



Memo

To: Randy Smith, Vice Provost for Academic Programs, Office of Academic Affairs
From: Rosie Quinzon-Bonello, Assistant Dean for Curriculum and Assessment
Date: February 6, 2023

Re: Informational Item: CCAA Approval of Certificate of Completion

On February 3, 2023, the College of Engineering Committee on Academic Affairs unanimously approved the following Non-Credit, Certificate of Completion Work Force Development Training Program:

Certification in Applied Aeronautics and Design

Attached is the proposal.
Please feel free to contact me should have additional questions.

Yours sincerely,

Rosie Quinzon-Bonello

College of Engineering

Proposal for a Non-Credit, Certificate of Completion Work Force Development Training Program

“Certification in Applied Aeronautics and Design”

January 17, 2023

OAA Certificate Program Category: (4) Workforce Development Certificate of Completion Program

Description

The proposed Certification in Applied Aeronautics and Design is a workforce development program aimed at practicing engineers seeking to increase their skills and knowledge in applied aeronautics. The certification will include four non-credit courses and students must successfully complete all in order to obtain the certification. Students may also take any of the courses individually for targeted learning and if they do not wish to pursue the certification. The courses will be delivered in 100% online asynchronous format only. This program is developed by the College of Engineering Aerospace Research Center and delivered through a partnership with the Professional and Distance Education Programs Office. The anticipated start for this program is Autumn 2024 semester.

Stand-alone Program and Maximum Credit Overlap between Academic Certificate and Other Academic Programs

The Certification in Applied Aeronautics non-credit courses will be a stand-alone program

Maximum Credit Overlap with Degree Program

N/A

Minimum Acceptable Grade to Apply

N/A

Transfer Credit

N/A

EM Credit

N/A

Outcomes-based

Upon completion of the certification, learners will be able to:

1. Apply advanced methods of flight analysis across the entire Mach number range
2. Develop flight vehicle operation envelopes and analyze representative flight mission profiles
3. Develop advanced numerical analysis techniques involved in applied aeronautics
4. Perform multivariate analysis and design evaluations to optimization results
5. Understand best practices in experimental testing and apply analysis techniques to wind tunnel testing and flight testing

Curriculum and Credits

The Certificate in Applied Aeronautics will include four non-credit courses:

1. Aircraft Performance and Flight Test Engineering
2. Advanced Aerodynamics
3. Advanced Flight Vehicle Design
4. Advanced Flight Mechanics

The instructional material for each course will be equivalent to a three semester credit hour class. This will consist of 36-38 hours of recorded online instruction and 30-35 hours of additional coursework for each course. Each course will be 14 weeks in length. The courses will be offered in the following proposed sequential format:

1. Aircraft Performance and Flight Test Engineering / Autumn semester 1st term
2. Advanced Aerodynamics / Autumn semester 1st term
3. Advanced Flight Vehicle Design / Spring semester 2nd term
4. Advanced Flight Mechanics / Spring semester 2nd term

The courses will be delivered 100% online and asynchronously. Students may progress through each course at their own pace but they must complete all of the course work within the 14 week period. The instructor will participate in each course offering and provide support to students and be available to answer questions using email, discussion boards, or Zoom meetings if requested.

Course Learning Objectives

Aircraft Performance and Flight Test Engineering

By the end of this course, students should successfully be able to:

- Understand the theoretical foundations of the flight environment, aircraft performance, aerodynamics, and stability & control as it applies to flight testing
- Be able to plan a flight test to evaluate the performance or handling qualities
- Have the knowledge and background needed to perform post-flight analysis and data reduction

Advanced Aerodynamics

By the end of this course, students should successfully be able to:

- Develop fundamental knowledge of aerodynamics across the entire Mach number range

- Understand and use fundamental tools for the analysis and design involved in aerodynamics across the entire Mach number range
- Understand and develop advanced numerical analysis techniques involved in aerodynamics

Advanced Flight Vehicle Design

By the end of this course, students should successfully be able to:

- Quantify flight vehicle systems by selecting appropriate design parameters
- Understand configuration layout designs to meet desired flight performance characteristics
- Develop a beginning understanding of optimum design concepts and problem formulation
- Perform multivariate analysis and perform design evaluations to optimization results

Advanced Flight Mechanics

By the end of this course, students should successfully be able to:

- Quantify flight vehicles by identifying key flight characteristics
- Apply fundamentals and advanced methods to flight analysis
- Develop complete flight vehicle operation envelopes
- Analyze full representative flight mission profile characteristics

Admission

A bachelor's degree in aerospace or mechanical engineering or a related field is required.

Arranged/Individual Study Courses

None.

Minimum Grades and GPA to Complete Program

No letter grade will be assigned for a course. Final course grades are Pass/Fail based on an 80% or better score.

Recorded in the Student Information System (SIS)

No

Regular OSU Tuition and Fee Assessment

No, this is a non-credit program. Fee will be \$1,000 per course, per person.

Eligibility for Federal Pell Grant and Direct Student Loans

No

Diploma Issued

No

Type of Completion Document Issued

A certificate of completion will be provided upon completion of all four courses. Students will also receive a certificate of completion after passing each course.

Proposal Contact Information

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