

Aerospace Engineering PhD

College

College of Engineering and Computer Science

Department

Department of Mechanical and Aerospace Engineering

Program Website

<http://www.mae.ucf.edu>

Program Contact Information

Jihua Gou PhD

Professor

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ENGR I - 381

Is this program available 100% online?

No

Licensure Disclosure

This program has potential ties to state-regulated professional licensure or certification in the field. For more information on how this program may prepare you in that regard, please visit <https://apq.ucf.edu/files/Licensure-Disclosure-CECS-Aerospace-Engineering-PhD.pdf>.

Program Description

The Aerospace Engineering PhD program offers students the opportunity, through both coursework and research, to meet the highest standards of academic achievement in the core areas: Aerodynamics. Aerospace Systems Design. Astrodynamics and Space Applications, Dynamics and Control. Propulsion. Structures and Materials.

The Doctor of Philosophy degree in Aerospace Engineering is intended for students who have earned an MS or BS degree in Aerospace Engineering, Mechanical Engineering or a closely related field of Engineering.

The Aerospace Engineering PhD program requires a minimum of 72 credit hours beyond a bachelor's degree. This program requires 15 Dissertation (EAS 7980) credit hours minimum and may include up to a total of 12 credit hours combined Directed (EAS 6918) or Doctoral Research (EAS 7919) and/or Independent Study (EAS 6908) with an approved Program of Study. At least 45 hours of the Program of Study must consist of formal coursework exclusive of Directed Research (EAS 6918), Doctoral Research (EAS 7919) and Independent Study (EAS 6908).

Students entering the program with a master's degree are required to complete 42 credit hours minimum, of which 15 credit hours must be formal coursework. The remaining 12 hours can be chosen by the student in consultation with the adviser and the dissertation committee and with the approval of the graduate program coordinator. These credit hours may include doctoral directed research hours or doctoral dissertation hours.

Total Credit Hours Required: 72 Credit hours minimum beyond the bachelor's degree 42 Credit hours minimum beyond the master's degree.

Program Prerequisites

Bachelor's or Master's degree in Aerospace or Mechanical Engineering or closely related discipline.

Graduate School Contact

Jaylin Hudgen

gradadmissions@ucf.edu

Telephone: 407-823-2766

Millican Hall 230

[Online Application](#)

[Graduate Admissions](#)

Mailing Address

UCF College of Graduate Studies

Millican Hall 230

PO Box 160112

Orlando, FL 32816-0112

Institution Codes

GRE: 5233

GMAT: RZT-HT-58

TOEFL: 5233

ETS PPI: 5233

Degree Requirements

Seminar

0 Total Credits

Earn at least 0 credits from the following types of courses:

EML 5090 - Mechanical and Aerospace Seminar

The MAE Graduate Seminar is a zero credit hour (S/U) course that is offered each fall and spring academic semesters. Prior to graduation, all MAE graduate students who are pursuing PhD dissertation required to register, participate, and receive a satisfactory (S) for four semesters of MAE Graduate seminar, with at least two of these taken prior to candidacy.

Elective Courses

57 Total Credits

Earn at least 57 credits from the following:

[EAS5123](#) - Intermediate Aerodynamics (3)

[EAS5211](#) - Aeroelasticity (3)

[EAS5302](#) - Direct Energy Conversion (3)

[EAS5315](#) - Rocket Propulsion (3)

[EAS5407C](#) - Mechatronic Systems (3)

[EAS5535](#) - Engineering Design for Aerospace Vehicles (3)

[EAS6138](#) - Advanced Gas Dynamics (3)

[EAS6185](#) - Turbulent Flow (3)

[EAS6222](#) - Non-Destructive Evaluation of Aero-Structures (3)

- [EAS6250](#) - Structural and Dynamic Stability (3)
- [EAS6403C](#) - Attitude Determination and Control (3)
- [EAS6405](#) - Advanced Flight Dynamics (3)
- [EAS6414](#) - Estimation of Dynamical Systems in Aerospace Engineering (3)
- [EAS6415](#) - Guidance, Navigation and Control (3)
- [EAS6507](#) - Topics of Astrodynamics (3)
- [EAS6722](#) - Multidisciplinary Optimization Under Uncertainty (3)
- [EAS6807C](#) - Aerospace Measurements Instrumentation (3 - 99)
- [EAS6808](#) - Space Environment and Payload Instrumentation (3)
- [EML5060](#) - Mathematical Methods in Mechanical and Aerospace Engineering (3)
- [EML5066](#) - Computational Methods in Mechanical and Aerospace Engineering (3)
- [EML5105](#) - Gas Kinetics and Statistical Thermodynamics (3)
- [EML5152](#) - Intermediate Heat Transfer (3)
- [EML5237](#) - Intermediate Mechanics of Materials (3)
- [EML5271](#) - Intermediate Dynamics (3)
- [EML5311](#) - System Control (3)
- [EML5402](#) - Turbomachinery (3)
- [EML5456](#) - Turbines for Sustainable Power (3)
- [EML5545](#) - Smart and Adaptive Structures (3)
- [EML6572](#) - Probabilistic Methods in Mechanical Design (3)
- [EML5713](#) - Intermediate Fluid Mechanics (3)
- [EML6067](#) - Finite Elements in Mechanical, Materials, and Aerospace Engineering I (3)
- [EML6068](#) - Finite Elements in Mechanical, Materials, and Aerospace Engineering II (3)
- [EML6104](#) - Classical Thermodynamics (3)
- [EML6131](#) - Combustion Phenomena (3)
- [EML6154](#) - Conduction Heat Transfer (3)
- [EML6155](#) - Convection Heat Transfer (3)
- [EML6157](#) - Radiation Heat Transfer (3)
- [EML6211](#) - Continuum Mechanics (3)
- [EML6223](#) - Advanced Vibrational Systems (3)
- [EML6233](#) - Fundamentals of Fatigue Analysis (3)
- [EML6547](#) - Engineering Fracture Mechanics in Design (3)
- [EML6712](#) - Mechanics of Viscous Flow (3)
- [EML6725](#) - Computational Fluid Dynamics and Heat Transfer I (3)
- [EEE5542](#) - Random Processes I (3)
- [EEL5432](#) - Satellite Remote Sensing (3)
- [EEL6616](#) - Adaptive Control (3)
- [EEL6621](#) - Nonlinear Control Systems (3)

Dissertation

15 Total Credits

Earn at least 15 credits from the following types of courses:

EAS/EML 7980 Doctoral Dissertation

Examinations

0 Total Credits

In addition to the Qualifying Examination discussed above, the student must pass a Candidacy Examination and a Dissertation Defense Examination. The Candidacy Examination is taken near the end of the coursework and consists of a written and oral presentation of a research proposal. The MAE Department typically requires a PhD student to submit his/her Candidacy Exam in the academic semester immediately following his/her successful passing of the PhD Qualifying Exam. The Dissertation Defense Examination is an oral examination taken in defense of the written dissertation. The College of Engineering and Computer Science requires that all Dissertation Defense Examination announcements are approved by the student's advisor and posted on the College's website and on the Events Calendar of the College of Graduate Studies website at least two weeks prior to the defense date.

Dissertation Committee

0 Total Credits

The Doctoral Advisory Committee must consist of a minimum of four members: two must be graduate faculty members from the MAE Department and one must be at large from outside the MAE Department and will serve as the external committee member. The committee Chair must be a member of the graduate faculty approved to direct dissertation. Joint faculty members may serve as members from within the MAE Department as well as committee Chair. Adjunct faculty and off-campus experts, if approved graduate faculty scholars, may serve as the external person in the committee. The UCF College of Graduate Studies reserves the right to review appointments to advisory committees, place a representative on any advisory committee or appoint a co-adviser.

All committee members vote on acceptance or rejection of the dissertation proposal and the final dissertation. The dissertation proposal and final dissertation must be approved by a majority of the Doctoral Advisory Committee.

Admission to Candidacy

0 Total Credits

The following are required to be admitted to candidacy and enroll in dissertation hours (enrollment in dissertation hours begins the semester following the completion of these requirements). Evidence of meeting these requirements must be received by the College of Graduate Studies by the day before the first day of classes for the semester in which a student wishes to enroll in dissertation hours.

Completion of all coursework, except for dissertation hours.

Successful completion of the Candidacy Examination.

Successful defense of the written dissertation proposal.

Formation of the Doctoral Advisory Committee, consisting of approved Graduate Faculty and Graduate Faculty Scholars.

Submission of an approved Program of Study.

Grand Total Credits: 72

Financial Information

Graduate students may receive financial assistance through fellowships, assistantships, tuition support, or loans. For more information, see the College of Graduate Studies [Funding website](#), which describes the types of financial assistance available at UCF and provides general guidance in planning your graduate finances. The [Financial Information](#) section of the Graduate Catalog is another key resource.

UCF Student Financial Assistance

Millican Hall 120

Telephone: 407-823-2827

Appointment Line: 407-823-5285

Fax: 407-823-5241

finaid@ucf.edu

<http://finaid.ucf.edu>

Fellowship Information

Fellowships are awarded based on academic merit to highly qualified students. They are paid to students through the Office of Student Financial Assistance, based on instructions provided by the College of Graduate Studies. Fellowships are given to support a student's graduate study and do not have a work obligation. For more information, see [UCF Graduate Fellowships](#), which includes descriptions of university fellowships and what you should do to be considered for a fellowship.

Grad Fellowships

Telephone: 407-823-0127

gradfellowship@ucf.edu

<https://graduate.ucf.edu/funding/>