

NOTICE OF INTENT
REQUEST FOR ENTITLEMENT TO PLAN A NEW PROGRAM

1 Basic Information

Name of the Proposed Degree:	Bachelor of Arts in Computer Science
Institutional Setting:	College of Engineering and Applied Science University of Wisconsin-Milwaukee
Mode of delivery:	Face-to-face (traditional)
Other Required Approvals:	None.
Institutional Contact Information:	Ethan Munson, Associate Dean, CEAS munson@uwm.edu

2 Description

The College currently offers a Bachelor of Science in Computer Science. This degree program is ABET accredited and includes a comprehensive list of requirements including 65 credits of Computer Science, 13 credits of Mathematics and 12 credits of Natural Science. This program serves our students and local employers well but is too large to be combined with another major.

The proposed program is intended to permit students to combine interest in an alternate area (in humanities, arts, the professions or even natural science) with computer science in order to gain skills that increase their desirability with employers. Burning Glass (in a presentation dated May 26) found that adding software development or computer programming skills permits graduates to gain a 30+% salary premium over those without. (These two skill areas of the fourteen measured by Burning Glass achieved the largest bumps.) Their conclusion was that education should incorporate these skills even for those not in exclusive Computer Science degree programs.

Thus the proposed program will pare down the required courses to a minimum while maintaining strength in software development and computer programming, transferable skills particularly sought by employers. In particular the new program will require only half (30-33 credits) of the existing BS Computer Science program, only one mathematics course (calculus), and no science beyond University requirements. Breadth within Computer Science will be provided through the existing CompSci 150 course which surveys the whole field.

3 Resources

The new program uses existing courses and so setting up the new program will not require additional resources, until and unless enrollment increases substantially. New faculty lines will be needed as the program grows, and these lines can serve existing programs as well.

In order to encourage students to declare this major, program advisers, especially in CEAS, L&S, and PSOA will need information that can be presented. The new major

will fit nicely in UWM's "metamajor" in Business, Industry, & Applied Technology. We anticipate that existing advising resources will prove sufficient.

4 Alignment with UWM's Mission

The proposed new program fits well with UWM's "Select Mission Statement" as seen online at <https://www4.uwm.edu/discover/mission.cfm>.

In particular, UWM seeks to "develop and maintain high quality undergraduate . . . programs," "attract highly qualified students," "further academic and professional opportunities for women, minority, part-time, and financially or educationally disadvantaged students," and "provide educational leadership in meeting future social, cultural, and technological challenges."

The program that we intend to design would be crafted as a high-quality program that could attract students who wish to be challenged in two or more separate academic areas, in a way to boost the employment potential for students primarily working in arts or humanities. It is also common wisdom that these inter-disciplinary programs can attract a more diverse pool of students, not solely white, male, and middle-class.

Some Computer Science faculty report that having a more interdisciplinary skillset would be valuable, especially for applications related to the analysis of data from a variety of domains including health or environment (e.g. freshwater). Thus support for such connections would strengthen UWM's mission.

5 Need for Program

Computer Science is increasingly forming connections across the academy. A renowned Computer Scientist wrote

Computation is worldly. Its about society, markets, people, brains, behaviors, perception, emotions. Computer Science is looking outwards now. I advise my undergrad students to take as many courses as they can: Economics, biology, sociology, humanities, linguistics, psychology. —Christos Papadimitriou

We'd like to support this long-term trend.

We received market research information from both Burning Glass and EAB. As mentioned above, the Burning Glass research indicates that candidates for non-software-oriented positions receive a substantial boost in pay offers if they bring documented software skills in their application.

We contracted with EAB for a market study on the demand for a Bachelor in Arts degree in Computer Science. The EAB research team profiled 7 universities with related programs. The researchers at EAB note that although most employers don't distinguish the degrees, students with stronger and narrower technical skills prefer the full (B.S.) programs while the B.A. typically fills with those who were unable to complete the full program (typically because of lower math and science skills). Thus we feel confident that the program wouldn't simply cannibalize the existing program.

The EAB report concludes:

Administrators at the University of Wisconsin-Milwaukee should expect strong student interest in a prospective B.A. in computer science program. Administrators at all profiled institutions report increased student interest in both B.A. and B.S. computer science degrees over the past five years. Contacts attribute the growth in interest for computer science degrees as a reflection of increased demand for computer science skilled professionals in the labor market.

To our knowledge, in Wisconsin, only UW-Madison and UW-Whitewater currently offer a BA in Computer Science. The BA at Madison requires more mathematics (15 credits versus 4 credits) than the one we anticipate implementing. The BA at Whitewater (“General Emphasis”) is more similar although it requires almost 40 credits if “Discrete Structures” is included. The BA at Madison anticipates being used as an “additional major” (as we also propose) and the BA at Whitewater requires that the student complete an additional minor major (as we also propose).

Thus the state already has two programs substantially similar to our proposed program, but the market demand for software developers and related fields is anticipated to climb (already 19% percent in the four years 2013–17 and an anticipated 13% additionally in the next ten years nationally, and 28% regionally), and Milwaukee as the largest metropolitan area of the state is a particular good place to center a degree with such affinity with industry. In conclusion, we see no problem with the increased competition, all programs should be able to thrive.