

# M.S. in Software Engineering

The Master of Science in Software Engineering prepares students to lead at every stage of the software development life cycle, with direct applications in aerospace, defense, healthcare, and beyond. The keystone of the program is hands-on work with sophisticated, high-stakes systems like those found in aircraft, spacecraft, and medical devices.

Housed in the Department of Electrical Engineering and Computer Science in the College of Engineering, the M.S. in Software Engineering is designed to allow students to enhance their careers and work on the cutting edge of modern software development. The process-centered, quantitative approach to coursework in this degree program equips students with the technical tools and techniques needed for successful software architecture and design.

The program emphasizes the engineering of real-time embedded software systems used in applications such as FAA air traffic control computer systems, aircraft avionics, and aerospace software. Students will graduate with the ability to apply software engineering processes (e.g., SCRUM, PSP, TSP, and CMM) to the development of highly reliable software-intensive systems.

## Program-Level Student Learning Outcomes

### Students will:

- Communicate effectively as an individual and to perform successfully as part of a team.
- Evaluate software engineering methods, techniques, and tools as they relate to the management of software-intensive systems development.
- Apply software engineering processes to the development of highly reliable software-intensive systems.
- Evaluate the appropriate software engineering methods, techniques, and tools to develop highly reliable software systems throughout the software development life cycle.

## Daytona Beach Program Requirements

|                      |           |
|----------------------|-----------|
| Core Requirements    | 18        |
| Option               | 12        |
| <b>Total Credits</b> | <b>30</b> |

### Core Requirements

|                      |                                            |           |
|----------------------|--------------------------------------------|-----------|
| CPSC 532             | Software Security Assessment               | 3         |
| SFTW 510             | Software Project Management                | 3         |
| SFTW 525             | Software Quality Engineering and Assurance | 3         |
| SFTW 530             | Software Requirements Engineering          | 3         |
| SFTW 610             | Software Systems Architecture and Design   | 3         |
| SFTW 650             | Current Trends in Software Engineering     | 3         |
| <b>Total Credits</b> |                                            | <b>18</b> |

### Option I: Capstone

|                                                                                                                                        |                                |           |
|----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-----------|
| SFTW 690                                                                                                                               | Graduate Research Project      | 3         |
| or SFTW 692                                                                                                                            | Software Engineering Practicum |           |
| Electives (500-600 level)                                                                                                              |                                | 9         |
| Electives are any 500-600 level course in CESC, CPSC, SFTW, SYSE, or with approval from Program Coordinator courses from DSCI or HFCT. |                                |           |
| <b>Total Credits</b>                                                                                                                   |                                | <b>12</b> |

### Option II: Thesis

|                                                                                                                                        |                 |           |
|----------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------|
| SFTW 700                                                                                                                               | Graduate Thesis | 6         |
| Electives (500-600 level)                                                                                                              |                 | 6         |
| Electives are any 500-600 level course in CESC, CPSC, SFTW, SYSE, or with approval from Program Coordinator courses from DSCI or HFCT. |                 |           |
| <b>Total Credits</b>                                                                                                                   |                 | <b>12</b> |

## Suggested Plan of Study

### Option I: Capstone

#### Year One

| Requirements                                 | Credits  |
|----------------------------------------------|----------|
| SFTW 530 - Software Requirements Engineering | 3        |
| CPSC 532 - Software Security Assessment      | 3        |
| <b>Semester Hours</b>                        | <b>6</b> |

| Requirements                                          | Credits  |
|-------------------------------------------------------|----------|
| SFTW 525 - Software Quality Engineering and Assurance | 3        |
| SFTW 510 - Software Project Management                | 3        |
| Elective *                                            | 3        |
| <b>Semester Hours</b>                                 | <b>9</b> |

### Total Credits

Total Hours for All Requirements: 15

#### Year Two

| Requirements                                        | Credits  |
|-----------------------------------------------------|----------|
| SFTW 610 - Software Systems Architecture and Design | 3        |
| Elective *                                          | 3        |
| Elective *                                          | 3        |
| <b>Semester Hours</b>                               | <b>9</b> |

| Requirements                                                                 | Credits  |
|------------------------------------------------------------------------------|----------|
| SFTW 650 - Current Trends in Software Engineering                            | 3        |
| SFTW 690 - Graduate Research Project or 692 - Software Engineering Practicum | 3        |
| <b>Semester Hours</b>                                                        | <b>6</b> |

### Total Credits

Total Hours for All Requirements: 15

\* Electives: Any course in CESC, CPSC, SFTW, SYSE, or with approval from Program Coordinator courses from DSCI or HFCT.

### Option II: Thesis

#### Year One

| Requirements                                 | Credits  |
|----------------------------------------------|----------|
| SFTW 530 - Software Requirements Engineering | 3        |
| CPSC 532 - Software Security Assessment      | 3        |
| <b>Semester Hours</b>                        | <b>6</b> |

| Requirements                                          | Credits |
|-------------------------------------------------------|---------|
| SFTW 525 - Software Quality Engineering and Assurance | 3       |
| SFTW 510 - Software Project Management                | 3       |
| Elective*                                             | 3       |
| Semester Hours                                        | 9       |

Total Credits

Total Hours for All Requirements: 15

Year Two

| Requirements                                        | Credits |
|-----------------------------------------------------|---------|
| SFTW 610 - Software Systems Architecture and Design | 3       |
| Elective*                                           | 3       |
| SFTW 700 - Graduate Thesis                          | 3       |
| Semester Hours                                      | 9       |

| Requirements                                      | Credits |
|---------------------------------------------------|---------|
| SFTW 650 - Current Trends in Software Engineering | 3       |
| SFTW 700 - Graduate Thesis                        | 3       |
| Semester Hours                                    | 6       |

Total Credits

Total Hours for All Requirements: 15

\* Electives: Any course in CESC, CPSC, SFTW, SYSE, or with approval from Program Coordinator courses from DSCI or HFCT.