# M.S. IN COMPUTER SCIENCE

*College of the Sciences and Mathematics*

## Curriculum

A student must take a total of 33 semester hours from the following courses (subject to the stipulations listed below):

### Curriculum

| | | |
|---|---|---|
| **Core Courses** | | |
| CSC 520 | Foundations of Computer Science | 3 |
| CSC 530 | Data Structures | 3 |
| CSC 540 | Programming Languages | 3 |
| CSC 560 | Analysis of Algorithms | 3 |
| **Electives** | | |
| Select at least four 500-level electives from the following; | | 12 |
| CSC 525 | Operating Systems | |
| CSC 535 | Networks and Data Communication | |
| CSC 545 | Database Systems Concepts | |
| CSC 555 | Software Engineering | |
| CSC 565 | Compiler Design | |
| CSC 575 | Artificial Intelligence | |
| CSC 581 | Topics in Computer Science | |
| CSC 582 | Topics in Information Systems | |
| CSC 583 | Topics in Computer Security | |
| CSC 584 | Topics in Web Technology | |
| CSC 585 | User Interface In Java | |
| CSC 586 | Sytem Administration and Security | |
| CSC 587 | Web Services using XML and SOAP | |
| CSC 588 | Wireless Programming and Security | |
| Select at least two 600-level courses from the following: | | 6 |
| CSC 600 | Advanced Seminar | |
| CSC 603 | Advanced Seminar in Security | |
| CSC 604 | Advanced Seminar Web Technology | |
| CSC 605 | Internship in Computer Science | |
| CSC 610 | Independent Research | |
| CSC 620 | Thesis (see stipulation #3 below) | |
| **Total Credits Required** | | 33 |

### Stipulations

1. A student must complete the four core courses within the first six courses taken.
2. All core courses must be completed before a student can take a 600-level course.
3. The advanced seminar courses (CSC 600, CSC 603, CSC 604) offer a variety of advanced topics in computer science. A student must take at least one of these courses and not more than two.
4. A student who elects to do a master's thesis must take CSC 610 (independent research) and CSC 620 (thesis). CSC 610 may count for credit towards the degree only once.

### Thesis Options

#### Independent Research ( CSC 610)

The student may work in one of three directions for this course:

1. Master's thesis preparation: After consulting with a faculty adviser, the student will conduct a comprehensive literature search in a research area, write a detailed report on the current state of the art in that area, and develop a thesis proposal.
2. Individual project: The student will work on a substantial programming project throughout the semester. The student will be expected to do sufficient background research and then design, as needed, all the data structures, flow of control, and so forth, required for implementation.
3. Team project: The student will be involved in an ambitious software development project with at least one other student under the guidance of the adviser. This course emphasizes the development of those capabilities that are considered especially important in the practical world of computing, such as written and oral communications skills and the ability to work as part of a team.

#### Thesis ( CSC 620)

The student is to carry out the research proposal developed in CSC 610. At the completion of the project, the student must submit a bound manuscript that meets the approval of the graduate committee.

## Sample Course Plan

To track their individual degree progress, students are advised to access their Degree Progress Report (DPR) via my WCU and consult their Graduate Coordinator. For more information, visit wcupa.edu/DegreeProgressReport.

The following is a suggested course sequence for this program; course offerings and availability are not guaranteed. Students should consult their academic advisor with any questions.

### For Students Starting in the Fall of Even Years

| Course | Title | Credits |
|---|---|---|
| **Year One** | | |
| **Fall** | | |
| CSC 520 | Foundations of Computer Science | 3 |
| CSC 530 | Data Structures | 3 |
| CSC 535<br>or<br>CSC 555<br>or<br>CSC 588<br>or<br>CSC 600 | Networks and Data Communication<br>or Software Engineering<br>or Wireless Programming and Security<br>or Advanced Seminar | 3 |
| | Credits | 9 |
| **Spring** | | |
| CSC 540<br>or<br>CSC 560<br>or<br>CSC 581<br>or<br>CSC 603 | Programming Languages<br>or Analysis of Algorithms<br>or Topics in Computer Science<br>or Advanced Seminar in Security | 3 |
| | Credits | 3 |
| **Summer** | | |
| CSC 584 | Topics in Web Technology | 3 |
| CSC 585 | User Interface In Java | 3 |
| | Credits | 6 |
| **Year Two** | | |
| **Fall** | | |
| CSC 583<br>or<br>CSC 535<br>or<br>CSC 600 | Topics in Computer Security<br>or Networks and Data Communication<br>or Advanced Seminar | 3 |
| | Credits | 3 |
| | Total Credits | 21 |

## For Students Starting in the Fall of Odd Years

| Course | Title | Credits |
|---|---|---|
| **Year One** | | |
| **Fall** | | |
| CSC 520 | Foundations of Computer Science | 3 |
| CSC 530 | Data Structures | 3 |
| CSC 535<br>or<br>CSC 583<br>or<br>CSC 600 | Networks and Data Communication<br>or Topics in Computer Security<br>or Advanced Seminar | 3 |
| | Credits | 9 |
| **Spring** | | |
| CSC 540 | Programming Languages | 3 |
| CSC 560 | Analysis of Algorithms | 3 |
| CSC 525<br>or<br>CSC 545<br>or<br>CSC 582 | Operating Systems<br>or Database Systems Concepts<br>or Topics in Information Systems | 3 |
| | Credits | 9 |
| **Summer** | | |
| CSC 586 | Sytem Administration and Security | 3 |
| CSC 604 | Advanced Seminar Web Technology | 3 |
| | Credits | 6 |
| **Year Two** | | |
| **Fall** | | |
| CSC 555<br>or<br>CSC 535<br>or<br>CSC 588<br>or<br>CSC 600 | Software Engineering<br>or Networks and Data Communication<br>or Wireless Programming and Security<br>or Advanced Seminar | 3 |
| | Credits | 3 |
| | Total Credits | 27 |