

Five-year BS CS + MS Cybersecurity Proposal

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Summary

The proposed program is simply a track for our BS Computer Science students to obtain a MS Cybersecurity degree with one additional year of study by counting three graduate courses for both degrees. This is similar to our existing five-year programs in Engineering, Computer Science, Biology, and other areas. No new courses, degrees, faculty, or other resources are needed.

Program Description

This program allows a student to earn a Bachelor of Science in Computer Science and a Master of Science in Cybersecurity in five years. It is open to current undergraduate Computer Science majors, who typically apply to participate in the second semester of their sophomore year.

Participants earn the B.S. degree in the typical four-year time frame and graduate with their class. They then continue their studies in the fifth year to complete the M.S. degree. Normally, earning both degrees would take six years of full-time study. The time savings is achieved by applying three graduate courses to both degrees.

To be eligible for this program, students must have strong academic credentials: a cumulative grade point average (GPA) of at least 3.0 and a GPA of at least 3.5 in the major.

Comparison with Existing BSCS/MSCS Program

This program is based on the existing BSCS/MSCS program in which students earn the Bachelor of Science and Master of Science degrees, both in Computer Science, in five years. The proposed program is almost identical to the existing BSCS/MSCS program, and differs only in: (1) the specification of the three graduate courses taken as part of the undergraduate degree; and (2) the requirement of CSC 4900, Computer Networks, or ECE 4470, Computer Networks, as one of undergraduate elective courses.

In the existing BSCS/MSCS program, students take the two graduate courses:

CSC 8310 - Linguistics of Programming Languages
CSC 8510 - Theory of Computability

instead of two undergraduate CSC courses, and they also take a third graduate CSC elective course.

In the proposed program, students take the two graduate courses:

CSC 8301 - Design and Analysis of Algorithms
CSC 8490 - Database Systems

instead of two undergraduate CSC courses, and they also take one graduate ECE cybersecurity course.

Also, in the proposed program, students must take CSC 4900, Computer Networks, or ECE 4470, Computer Networks, as one of their undergraduate elective courses, because this course or equivalent is required for admission to the MS Cybersecurity program.

Relationship with Existing MS Cybersecurity Program

No changes are required in the existing MS Cybersecurity admission or degree requirements to accommodate students in the proposed program.

The MS Cybersecurity program has always accepted students with BS degrees in Computer Science and certain other areas. The admission requirements state:

Admission to the Master of Science in Cybersecurity degree program will be granted to qualified students who hold a bachelor's degree in Engineering, Computer Science, Mathematics, or applied sciences from an accredited and/or reputable institution, with a GPA of 3.0 or better.

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Undergraduate course prerequisite requirements include Villanova ECE 4470, Computer Networks, or equivalent.

For admission to the MS Cybersecurity program, CSC 4900 is considered equivalent to ECE 4470. And the two CSC graduate courses to be taken by undergraduate students in the proposed five-year program, CSC 8301 and CSC 8490, are approved electives in the MS Cybersecurity program.

There are existing five-year BS/MS programs in all engineering areas at Villanova, including BS/MS Computer Engineering, and BS Computer Engineering + MS Cybersecurity. The engineering MS online application process would not require any changes for the new five-year program. Students would just select the MS Cybersecurity and submit their Villanova transcript as usual. There is nothing hard-coded in the application process that refers to any particular undergraduate degree requirement.

Enrollment Analysis

Since the proposed program is open only to current undergraduate Computer Science majors, it will not change the current number of CSC majors, though in the long term it may attract more undergraduate CSC applications.

The program is expected to attract students who may have pursued the MS Cybersecurity anyway after the BS Computer Science, and will choose the five-year program as simply a faster way to obtain the same degrees.

CSC course enrollments will be redistributed slightly, since the students will substitute two CSC graduate courses for two CSC undergraduate courses, which is also true for the existing BSCS/MSCS program. Students will also substitute one MS Cybersecurity course for an undergraduate CSC elective course, which will shift a small number of enrollments from CSC electives to MS Cybersecurity courses.

Attachments

Attached are descriptions for the proposed program and the existing BSCS/MSCS and BS CPE + MS Cybersecurity programs.