

New Program Proposal

NOTE: This form should be used for new minors, or new concentrations to existing degrees. For new majors/degrees, complete the HECC new program proposal form as well as this form.

New Program name: *Certificate in Cybersecurity*

CIP Code: (Classification of Instructional Program): [43.0403](#)

<https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=56&cipid=91562>

Impact statement:

1. What is the expected effect of this program on existing courses (both within your department/program or elsewhere in the SOU curriculum)?
The proposed certificate will be based on a group of existing courses in the Computer Science catalog. Current courses will be updated to cover new technologies, specific aspects and trends in the Cybersecurity field, and to reflect the new faculty group.

2. Will any prerequisites or other course requirements affect other departments/programs? *No* If so, the relevant chairs or program directors should be notified to determine if those departments/programs have sufficient capacity to meet these requirements. Please document your research into this possible impact.
The Certificate is being planned as part of our current CS catalog and fully covered by the CS program faculty group. Some electives and projects can be considered, but with no specific program demand to support us.

3. Program Resource evaluation:

- a. Faculty: Cite faculty availability or needs and impact on other teaching obligations. If additional faculty teaching hours are needed, how will that need be met?

The new course will demand about 9 courses (4 credits each) in a total of 36 credits/hours. In the academic year of 2020/2021, we are offering the core classes for this certificate as electives in our CS Major. However, we might need to alternate our elective offerings to offer more options to our CS Major students, due to the size of our current available staff (tenure track/tenured, one-year contract and adjunct faculties).

- b. Facilities: Cite any additional need for classrooms, equipment or laboratory space and how that need will be met.

It is important to keep the instructional/experimental environment isolated from the university environment for the hacking tools used in

class. Therefore, the certificate demands an exclusive lab. Currently the CS program has a proprietary lab for network and security training. However, the lab has a low capacity (about 15 students), and it is shared with current CS program courses. We will need another lab with 25 or more seats/computers or at least, remodeling the current one to expand its capacity.

- c. Library: Are Hannon Library resources sufficient to meet the needs of this program? (Check with the library staff and **attach a copy of their report.**)

Currently, many topics are covered based on books already available in the library, and material provided by instructors. The second option is more common, as the topics demand frequent updates.

- d. Other: Are any other resources needed to support this program? If so, please document them and explain how they will be obtained.

We will need some physical/virtual servers to allow students to experiment and build network and security services.

4. Catalog copy for the new program, including requirements and electives.

Certificate in Cybersecurity

Cybersecurity has become a major priority for organizations looking to protect themselves from the massive cost of security breaches. Despite the crucial need to protect information systems, employers are having a hard time finding qualified and educated cybersecurity workers. In the U.S. alone there are more than 500,000 open jobs in cybersecurity. SOU's cybersecurity certificate program addresses that shortage while providing students with an opportunity to learn about network security, software security, and systems management.

The Cybersecurity certificate program is open to all students (undergraduate, graduate, and post-baccalaureate) as well as industry members.

The certificate will equip learners to develop and maintain secure networks and software. Students will learn about common threats and vulnerabilities and how to protect information systems from attacks. The program teaches secure software development as well as secure network design and management, security principles, cryptography, risk management, access control, wireless networking, and network device configuration.

Programming experience is required to enter the certificate program. Students must have taken CS257 or equivalent.

The certificate requires completion of 36 credits, consisting of required and elective courses. All courses taken for the certificate must be completed with a grade of C or better.

Students should have the equivalent of the following prerequisite knowledge:

MATH 111 - Precalculus I

MATH 112 - Precalculus II

CS 256 - Computer Science I

CS 257 - Computer Science II

Required Courses

CS 310 - Information Technology Legal and Ethical Issues

CS 314 - Computer Organization

CS 336 - Networks 1

CS 456 - Security 1 : Intro to Computer Security

CS 457 - Security 2: Network Security

Elective Courses (student should choose four)

CS 346 - Computer Forensics

CS 426 - Unix System Administration

CS 436 - Networks 2

CS 446 - Wireless Networks

CS 356 or 455 - Topics in Computer Science (by approval)

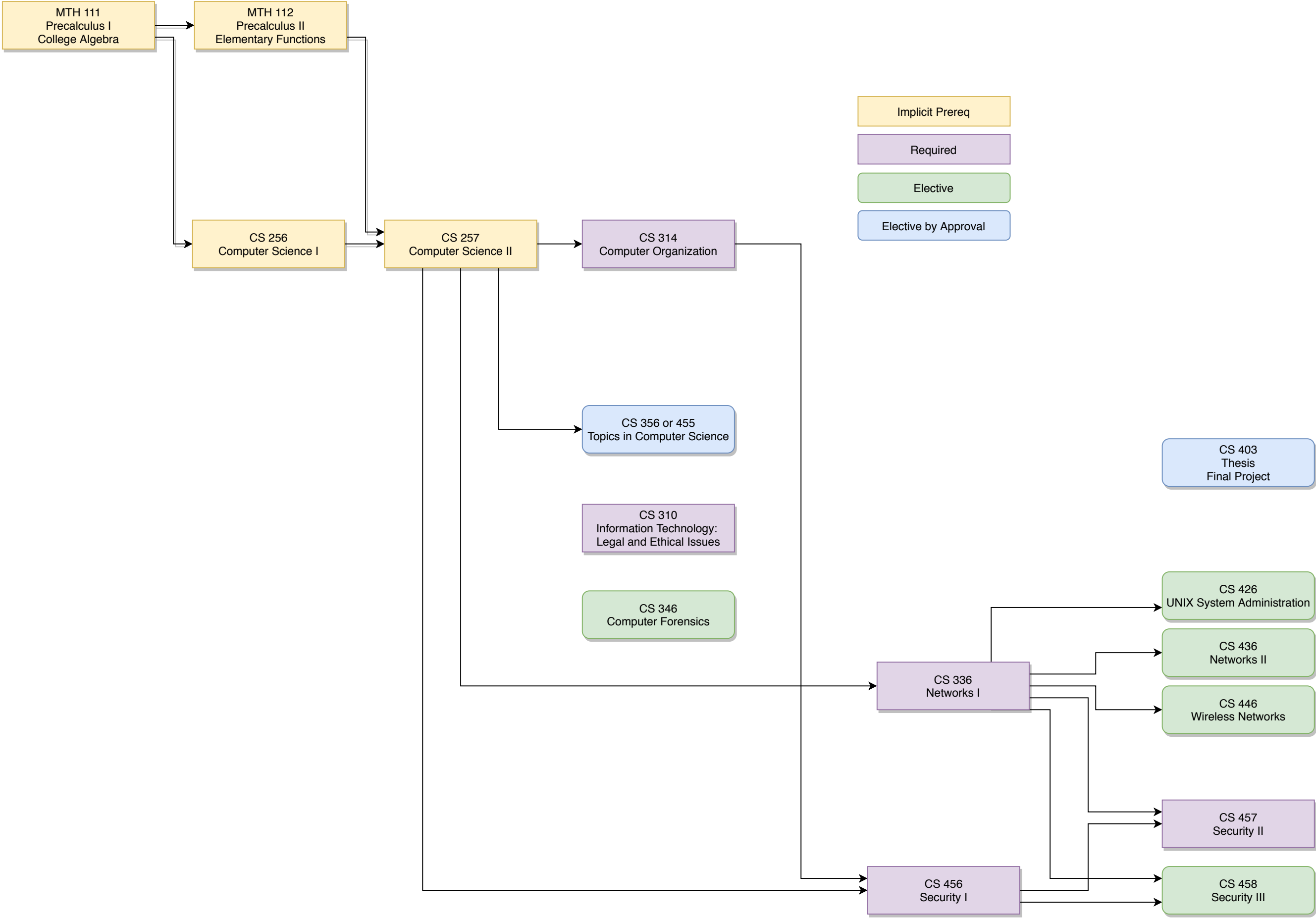
CS 458 - Security 3: Web Security

CS 403 - Thesis - Final Project (by approval)

5. Please provide written verification of contact with the Chair of any other departments or programs affected by the new program.

We are not creating or demanding extra courses to be offered by other programs. Therefore, there is no verification to be provided.

Certificate in Cyber Security



Suggested Offer

Observed that the certificate can be obtained in two years for a freshman and in a year for a student who already meet prerequisite of CS 257 (Transfers, etc)

Fall 1

Winter 1

Spring 1

Fall 2

Winter 2

Spring 2

MTH 111
Precalculus I
College Algebra

MTH 112
Precalculus II
Elementary Functions

CS 256
Computer Science I

CS 257
Computer Science II

CS 336
Networks I

CS 456
Security I

CS 457
Security II

CS 458
Security III

CS 446
Wireless Networks

CS 346
Computer Forensics

CS 455
Topics in Computer Science

Implicit Prereq
Required
Elective
Elective by Approval

CS 314
Computer Organization

CS 310
Information Technology:
Legal and Ethical Issues

CS 436
Networks II

CS 426
UNIX System Administration

CS 403
Thesis
Final Project