



The Department seeks to provide each of its majors with a broad understanding of computer science. This broad understanding serves as a coherent framework in which the student can place his or her developing knowledge and technical skill. Moreover, the Department seeks to provide each student with a solid foundation in the central ideas and methods of modern computer science. It seeks to produce computer scientists who know, understand, and can apply these central ideas and methods to real problems.

Computer science is dynamic. It grows constantly. It evolves continuously. It regula

time on the student meets with the advisor to discuss course selections for the next semester and general academic progress.

Upon completion of all required coursework, Computer Science majors will be able to:

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
2. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the pr
3. Communicate effectively in a variety of professional contexts.
4. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
5. Function effectively as a member or leader of a team engaged in activities
6. Apply computer science theory and software development fundamentals to produce computing-based solutions



|           |   |             |
|-----------|---|-------------|
| COSC 4300 | Networks and Internets                  | 3 sem. hrs. |
| COSC 4360 | Computer Security                       | 3 sem. hrs. |
| COSC 4370 | Internet of Things                      | 3 sem. hrs. |
| COSC 4400 | Compiler Construction                   | 3 sem. hrs. |
| COSC 4500 | Visual Analytics                        | 3 sem. hrs. |
| COSC 4600 | Fundamentals of Artificial Intelligence | 3 sem. hrs. |
| COSC 4610 | Data Mining                             | 3 sem. hrs. |
| COSC 4800 | Principles of Database Systems          | 3 sem. hrs. |
| COSC 4820 | Ethical and Social Implications of Data | 3 sem. hrs. |

Special topics courses (COSC 4931) are also routinely offered by the faculty.

In addition, Marquette's Computer Engineering (COEN) major offers upper division electives in computer architecture, graphics, intelligent systems, and other topics. Students are normally permitted to substitute up to six credits of COEN electives toward the COSC elective requirement, but must apply for a waiver from the CS Director of Undergraduate Studies on a course by course basis.

Special 1-credit electives COSC 3870 and 3977 may be taken for credit more than once in subsequent semesters, and can accumulate towards the COSC elective total. COSC 3870 is a service learning SC elective [T#1-.63 Tm0 g0 G(-)]T#TOivl-





A student with a major in computer science needs to complete the math requirements for the minor in mathematics. There are seven additional credit hours of MATH courses including: MATH 2450, MATH 2350 (in place of MATH 2100), and one more upper division MATH elective (in addition to the MATH cognates required for the COSC major). If a COSC major decides to embark on a MATH minor after completing MATH 2100, substitutions for the MATH 2350 requirement may be allowed, but students must apply for a waiver from the CS Director of Undergraduate Studies.

A student majoring in both Computer Science and Mathematics must complete eighty credit hours of COSC and MATH courses. This total includes twenty-two additional credit hours of MATH course in addition to the 58 credit hour required of the computer science major. The required courses include: COSC 1010, 1020, 2100, 2200, 3100, 3250, 3410, 4920, 4998, and OCIE



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| <u>First Term</u>               | <u>Sem. Hrs.</u> | Freshman | <u>Second Term</u>            | <u>Sem. Hrs.</u> |
|---------------------------------|------------------|----------|-------------------------------|------------------|
| C4SC 1010                       | 1                |          | C4SC 1020                     | 1                |
| M3TH 1150                       | 1                |          | M3TH 1151                     | 1                |
| BA 2 < 1001 or BSS=1 6MCC8      | /                |          | BA 2 < 1001 or BSS=1 6MCC8    | /                |
| Aatura" Science with <aborator% | 1                |          | THB4 1001 or 0H\$< 1001 6MCC8 |                  |

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|   |                  | Freshman                      |                  |
|---|------------------|-------------------------------|------------------|
| <u>First Term</u>                             | <u>Sem. Hrs.</u> | <u>Second Term</u>            | <u>Sem. Hrs.</u> |
| C4SC 1010                                     | 1                | C4SC 1020                     | 1                |
| M3TH 1150                                     | 1                | M3TH 1151                     | 1                |
| BA 2 < 1001 or BSS=1 6MCC8                    | /                | BA 2 < 1001 or BSS=1 6MCC8    | /                |
| Aatura" Science with <aborator% <sup>11</sup> | 1                | THB4 1001 or 0H\$< 1001 6MCC8 | /                |
|   | -----            |                               | -----            |
|   | 15               |                               | 11               |

|                        |                  | Sophomore                     |                  |
|------------------------|------------------|-------------------------------|------------------|
| <u>First Term</u>      | <u>Sem. Hrs.</u> | <u>Second Term</u>            | <u>Sem. Hrs.</u> |
| C4SC 2100              | /                | C4SC /&&&1&&&                 | /                |
| C4SC 2200              | 1                | C4SC /250                     | 1                |
| M3TH 2100              | /                | DSC= 6MCC8                    | /                |
| C4 ' B 1;2; 6MCC8      | /                | 0H\$< 1001 or THB4 1001 6MCC8 | /                |
| BC4A 1001 or BC4A 110/ | /                | : + 3D 2100 or 3CC4 10/0      | /                |
|                        | -----            |                               | -----            |
|                        | 1@               |                               | 1@               |

|                   |                  | Junior                  |                  |
|-------------------|------------------|-------------------------|------------------|
| <u>First Term</u> | <u>Sem. Hrs.</u> | <u>Second Term</u>      | <u>Sem. Hrs.</u> |
| C4SC /110         | /                | C4SC /100               | /                |
| C4SC /&&&1&&&     | /                | M3TH 1D20 <sup>12</sup> | /                |
| M3TH /100         | /                |                         |                  |