

## UMBC UGC Program Changes & Other Request: Minor in Computing

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### Specifics (see instructions):

The CSEE Department proposes to offer a minor concentration in *Computing* for students in other majors with an interest in learning about computer science and how to apply computing to their discipline. The minor in Computing consists of 19 credits – 3 core computing courses (10 credits) and 3 elective courses (at least 3 credits each) taken in other disciplines. A minimum of nine credits must be at the 300 or 400 level. A minimum of six credits in the minor must be done at UMBC. To complete the minor, students must complete six courses (19 credit hours) meeting the following requirements:

- Complete CMSC 201 (any section, including the special section for non-majors), CMSC 210, and CMSC 310 each with a C or better.
- Complete three of the following elective courses: AGNG 361, ART 486, ECON 320, 421, 422, 423, PUBL 600, 604, THTR 231, 235, 237, 335, 337, ECAC 317, CMSC 304, BIOL 313, 410, 415, 428, 495, IS 202, 295, 296, 430, 460, 461, 470, MGMT 210, 310, 410, DATA 602, 603, 604, MATH 221, 341, 447, STAT 355, 433 each with a C or better.

### Rationale (see instructions):

With computing impacting most every professional field, it has become essential to provide pathways for students other than those majoring in computer science to acquire computing knowledge and skills, such as programming, computational thinking, and data analysis with computers. Virtually all employers and graduate and professional schools seek these skills in their employees or students, regardless of discipline. Academia currently leans towards approaches such as double majors or combined majors between computer science and other non-CS disciplines, commonly referred to as “CS+X” programs. These programs tend to require rigorous courses gleaned from the institutions’ courses for computer science majors. Thus, they may not meet the needs of majors in disciplines such as the social and biological sciences, humanities, and others. The proposed minor in Computing takes an alternate X+CS approach, using a three-course sequence to acquaint students with the fundamentals of computing, and three more courses showing them how to use computing in disciplinary settings. The Computing minor is providing advanced programming and data analysis opportunities without the extensive math requirements that the CMSC minor requires.

The minor in Computing is intended for students in any discipline (non-computer science, computer engineering, or information systems) who are interested in programming, computational thinking, and applying computing to their major area. The minor assists students in developing programming skills, computational thinking skills, and skills in using data and solving problems through a series of foundational courses in computing. This is followed by three electives from an approved set, which could span multiple disciplines.

Students in majors that have math requirements similar to CMSC (Calculus 2, Linear Algebra) are also encouraged to consider the CMSC minor (<https://advising.coeit.umbc.edu/computer-science-minor-requirements/>). The minor in Computing consists of 19 credits – 3 core computing courses (10 credits) and 3 elective courses (at least 3 credits each) taken in other disciplines. A minimum of nine credits must be at the 300 or 400 level. A minimum of six credits in the minor must be done at UMBC.