

5-6-1985

Revision in Computer Science Major

The College at Brockport, College Senate

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Resolution #37, 1984-85

TO: President John E. Van de Wetering

FROM: The Faculty Senate

Meeting on May 6, 1985

(Date)

RE: X I. Formal Resolution (Act of Determination)
 II. Recommendation (Urging the fitness of)
 III. Other (Notice, Request, Report, etc.)

SUBJECT: Revision in Computer Science Major



(see attached)

Signed [Signature] Date Sent 5/8/85
(For the Senate)

Kenneth P. O'Brien, President, Faculty Senate

TO: The Faculty Senate

FROM: President John E. Van de Wetering

RE: I. Decision and Action Taken on Formal Resolution

a. Accepted. Effective Date Fall 85

b. Deferred for discussion with the Faculty Senate on _____

c. Unacceptable for the reasons contained in the attached explanation

II., III. a. Received and acknowledged

b. Comment:

DISTRIBUTION: Vice Presidents: (see attached list)

Others:

Distribution Date: 5/17/85

Signed: [Signature]

(President of the College)

Date Received by the Senate: _____

Revision of the Requirements for
the Major Program in Computer Science

Department of Mathematics and Computer Science

I. Rationale

The present Computer Science Major program is rather loosely structured. After completing the sequence of the first three required courses, CSC 203, 205 and 311, students may take almost any course from a variety of the upper-level elective courses (eighteen 400-level courses are offered regularly). As a consequence, some students may graduate without understanding important concepts of computer organization or they may lack in-depth knowledge of data structures. We find it a severe deficiency of the program and propose a major program which is more structured yet flexible enough to allow students to pursue many options.

II. Major in Computer Science

For a Major in Computer Science, a student must complete the following thirty-three hours of Computer Science courses with an average grade of C or better and three hours of a corequisite Mathematics course.

(a) Core Courses (18 hours)

CSC 203 Fundamentals of Computer Science I
CSC 205 Fundamentals of Computer Science II
CSC 311 Assembly Language Programming
CSC 406 Advanced Data Structures
CSC 401 Theory of Programming Languages
CSC 411 Computer Architecture

Note: CSC 203 and 205 are taken first in this order. CSC 311 and 406 are concurrently taken in the third semester of the major program, followed by CSC 401 and 411 in the fourth semester. CSC 406 is a prerequisite for both CSC 401 and 411. In addition, CSC 311 is a prerequisite for CSC 411.

(b) Elective Courses (15 hours)

At least 12 credit-hours must be selected from the 400-level Computer Science elective courses. At most six credit-hours may be taken from the courses numbered 490-499. These are independent studies, topics courses or internship courses.

(c) Corequisite (3 hours)

MTH 481 Discrete Mathematics

III. Highlight of Changes

Two courses, CSC 406 and 411, are added to the core. Currently, these are elective courses. The student will be introduced to concepts of data structures in CSC 205 as they learn advanced concepts and techniques of the language Pascal. Data structures will be discussed thoroughly in CSC 406 from a more general point of view. CSC 205 is presently the only required course on data structures. Both instructors and students find the subject too profound to cover in one course. Every Computer Science student should have some knowledge of internal organization of computers. Hence, CSC 411 Computer Architecture is in the core. This requirement will direct more students into the study of operating systems of computers which is one of the important areas of Computer Science.

CSC 481 Discrete Mathematics, cross-listed as MTH 481, is removed from the core but still required in the Major Program as a corequisite for required courses such as CSC 205 and CSC 311, and also a prerequisite for CSC 406. We believe that the core should consist of Computer Science courses only. MTH 481 will not be cross-listed as CSC 481.

Since the number of credit-hours for the core increases from 15 to 18, the number for elective courses is reduced from 18 to 15. The total number of credit-hours of Computer Science courses remains unchanged.

Restriction of language courses in the Program is still applied. One language course (from CSC 213 FORTRAN, CSC 214 COBOL, CSC 215 PL/1 and CSC 316 C) may be counted towards the 15 credit-hours of the electives but no more than one. Credits outside regularly scheduled courses such as independent studies, topics courses and internship courses are still limited to six credit-hours. Therefore, at least six credit-hours (2 courses) of the 15 hours must be selected from the 400-level regularly scheduled courses. This requires students to study in depth in a certain area of Computer Science and its applications.

The revised program strengthens students' background regardless of the option they choose, for the important basic concepts of Computer Science in both hardware and software are covered uniformly in the six core courses. In addition, students will spend at least 15 credit-hours by taking five elective courses or more to prepare for professional future in the field of their choice.

IV. Implementation

The Department intends to implement this revised program in the Fall semester 1985. The students entering Brockport as either a Freshman or a transfer student in Fall 1985 or later must complete the requirements for the revised program to obtain a baccalaureate degree in Computer Science. Students who have already been on campus are not required to follow the changes but they are strongly advised to include courses such as CSC 406 and CSC 411 in the electives to complement their Major Program.

V. Impact of the Revised Program

The revised Major Program will not require any additional resources. The two new required courses in the core have been offered as electives. The faculty resource will be used more effectively, for the success rate of students will improve due to the structured core requirements. The student and the advisor can plan a coherent program of study around the core requirements. In the revised program, it takes four consecutive semesters to complete all core requirements. However, students may take some upper-level elective courses while taking CSC 406, 401 or 411.

Transfer students from community colleges can complete the major requirements in four semesters. They typically transfer courses equivalent to our CSC 203 and 311, and one language course. Community colleges planning a new Computer Science Program are advised to include courses equivalent to our CSC 203, 205 and 311. Students coming from such a program will have no problem to complete this revised program in four semesters. In fact, it will be clearer as to which courses should be taken in the first three semesters after transferring to Brockport.

The transition from the present program to the revised one should cause neither confusion nor anxiety among students. There are already a large number of students taking CSC 411 as an elective course (2 sections are offered each Fall). Addition of CSC 406 in the core will fill in the gap between the lower-level required courses and the upper-level core courses CSC 401 and CSC 411. Furthermore with CSC 406, students are better-prepared for elective courses such as CSC 433 Computer Graphics, CSC 434 Artificial Intelligence, CSC 426 File Processing and CSC 485 Analysis of Algorithms.

All core courses will be scheduled every semester and elective courses equally proportioned between Fall and Spring semesters. Students should have no difficulty of scheduling classes.

APPENDIX 1

Present Requirements for
Major in Computer Science

For a Major in Computer Science, a student must complete the following thirty-three hours of Computer Science courses with an average grade of C or better.

(a) Core Courses (15 hours)

CSC 203 Fundamentals of Computer Science I
CSC 205 Fundamentals of Computer Science II
CSC 311 Assembly Language Programming
CSC 401 Programming Languages
CSC 481 Discrete Mathematics

(b) Elective Courses (18 hours)

At most one course chosen from CSC 213, CSC 214, and CSC 215, may be counted toward the major. At most six semester hours of courses numbered 490-499 may be counted toward the major. Otherwise, any 400-level computer science elective courses may be chosen by the student.

Revised Requirements for
Major in Computer Science

For a Major in Computer Science, a student must complete the following thirty-three hours of Computer Science courses with an average grade of C or better and three hours of a corequisite Mathematics course.

(a) Core Courses (18 hours)

CSC 203 Fundamentals of Computer Science I
CSC 205 Fundamentals of Computer Science II
CSC 311 Assembly Language Programming
CSC 406 Advanced Data Structures
CSC 401 Programming Languages
CSC 411 Computer Architecture

(b) Elective Courses (15 hours)

At least 12 credit-hours must be selected from the 400-level Computer Science elective courses. At most six credit-hours may be taken from the courses numbered 490-499. These are independent studies, topics courses or internship courses.

(c) Corequisite (3 hours)

MTH 481 Discrete Mathematics