Doctor of Philosophy in Aerospace Engineering (MS Entry)

About This Program

The overall objective of the graduate program in Aerospace Engineering is to develop in a student the ability to define a technical problem, establish an appropriate mathematical or experimental model based on a firm understanding of the physical nature of the problem, analyze the problem by theoretical, numerical, or experimental techniques, and evaluate the results. Although this ability is developed in the context of aerospace problems, it is applicable to the engineering of any physical system. The program is designed for a student with any of the following specific objectives:

1. A program of advanced study which allows specialization in one of the following areas:
   - Fluid dynamics, aerodynamics and propulsion (theoretical and applied aerodynamics, gas dynamics, viscous fluid mechanics, turbulence, computational and experimental fluid dynamics, bio-fluidics, hypersonic flow theory, high-temperature gas dynamics, V/STOL and rotorcraft aerodynamics, air-breathing and rocket propulsion);
   - Structural mechanics and structures (solid mechanics, aerospace structures, structural dynamics, composite structures and material characterization, damage tolerance and durability, smart structures, structure optimization, sensor technology, high-temperature structures and materials, aeroelasticity);
   - Flight mechanics and controls (atmospheric and space flight mechanics, orbital mechanics, guidance, navigation and control);
   - Vehicle design (conceptual aircraft design, atmospheric flight vehicle design, spacecraft design, computer-aided engineering).
2. A balanced but non-specialized program of advanced study in aerodynamics, astronautics, flight dynamics, structural analysis, propulsion, and fluid mechanics, with emphasis on experimental techniques and modern mathematical analysis.

Competencies

1. Upon completion, students are expected to attain mastery of theoretical concepts applicable to aerospace engineering.
2. Upon completion, students are expected to attain the ability to effectively use the modern techniques and tools applicable to aerospace engineering.
3. Upon completion, students are expected to attain the ability to communicate effectively.
4. Upon completion, students are expected to attain the ability to perform independent research studies in aerospace engineering that require knowledge of the literature and demonstrate critical thinking and analysis.
5. Upon completion, students are required to publish the results of their research at appropriate technical conferences and/or refereed journals.

Admissions Criteria

Doctoral candidates shall demonstrate through previous academic preparation the potential to carry out independent research in aerospace engineering. All applicants must meet the general requirements of the Graduate School as stated in the section of this catalog entitled "Admission Requirements and Procedures". Applicants not meeting all criteria may be admitted on a provisional or probationary basis.

For applicants with no prior training in engineering or with insufficient undergraduate aerospace engineering coursework, the same minimum criteria will apply. Additionally, their records will be reviewed in relation to their mathematics, engineering, and science backgrounds, and probationary status may be a basis for acceptance of such applicants, with specific undergraduate remedial work required.

The doctoral programs in Aerospace Engineering use the following guidelines in the admission review process.

UNCONDITIONAL ADMISSION

Unconditional admission requires the submission of items 1 through 5 below for each degree program. To be unconditionally admitted, an applicant must at least meet conditions 1, 2, 3, and 4.

1. Minimum GPA of 3.3 in the last 60 hours taken in the major field of study in an appropriate engineering or science discipline. (For some international applicants where GPA calculations based on a 4.0 system are not performed, a minimum performance level of 70 percentile is expected. This minimum expectation may be higher for some countries, where less stringent grading criteria are used.) Performance in core aerospace engineering courses is of particular importance.
2. GRE scores of at least 150 on the Verbal and 159 on the Quantitative subtests. For those applicants whose GRE verbal score falls below 150, high TOEFL/IELTS scores may be considered to offset the GRE verbal score.
3. Three favorable recommendations via the university’s recommendation form or via recommendation letter.
4. A Statement of Purpose detailing the applicant’s background, education, professional goals, technical interests, and research interests.
5. For applicants whose native language is not English: All students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

PROBATIONARY ADMISSION

Probationary admission into the Aerospace Engineering PhD may be permitted under the following conditions:

1. If an applicant meets any three of the items 1, 2, 3, and 4 above.
2. For applicants whose native language is not English: all students admitted in the program must meet the minimum university English language requirements as detailed in the general admission requirements section of the catalog. However, meeting the minimum requirement does not guarantee admission. The program will give preference to students with IELTS score of 6.5, or TOEFL-iBT total score of 84.

PROVISIONAL ADMISSION

An applicant who is unable to supply all required documentation prior to the admission deadline, but who otherwise appears to meet admission requirements, may be granted provisional admission.

DEFERRED ADMISSION

If an applicant does not present adequate evidence of meeting admission requirements, the admission decision may be deferred until admission records are complete or the requirements are met.

DENIAL OF ADMISSION

Admission may be denied if the applicant has less than satisfactory performance in two out of the first three admission criteria.

Curriculum

The MS-entry PhD requires a combination of graduate-level course work beyond the master's degree and research effort that will include a scholarly dissertation that provides a significant original contribution to Aerospace Engineering.

Didactic Courses		
Didactic courses sufficient to obtain in-depth knowledge in at least two core areas of aerospace engineering. Students with backgrounds outside aerospace engineering must satisfy the master's core requirements.		
Select at least 24 hours in consultation with faculty research advisor.		24
AE 5101	GRADUATE SEMINAR (repeat at least 3 times)	3
Research Hours		
Select research hours as appropriate for degree progression.		
Dissertation		
Select at least 9 hours from the following:		9
AE 6399	DISSERTATION	
AE 6699	DISSERTATION	
AE 6999	DISSERTATION	
AE 7399	DOCTORAL DEGREE COMPLETION	
Total Hours		**36**

Program Completion

MILESTONES

Research Advisor and PRoGram of Work

Students must have a faculty research (dissertation) advisor (supervising professor) and an approved program of work in the second full semester or after 12 hours are completed.

Qualifying Exam

MS-entry students must take the Qualifying Exam at the end of the their first semester. This exam is offered twice per year, during the week preceding the start of classes for the fall and spring semesters. Possible outcomes of this evaluation are:

- continuation in the doctoral program
- approval to continue with certain specified remedial work,
- failure with approval to retake
- termination in the program.

Comprehensive Exam

Students are eligible to take the comprehensive examination after satisfying all requirements stipulated by the Qualifying Exam Committee and giving evidence to their doctoral committee of adequate academic achievement by having completed all or most coursework requirements. The comprehensive examination is used to determine if the student has the necessary background and specialization required for the dissertation research and if the student can organize and conduct the research. An applicant must pass this examination to be admitted to candidacy for the PhD degree.

Advising Resources

Advising can be conducted in person or remotely via Teams. Please email your advisor to schedule an appointment. The advising form can be downloaded from the MAE Grad Advising Canvas page. First consult with your advisor if you are planning a Leave of Absence, Grade Forgiveness, or Change of Program.

Location:

306 Woolf Hall

Email:

MAEGradAdvising@uta.edu

Phone:

817-272-2500

Web:

Graduate Advising Webpage (https://www.uta.edu/academics/schools-colleges/engineering/academics/departments/mechanical-aerospace/students/gradadvising/)