passed with a grade of at least "C".

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.