Dual M.S. Degree in Aerospace Engineering and Space Architecture

Rationale for the Program

Graduate students interested in the related fields of Aerospace Engineering and Space Architecture can combine their studies in a Dual Aerospace Engineering/Space Architecture Master of Science degree program. The dual degree allows students to obtain a M.S. degree in Aerospace Engineering and a M.S. degree in Space Architecture by completing 46 credit hours of relevant graduate coursework. Hence, with the appropriate selection of graduate courses within the Aerospace Engineering and the Space Architecture programs students can be awarded both degrees. Hence, the dual degree plan significantly reduces the total number of credit hours needed if the two degrees were pursued separately.

Admission to the Program

New students should apply to Mechanical Engineering graduate program for admission and indicate their interest to pursue the dual Aerospace Engineering/Space Architecture M.S. degree.

To be unconditionally admitted to the Dual MS degree program, an applicant should have:

- A Bachelor's degree in Mechanical Engineering, Aerospace Engineering or a related field, preferably from an accredited engineering program. Students with a Bachelor's degree in architecture, natural sciences or mathematics may apply but will have to meet appropriate coursework prerequisites.
- A grade point average of at least 3.00 out of 4.00 on the last 60 semester credit hours attempted exclusive of grades received for activities such as seminars, physical education, industrial internships, etc.
- An adequate score on the Graduate Record Examination (GRE). Texas law prohibits the definition of minimum acceptable scores on the GRE. However, 160 to 163 is a typical average score on the Quantitative section across all degree programs for an admission class.
- A minimum score of 6.5 on the IELTS, with a minimum writing score of 6.5, or 79 on the internet-based TOEFL examination, with a minimum writing score of 20, for students whose native language is not English.
- Three letters of recommendation attesting to the student's capacity to perform in the classroom and (for applicants to the thesis program) in a research capacity. A minimum of two letters should be from tenured or tenure-track faculty members who have observed the academic performance of the applicant,
and one can come from an engineering industry supervisor.

- A statement of purpose that is consistent with the areas of instruction and (for applicants to the thesis program) the current research areas within the Department.

Acceptance to the program is based on a competitive combination of academic background, GRE scores, recommendation letters and the statement of purpose. Domestic applicants who are not clearly competitive in these areas may be admitted on a conditional basis at the discretion of the Director of Admissions. Nonimmigrant visa holders may not be admitted conditionally.

Students may begin their graduate studies in one program and apply for admission to the dual degree program at a later date. However, the decision by a student to pursue the dual degree should be made prior to the completion of 18 hours of coursework.

**Program of Study**

Within the 46 completed credit hours, students must fulfill the program requirements for each separate degree. Hence, the course selections should simultaneously comply with the course requirements of the Aerospace Engineering M.S. program and the core area course requirements of the Space Architecture M.S. program.

Completion of the program with a Thesis option is possible and in this case the corresponding degree will be an M.S. with Thesis degree. Specific plan of study requirements for the Dual M.S. Program without Thesis and the Dual M.S. Program with Thesis are outlined below:

**Program of Study for the Dual M.S. Program without Thesis**

1. Eighteen hours of coursework from the approved Aerospace Engineering courses in the core areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics. Students can select a core area of concentration where they take the majority of their core courses. However, as a breadth requirement, students should take at least six semester hours of core course work outside their core area of concentration.

2. Sixteen hours of coursework from Space Architecture core courses, exclusive of Special Problems/Independent Study (SPAC 6298 and SPAC 6398) and Master's Project (SPAC 7410).

3. Twelve hours of approved coursework at the 6000-level or above from any department in the College of Engineering or the College of Natural Science and Mathematics. A total of no more than six hours can be from the Gerald D. Hines College of Architecture and Design and the Bauer College of Business and Law.

**Program of Study for the Dual M.S. Program with Thesis**

1. Nine hours of thesis or Master's project credits

2. Eighteen hours from the approved Aerospace Engineering courses in the core areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics. As in the non-thesis option at least six semester hours of core course work should be completed outside a core area of concentration.

3. Sixteen hours of Space Architecture courses, exclusive of Special Problems/Independent Study (SPAC 6298 and SPAC 6398) and Master's Project (SPAC 7410).

4. Three hours of approved coursework at the 6000-level or above from any department in the College of Engineering or the College of Natural Science and Mathematics.
If a graduate course is dual-listed with an undergraduate 5000-level section, the student must enroll in the corresponding graduate section. Approval of any course that falls outside of the description given here must be requested by petition to the Director of Graduate Studies. Approval must be received prior to enrollment in the course. Non-thesis students should not enroll in research or thesis courses (MECE 6x98, MECE 6399, MECE 7399 or SPAC 7410).

**Graduation Requirements**

The graduation requirement for the dual-degree program is an overall minimum 3.00/4.00 grade point average, as well as, a minimum 3.00/4.00 grade point average on the eighteen or more hours of the core area Aerospace Engineering courses.

**Appendix:** Comparison of individual and dual degree plans

**Without Thesis:**

Aerospace Engineering: 30 credit-hours of coursework with:

- 18 in the core areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics and
- 12 in approved graduate electives.

Space Architecture: 30 credit hours of coursework with

- a minimum of 16 from Space Architecture core courses and
- the remaining from Special Problems/Independent Study (SPAC 6298 and SPAC 6398) and other approved graduate electives.

Dual Degree: 46 credit hours of coursework with

- 18 in the core Aerospace Engineering areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics
- 16 in core Space Architecture courses and
- 12 of approved electives.

**With Thesis:**

Aerospace Engineering: 30 credit-hours of coursework with:

- 9 hours of thesis
- 18 in the core areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics
- 3 in approved graduate electives.

Space Architecture: 30 credit hours of coursework with

- 9 hours of Master's project
- a minimum of 16 from Space Architecture core courses and
- the remaining from Special Problems/Independent Study (SPAC 6298 and SPAC 6398) and other approved graduate electives.
Dual Degree: 46 credit hours of coursework with

- 9 hours of thesis or Master's project
- 18 in the core Aerospace Engineering areas of a) Aerodynamics & Heat Transfer, b) Structural Mechanics and Materials, and c) Controls and Dynamics
- a minimum of 16 in core Space Architecture courses and
- the remaining from Special Problems/Independent Study (SPAC 6298 and SPAC 6398) and other approved graduate electives.