UNIVERSITY of HOUSTON

COLLEGE OF NATURAL SCIENCES AND MATHEMATICS
OFFICE OF THE DEAN

RECEIVED FEB 23 2007

Replaces
UC 9058 06F

MEMORANDUM

TO: Marsha Daly, Academic Program Management
FROM: Valerie Gudell, College of Natural Sciences and Mathematics
RE: Computer Science-Business Option Proposal
DATE: February 23, 2007

APPROVED APR 18 2007

I have enclosed an updated proposal and the original document for reference (UC9058 06F) from our Computer Science Department for consideration at the next Undergraduate Council meeting. These documents and their changes have been approved by the NSM Curriculum Committee.

There are two sets of changes that the Department of Computer Science would like to make to the Computer Science-Business Option degree:

1. Change the Computer Science Business Option NSM Capstone Electives section from 9 hours to 6 hours.

2. Update the list of those courses to the following:

DISC 3380, and either DISC 4374, DISC 4379 or DISC 4478.

(The previous list of course options consisted of INDE 4333; DISC 3371, 4368, 4370, 4371, 4372, 4377, 4378 and 4379.)

The reasons they decided to make these changes are:

1. The Business Option averaged 126 hours, which is four more hours than the 122 NSM requires. They only have 18 students enrolled, and believe that this change will make the Business Option equal to the Science Option as far as the number of hours required.

2. They met with representatives from the CT Bauer College of Business and updated the list of business courses to reflect the current trends in the industry. The list currently being used was at least four years old.

Please feel free to contact me with any questions that you may have (3-2614, vgudell@uh.edu).

[redacted]
Assoc Dean
23 Feb '07

On February 14, 2007 The Computer Science Faculty has approved two additional changes to the Business Option that have minimal impact.

We kindly request the Undergraduate Council to review and approve these additional changes/additions to replace the UC 9058 06F.

The Computer Science Faculty and Curriculum Committee of NSM have reviewed and approved (a) change to existing "Science Option" and "Business Option," and (b) introduced the new "Software Design Option." We request the Undergraduate Council to review and approve these changes/additions.

Computer Science Major

Students who choose to major in computer science must meet the following requirements in addition to the special requirements for the Bachelor of Science degree:

Science Option

Requirements	Hours
Mathematics	
MATH 1431, 1432, 2431, 2433, 3336, 3338, and 3339	25
Three semester hours of approved 4000-level MATH (Designed to complete a minor in mathematics meeting the NSM Capstone requirement. **Note:** students must file for a minor and meet all university requirements for a minor.)	3
Physics	
PHYS 1321, 1322	6
Computer Science	
COSC 1410, 1320, 2320, 2410, 3320, 3430,	35

3340, 3380, 4211, 4330, and 4351	
Nine approved advanced semester hours of computer science electives	9

Business Option

Requirements	Hours
Mathematics	
MATH 1431, 1432, 2431, 3336, 3338, and 3339	21
Accounting	
ACCT 2331 and 2332	6
Electives	
Six approved advanced hours from DISC 3380 AND ONE OF 4374, or 4379, or 4478. (Satisfies NSM Capstone requirement)	6
Computer Science	
COSC 1410, 1320 , 2320, 2410, 3320, 3430, 3340, 3380, 4211, 4330, and 4351	35
Nine approved advanced semester hours of computer science electives	9

Software Design Option

Requirements	Hours
Mathematics	
MATH 1431, 1432, 2431, 3336, 3338, and	21

3339	
Computer Science	
COSC 1410, 1320, 2320, 2410, 3320, 3351, 3430, 3340, 3380, 4211, 4330, 4351, and 4352	41
Nine approved advanced semester hours of computer science electives with at least six hours of regular 3000 or 4000 level CS electives.	9

Suggested Program - Bachelor of Science in Computer Science (Systems, Science Option)

First Year

Fall Semester	**Hours**
ENGL 1303. Freshman Composition I [1]	3
HIST 1377. The United States to 1877 or equivalent	3
POLS 1336. U.S. and Texas Constitutions and Politics or equivalent	3
MATH 1431. Calculus I	4
COSC 1410. Introduction to Computer Science I	4
Total	**17**

Spring Semester	**Hours**
ENGL 1304. Freshman Composition II [1]	3
HIST 1378. The United States Since 1877 or	3

equivalent	
POLS 1337. U.S. Government: Congress, President and Courts or equivalent	3
MATH 1432. Calculus II	4
COSC 1320. Introduction to Computer Science II	3
Total	**16**

Second Year

Fall Semester	**Hours**
COSC 2320. Data Structures	3
COSC 2410. Computer Organization and Programming	4
MATH 2433. Calculus III	3
PHYS 1321. University Physics [1,6]	4
Social Sciences Core	3
Total	**17**

Spring Semester	**Hours**
COSC 3320. Algorithms and Data Structures	3
MATH 2431. Linear Algebra	4
PHYS 1322. University Physics II [1,6]	3
Social Sciences Writing Intensive Core Course	3
Total	**13**

Third Year

Fall Semester	**Hours**

COSC 3430. Computer Architecture	3
MATH 3336. Discrete Mathematics	3
MATH 3338. Probability and Statistics	3
Humanities Core Course	3
Natural Sciences Approved Course	3
Natural Science Laboratory [6]	1
Total	**16**

Spring Semester	**Hours**
COSC 3340. Introduction to Automata and Computability	3
COSC 3380. Introduction to File and Database Systems	3
COSC 4351. Fundamentals of Software Engineering	3
MATH 3339. Probability and Statistics	3
Natural Science Approved Course	3
Natural Science Laboratory [6]	1
Total	**16**

Fourth Year

Fall Semester	**Hours**
COSC 4330. Fundamentals of Operating Systems	3
Computer Science Approved Electives (3000- or 4000-level)	6
Mathematics Approved Elective (4000-level)	3
NSM Capstone, Minor, or Elective Course	3
Total	**15**

Spring Semester	Hours
COSC 4211. Computer Scientists and the Society	2
Computer Science Approved Electives (3000- or 4000-level)	3
NSM Capstone, Minor, or Elective Course	3
Visual/Performing Arts Core Course	3
Total	**11**

All students are responsible for the completion of 36 advanced semester hours required for a University of Houston degree.

Suggested Program - Bachelor of Science in Computer Science (Business Option)

First Year

Fall Semester	Hours
ENGL 1303. Freshman Composition I [1]	3
HIST 1377. The United States to 1877 or equivalent	3
MATH 1431. Calculus I	4
POLS 1336. U.S. and Texas Constitutions and Politics or equivalent	3
COSC 1410. Introduction to Computer Science I	4
Total	**17**

Spring Semester	Hours

COSC 1320. Introduction to Computer Science II	3
ENGL 1304. Freshman Composition II [1]	3
HIST 1378. The United States Since 1877 or equivalent	3
MATH 1432. Calculus II	4
POLS 1337. U.S. Government: Congress, President and Courts or equivalent	3
Total	**16**

Second Year

Fall Semester	**Hours**
COSC 2320. Data Structures	3
COSC 2410. Computer Organization and Programming	4
MATH 2431. Linear Algebra	4
Natural Science Approved Course	3
Natural Science Laboratory [6]	1
Total	**15**

Spring Semester	**Hours**
ACCT 2331. Accounting Theory I	3
COSC 3320. Algorithms and Data Structures	3
COSC 3430. Computer Architecture	4
Social Sciences Core Course	3
Natural Science Approved Course	3
Natural Science Laboratory [6]	1
Total	**17**

Third Year

Fall Semester	Hours
MATH 3336. Discrete Mathematics	3
MATH 3338. Probability and Statistics	3
COSC 3380. Introduction to File and Database Systems	3
ACCT 2332. Operational Uses of Financial Data	3
Social Sciences Writing Intensive Core Course	3
Total	**15**

Spring Semester	Hours
MATH 3339. Probability and Statistics	3
COSC 4351. Fundamentals of Software Engineering	3
COSC 3340. Introduction to Automata and Computability	3
Specialty Field [7]	3
Natural Science Approved Course	3
Total	**15**

Fourth Year

Fall Semester	Hours
COSC 4330. Fundamentals of Operating Systems	3
Computer Science Approved Electives (3000- or 4000-level)	3
Specialty Field [7]	3

Humanities Core Course	3
Natural Science Approved Course	3
Total	**15**

Spring Semester	**Hours**
COSC 4211. Computer Scientists and the Society	2
Computer Science Approved Electives (3000- or 4000-level)	6
Specialty Field [7]	3
Visual/Performing Arts Core Course	3
Total	**14**

All students are responsible for the completion of 36 advanced semester hours required for a University of Houston degree.

The program is accredited by the Computing Sciences Accreditation Commission.

Suggested Program - Bachelor of Science in Computer Science (Software Design Option)

First Year

Fall Semester	**Hours**
ENGL 1303. Freshman Composition I [1]	3
HIST 1377. The United States to 1877 or equivalent	3
POLS 1336. U.S. and Texas Constitutions and Politics or equivalent	3
MATH 1431. Calculus I	4
COSC 1410. Introduction to Computer	4

Science I	
Total	**17**

Spring Semester	**Hours**
ENGL 1304. Freshman Composition II [1]	3
HIST 1378. The United States Since 1877 or equivalent	3
POLS 1337. U.S. Government: Congress, President and Courts or equivalent	3
MATH 1432. Calculus II	4
COSC 1320. Introduction to Computer Science II	3
Total	**16**

Second Year

Fall Semester	**Hours**
COSC 2320. Data Structures	3
COSC 2410. Computer Organization and Programming	4
MATH 2431. Linear Algebra	4
Natural Science Approved Course	3
Natural Science Labaratory[6]	1
Total	**15**

Spring Semester	**Hours**
COSC 3320. Algorithms and Data Structures	3
Social Sciences Core	3
Natural Science Approved Course	3

Natural Science Labaratory[6]	1
COSC 3351. Software Design	3
Social Sciences Writing Intensive Core Course	3
Total	**16**

Third Year

Fall Semester	**Hours**
COSC 3430. Computer Architecture	3
MATH 3336. Discrete Mathematics	3
MATH 3338. Probability and Statistics	3
Humanities Core Course	3
Natural Sciences Approved Course	3
Total	**15**

Spring Semester	**Hours**
COSC 3340. Introduction to Automata and Computability	3
COSC 3380. Introduction to File and Database Systems	3
COSC 4351. Fundamentals of Software Engineering	3
MATH 3339. Probability and Statistics	3
Natural Science Approved Course	3
Total	**15**

Fourth Year

Fall Semester	**Hours**
COSC 4330. Fundamentals of Operating Systems	3

Computer Science Approved Electives (3000- or 4000-level)	6
COSC 4352. Software Development Practices	3
NSM Capstone, Minor, or Elective Course	3
Total	**15**

Spring Semester	**Hours**
COSC 4211. Computer Scientists and the Society	2
Computer Science Approved Electives (3000- or 4000-level)	3
NSM Capstone, Minor, or Elective Course	3
Visual/Performing Arts Core Course	3
Total	**11**

All students are responsible for the completion of 36 advanced semester hours required for a University of Houston degree.

COSC 4211: Computer Scientists & Society Cr. 2. (2-0).
Pre-requisite: COSC 4330 and successful completion of the university core curriculum. Introduction and discussion of issues of professional responsibility and ethics related to the use of computer technology in complex modern working environments. Emphasis on specific cases, on group discussion, and on oral presentations and written reports by students. Emphasis and evaluation on Technical Writing is included. Major Field Test is a required component of the course.

COSC3351: Software Design Cr. 3. (3-0).
Prerequisite: COSC3320. Object-oriented paradigm, classes, object relationship, software architecture, use-case analysis, object modeling technique, design metrics, software development patterns, practices, and principles. A group project may be required.

COSC4352: Software Development Practices Cr. 3. (3-0).
Prerequisite: COSC 3351 and COSC 4351. Pragmatics of software development, hands-on iterative, incremental, and agile software development team project with emphasis on

use of state of the art tools, techniques, principle and better practices. May include invited lectures from outside speakers.

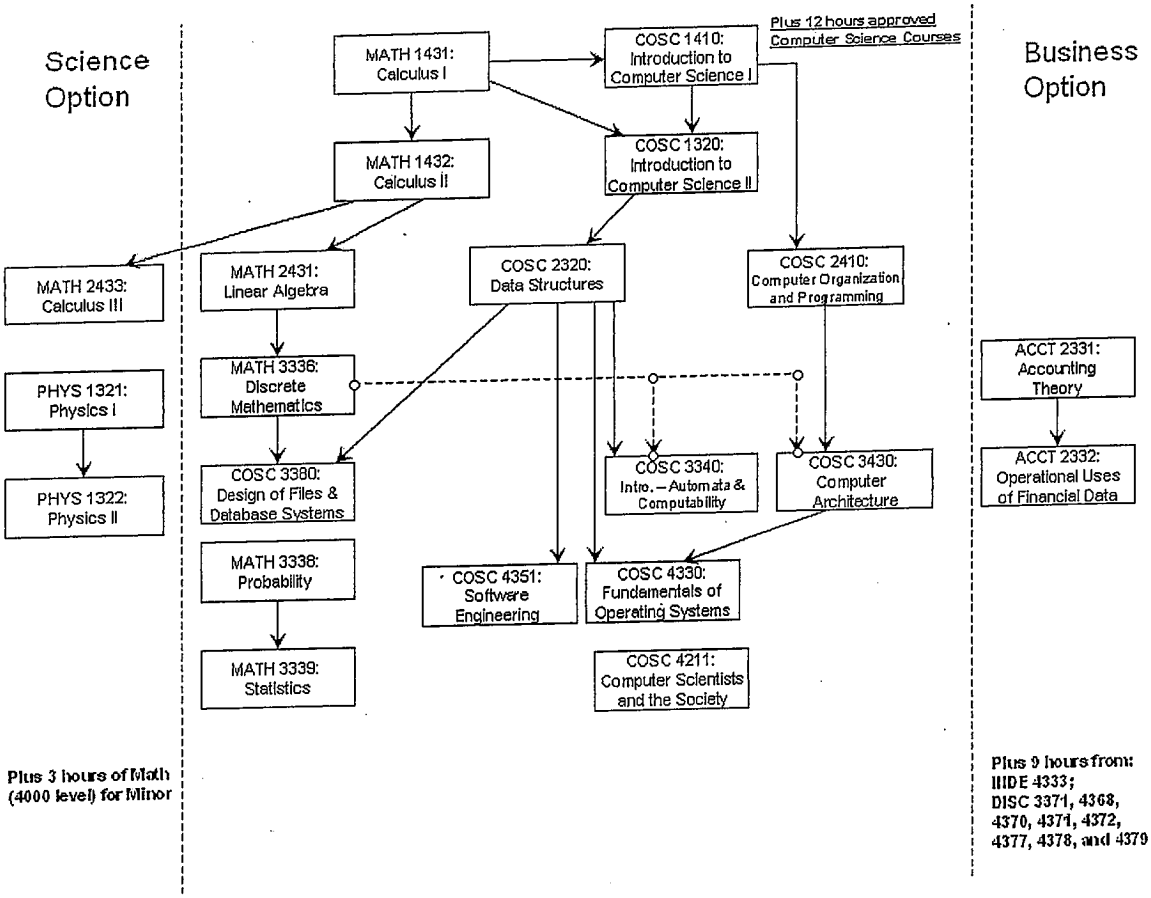
COSC3319: Web Development Cr. 3. (3-0).
Prerequisite:COSC3380. Introduction to DHTML, CSS, CGI, JavaScript, Server side programming paradigm, XML and transformation, Web Services, Service Oriented Architecture.

COSC4353: Advances in Software Development Cr. 3. (3-0).
Prerequisite: COSC 2320. COSC 3380 completed or concurrently enrolled. Selected special topics related to current trend in Software Development area. This will involve introducing students to new technology in the broad area of software development. A group project may be required.

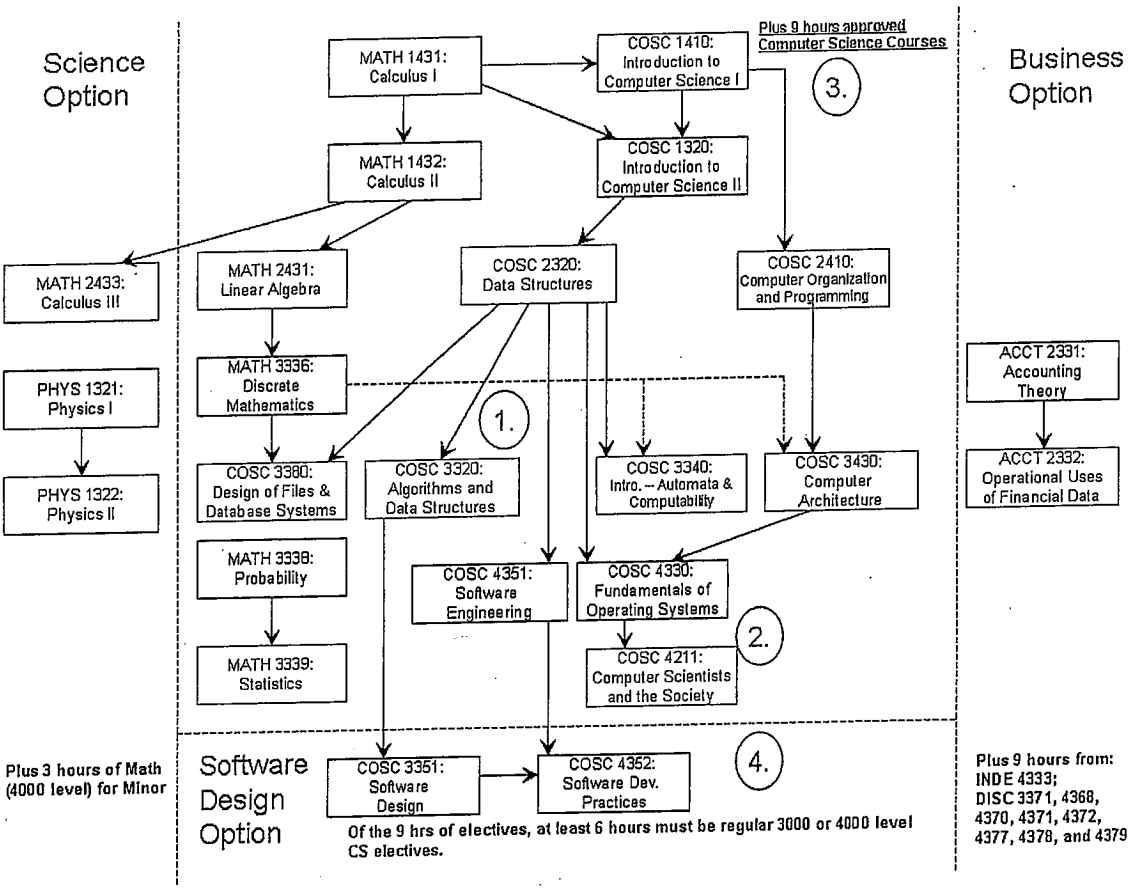
COSC3320: Algorithms and Data Structures Cr. 3. (3-0).
Prerequisite: COSC 2320. Data structures and algorithms for manipulating them. Algorithm analysis and design, heuristics; advanced tree structures; advanced hashing techniques; sorting and searching; graphs, and sets. introduction to NP-Completeness, Time and space complexities.

Other details that may be useful for review:

Current curriculum

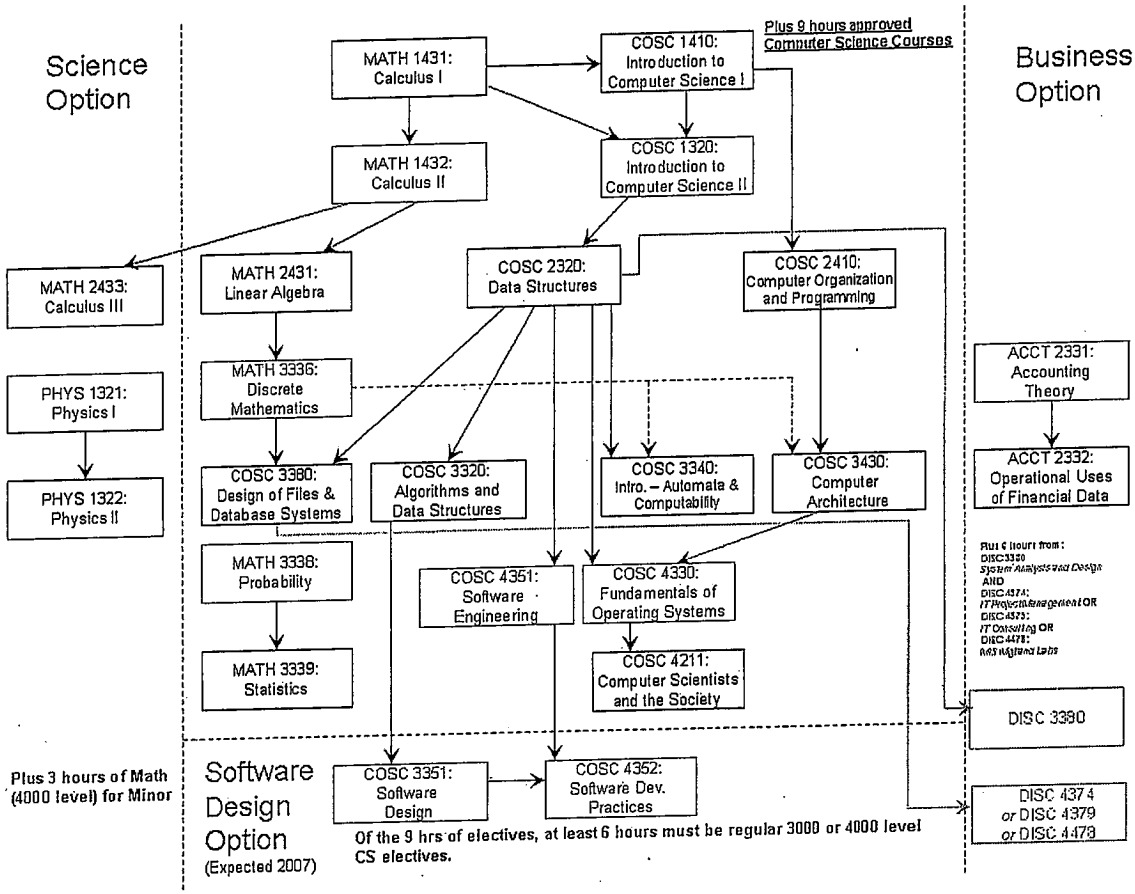

Science Option
MATH 1431: Calculus I
COSC 1410: Introduction to Computer Science I
Plus 12 hours approved Computer Science Courses
Business Option
MATH 1432: Calculus II
COSC 1320: Introduction to Computer Science II
MATH 2433: Calculus III
MATH 2431: Linear Algebra
COSC 2320: Data Structures
COSC 2410: Computer Organization and Programming
ACCT 2331: Accounting Theory
PHYS 1321: Physics I
MATH 3336: Discrete Mathematics
ACCT 2332: Operational Uses of Financial Data
PHYS 1322: Physics II
COSC 3380: Design of Files & Database Systems
COSC 3340: Intro. – Automata & Computability
COSC 3430: Computer Architecture
MATH 3338: Probability
COSC 4351: Software Engineering
COSC 4330: Fundamentals of Operating Systems
MATH 3339: Statistics
COSC 4211: Computer Scientists and the Society
Plus 3 hours of Math (4000 level) for Minor
Plus 9 hours from: IIDE 4333; DISC 3371, 4368, 4370, 4371, 4372, 4377, 4378, and 4379

Proposed Curriculum



1. Introduce COSC 3320 Algorithms and Data Structures for *all* options
2. Require students to take Major Field Test as part of 4211 for *all* options.
   Make COSC 4351 and COSC 4330 required for COSC 4211 for *all* options.
3. Reduce elective hours from 12 to 9 (due to introduction of 3320) for *all* options
4. Introduce Software Design Option

Proposed Curriculum Change to Business Option
Approved by faculty on February 14, 2007



1. Reduce the 9 hours to 6 hours.
2. Update the list of DISC courses.