

# M.S. in Uncrewed and Autonomous Systems

## Worldwide Program Requirements

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

## Program Details

The Master of Science in Uncrewed and Autonomous Systems requires successful completion of a minimum of 30 credit hours. Students enrolled in the Worldwide Graduate Online program may complete the degree in six terms, or approximately two years, assuming full-time enrollment and continuous progress. Students pursuing this graduate degree must earn a minimum cumulative grade point average (CGPA) of 3.00 for all work completed at the University. The courses required to earn this degree are listed below.

Students should be aware that many courses have prerequisites and/or corequisites. Students are responsible for ensuring that all prerequisite and degree requirements are satisfied prior to enrollment in advanced coursework. The suggested plan of study is provided as a guide. A student's actual plan of study may vary based on term of admission, course availability, transfer credit, and other academic considerations. Students should consult with their academic advisor to develop an individualized plan of study.

Students must complete one approved specialization in addition to the required core curriculum. Students selecting the Small Uncrewed Aircraft Systems (sUAS) Operations specialization must be physically located in the United States while enrolled in UNSY 520 and UNSY 620 and should contact their academic advisor prior to enrolling in UNSY 515 regarding additional costs, potential travel requirements, and FAA testing. Students interested in the Research specialization should consult with their academic advisor regarding thesis requirements and sequencing.

## Core Requirements

|                      |                                                                |           |
|----------------------|----------------------------------------------------------------|-----------|
| UNSY 502             | Current Issues in Uncrewed and Autonomous Systems              | 3         |
| UNSY 503             | Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3         |
| UNSY 504             | Application of Uncrewed and Autonomous Systems                 | 3         |
| UNSY 603             | Uncrewed and Autonomous Systems Operational Configuration      | 3         |
| UNSY 606             | Uncrewed and Autonomous Systems Interoperability and Control   | 3         |
| CYAV 517             | Uncrewed and Autonomous Systems Cybersecurity                  | 3         |
| <b>Total Credits</b> |                                                                | <b>18</b> |

## Specializations

### Research

|                      |                      |           |
|----------------------|----------------------|-----------|
| RSCH 665             | Statistical Analysis | 3         |
| RSCH 670             | Research Methods     | 3         |
| RSCH 700A            | Graduate Thesis I    | 3         |
| RSCH 700B            | Graduate Thesis II   | 3         |
| <b>Total Credits</b> |                      | <b>12</b> |

## Technical Development and Support

|                      |                                                                                 |           |
|----------------------|---------------------------------------------------------------------------------|-----------|
| SYSE 500             | Fundamentals of Systems Engineering                                             | 3         |
| SYSE 530             | System Requirements Analysis and Modeling                                       | 3         |
| UNSY 531             | Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems | 3         |
| UNSY 635             | Remote Sensing Data Analysis                                                    | 3         |
| <b>Total Credits</b> |                                                                                 | <b>12</b> |

## Small Uncrewed Aircraft System (sUAS) Operations

Students declaring the sUAS Operations Specialization must be physically located within the U.S., have access to a sUAS with which to train, and hold a current FAA Part 107 Certification while participating in the UNSY 520 and UNSY 620 courses. Students must contact their Academic Advisor regarding additional cost, required travel, and FAA Testing, prior to enrolling in the first course of this specialization, UNSY 515.

|                      |                                                 |           |
|----------------------|-------------------------------------------------|-----------|
| UNSY 515             | sUAS Operation Fundamentals                     | 3         |
| UNSY 520             | sUAS Practical Application and Assessment *     | 3         |
| UNSY 620             | sUAS Operational Planning and Safety Management | 3         |
| UNSY 625             | sUAS Advanced Fixed-Wing Operations             | 3         |
| <b>Total Credits</b> |                                                 | <b>12</b> |

\* Course includes a mandatory weekend residency and personal sUAS required at students' expense.

## Suggested Plans of Study

### Two Year Plan - Research

| Requirements                                              | Credits  |
|-----------------------------------------------------------|----------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                     | <b>3</b> |

| Requirements                                                 | Credits  |
|--------------------------------------------------------------|----------|
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                        | <b>3</b> |

| Requirements                                                              | Credits  |
|---------------------------------------------------------------------------|----------|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                                     | <b>3</b> |

| Requirements                                             | Credits  |
|----------------------------------------------------------|----------|
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity | 3        |
| <b>Semester Hours</b>                                    | <b>3</b> |

| Requirements                                                         | Credits  |
|----------------------------------------------------------------------|----------|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration | 3        |
| <b>Semester Hours</b>                                                | <b>3</b> |

### Total Credits

Total Hours for All Requirements: 15

| Requirements                                                            | Credits |
|-------------------------------------------------------------------------|---------|
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3       |
| Semester Hours                                                          | 3       |

| Requirements                    | Credits |
|---------------------------------|---------|
| RSCH 665 - Statistical Analysis | 3       |
| Semester Hours                  | 3       |

| Requirements                | Credits |
|-----------------------------|---------|
| RSCH 670 - Research Methods | 3       |
| Semester Hours              | 3       |

| Requirements                  | Credits |
|-------------------------------|---------|
| RSCH 700A - Graduate Thesis I | 3       |
| Semester Hours                | 3       |

| Requirements                   | Credits |
|--------------------------------|---------|
| RSCH 700B - Graduate Thesis II | 3       |
| Semester Hours                 | 3       |

Total Credits

Total Hours for All Requirements: 15

One Year Plan - Research

| Requirements                                                 | Credits |
|--------------------------------------------------------------|---------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems    | 3       |
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3       |
| Semester Hours                                               | 6       |

| Requirements                                                              | Credits |
|---------------------------------------------------------------------------|---------|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3       |
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity                  | 3       |
| Semester Hours                                                            | 6       |

| Requirements                                                            | Credits |
|-------------------------------------------------------------------------|---------|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration    | 3       |
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3       |
| Semester Hours                                                          | 6       |

| Requirements                    | Credits |
|---------------------------------|---------|
| RSCH 665 - Statistical Analysis | 3       |
| RSCH 670 - Research Methods     | 3       |
| Semester Hours                  | 6       |

| Requirements                  | Credits |
|-------------------------------|---------|
| RSCH 700A - Graduate Thesis I | 3       |
| Semester Hours                | 3       |

Total Credits

Total Hours for All Requirements: 27

| Requirements                   | Credits |
|--------------------------------|---------|
| RSCH 700B - Graduate Thesis II | 3       |
| Semester Hours                 | 3       |

Total Credits

Total Hours for All Requirements: 3

Two Year Plan - Technical Development and Support

| Requirements                                              | Credits |
|-----------------------------------------------------------|---------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems | 3       |
| Semester Hours                                            | 3       |

| Requirements                                                 | Credits |
|--------------------------------------------------------------|---------|
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3       |
| Semester Hours                                               | 3       |

| Requirements                                                              | Credits |
|---------------------------------------------------------------------------|---------|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3       |
| Semester Hours                                                            | 3       |

| Requirements                                   | Credits |
|------------------------------------------------|---------|
| SYSE 500 - Fundamentals of Systems Engineering | 3       |
| Semester Hours                                 | 3       |

| Requirements                                         | Credits |
|------------------------------------------------------|---------|
| SYSE 530 - System Requirements Analysis and Modeling | 3       |
| Semester Hours                                       | 3       |

Total Credits

Total Hours for All Requirements: 15

| Requirements                                             | Credits |
|----------------------------------------------------------|---------|
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity | 3       |
| Semester Hours                                           | 3       |

| Requirements                                                         | Credits |
|----------------------------------------------------------------------|---------|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration | 3       |
| Semester Hours                                                       | 3       |

| Requirements                                                            | Credits |
|-------------------------------------------------------------------------|---------|
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3       |
| Semester Hours                                                          | 3       |

| Requirements                                                                               | Credits |
|--------------------------------------------------------------------------------------------|---------|
| UNSY 531 - Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems | 3       |
| Semester Hours                                                                             | 3       |

| Requirements                            | Credits  |
|-----------------------------------------|----------|
| UNSY 635 - Remote Sensing Data Analysis | 3        |
| <b>Semester Hours</b>                   | <b>3</b> |

### Total Credits

Total Hours for All Requirements: 15

## One Year Plan - Technical Development and Support

| Requirements                                                 | Credits  |
|--------------------------------------------------------------|----------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems    | 3        |
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                        | <b>6</b> |

| Requirements                                                              | Credits  |
|---------------------------------------------------------------------------|----------|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3        |
| SYSE 500 - Fundamentals of Systems Engineering                            | 3        |
| <b>Semester Hours</b>                                                     | <b>6</b> |

| Requirements                                             | Credits  |
|----------------------------------------------------------|----------|
| SYSE 530 - System Requirements Analysis and Modeling     | 3        |
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity | 3        |
| <b>Semester Hours</b>                                    | <b>6</b> |

| Requirements                                                            | Credits  |
|-------------------------------------------------------------------------|----------|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration    | 3        |
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3        |
| <b>Semester Hours</b>                                                   | <b>6</b> |

| Requirements                                                                               | Credits  |
|--------------------------------------------------------------------------------------------|----------|
| UNSY 531 - Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems | 3        |
| UNSY 635 - Remote Sensing Data Analysis                                                    | 3        |
| <b>Semester Hours</b>                                                                      | <b>6</b> |

### Total Credits

Total Hours for All Requirements: 30

## Two Year Plan - Small Uncrewed System (sUAS) Operations

### Year One

| Requirements                                              | Credits  |
|-----------------------------------------------------------|----------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                     | <b>3</b> |

| Requirements                                                 | Credits  |
|--------------------------------------------------------------|----------|
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                        | <b>3</b> |

| Requirements                                                              | Credits  |
|---------------------------------------------------------------------------|----------|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3        |
| <b>Semester Hours</b>                                                     | <b>3</b> |

| Requirements                           | Credits  |
|----------------------------------------|----------|
| UNSY 515 - sUAS Operation Fundamentals | 3        |
| <b>Semester Hours</b>                  | <b>3</b> |

| Requirements                                         | Credits  |
|------------------------------------------------------|----------|
| UNSY 520 - sUAS Practical Application and Assessment | 3        |
| <b>Semester Hours</b>                                | <b>3</b> |

### Total Credits

Total Hours for All Requirements: 15

### Year Two

| Requirements                                             | Credits  |
|----------------------------------------------------------|----------|
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity | 3        |
| <b>Semester Hours</b>                                    | <b>3</b> |

| Requirements                                                         | Credits  |
|----------------------------------------------------------------------|----------|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration | 3        |
| <b>Semester Hours</b>                                                | <b>3</b> |

| Requirements                                                            | Credits  |
|-------------------------------------------------------------------------|----------|
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3        |
| <b>Semester Hours</b>                                                   | <b>3</b> |

| Requirements                                               | Credits  |
|------------------------------------------------------------|----------|
| UNSY 620 - sUAS Operational Planning and Safety Management | 3        |
| <b>Semester Hours</b>                                      | <b>3</b> |

| Requirements                                   | Credits  |
|------------------------------------------------|----------|
| UNSY 625 - sUAS Advanced Fixed-Wing Operations | 3        |
| <b>Semester Hours</b>                          | <b>3</b> |

### Total Credits

Total Hours for All Requirements: 15

## One Year Plan - Small Uncrewed System (sUAS) Operations

### Year One

| Requirements                                              | Credits |
|-----------------------------------------------------------|---------|
| UNSY 504 - Application of Uncrewed and Autonomous Systems | 3       |

|                                                              |   |
|--------------------------------------------------------------|---|
| UNSY 502 - Current Issues in Uncrewed and Autonomous Systems | 3 |
|--------------------------------------------------------------|---|

|                |   |
|----------------|---|
| Semester Hours | 6 |
|----------------|---|

|              |         |
|--------------|---------|
| Requirements | Credits |
|--------------|---------|

|                                                                           |   |
|---------------------------------------------------------------------------|---|
| UNSY 503 - Legal and Regulatory Issues in Uncrewed and Autonomous Systems | 3 |
|---------------------------------------------------------------------------|---|

|                                        |   |
|----------------------------------------|---|
| UNSY 515 - sUAS Operation Fundamentals | 3 |
|----------------------------------------|---|

|                |   |
|----------------|---|
| Semester Hours | 6 |
|----------------|---|

|              |         |
|--------------|---------|
| Requirements | Credits |
|--------------|---------|

|                                                      |   |
|------------------------------------------------------|---|
| UNSY 520 - sUAS Practical Application and Assessment | 3 |
|------------------------------------------------------|---|

|                                                          |   |
|----------------------------------------------------------|---|
| CYAV 517 - Uncrewed and Autonomous Systems Cybersecurity | 3 |
|----------------------------------------------------------|---|

|                |   |
|----------------|---|
| Semester Hours | 6 |
|----------------|---|

|              |         |
|--------------|---------|
| Requirements | Credits |
|--------------|---------|

|                                                                      |   |
|----------------------------------------------------------------------|---|
| UNSY 603 - Uncrewed and Autonomous Systems Operational Configuration | 3 |
|----------------------------------------------------------------------|---|

|                                                                         |   |
|-------------------------------------------------------------------------|---|
| UNSY 606 - Uncrewed and Autonomous Systems Interoperability and Control | 3 |
|-------------------------------------------------------------------------|---|

|                |   |
|----------------|---|
| Semester Hours | 6 |
|----------------|---|

|              |         |
|--------------|---------|
| Requirements | Credits |
|--------------|---------|

|                                                            |   |
|------------------------------------------------------------|---|
| UNSY 620 - sUAS Operational Planning and Safety Management | 3 |
|------------------------------------------------------------|---|

|                                                |   |
|------------------------------------------------|---|
| UNSY 625 - sUAS Advanced Fixed-Wing Operations | 3 |
|------------------------------------------------|---|

|                |   |
|----------------|---|
| Semester Hours | 6 |
|----------------|---|

Total Credits

Total Hours for All Requirements: 30

Estimated Cost of Attendance

Estimated Cost of Attendance: California Student Information (<https://catalog.erau.edu/student-life/student-affairs/california-student/>)