

Department of Aerospace

Wayne Dornan, Chair
Business and Aerospace Building S211C

The Department of Aerospace offers the Master of Science (M.S.) in Aviation Administration, with a concentration in Airline/Airport Management or Aviation Asset Management, and a Master of Education (M.Ed.) in Aerospace Education.

Requirements for the Master of Science— Aviation Administration Major

Normally the required minimum test score for admission to this program is 800 on the Graduate Record Examination or 393 on the Miller Analogies Test (38 on the old scale).

Candidate must

1. have graduated from an accredited four-year college or university to be considered for unconditional admission. Transcripts must reflect 6 hours of research-related coursework (e.g., statistics, computer science, etc.) and 18 semester hours from the following disciplines: aviation, business, or information systems. Demonstrated knowledge equivalent to that obtainable through the undergraduate core curriculum in Aerospace may be substituted for up to 15 of the 18 required semester hours. The aviation coursework must include 6 semester hours in at least two of the following areas: airline or airport management, aviation asset management, fixed-base operations or theory of flight. Applicants with undergraduate majors in fields other than aviation who have not completed a college-level flight theory course, or who do not possess Federal Aviation Administration or military-issued pilot credentials, will be required to enroll in AERO 1020 (Theory of Flight) during their first semester after admission to the M.S. degree program.
2. complete 36 semester hours consisting of an 18-hour core, 12 hours in the chosen concentration, and 6 hours of electives with a cumulative GPA of 3.0 or greater. If necessary, an additional 3 hours may be taken to complete the thesis; however, these hours may not be applied toward elective requirements.
3. file a degree plan with the Graduate Office prior to the completion of 21 credit hours.
4. successfully complete a written comprehensive examination (may be taken no more than twice).
5. successfully complete a thesis defense.

NOTE: Applicants meeting the above criteria whose cumulative GPA is less than 3.00 but at least 2.75 and who present other qualities deemed valuable by the aviation industry, as determined by the Graduate Program Committee, may be conditionally accepted with academic probationary status. Students with probationary status who fail to achieve and maintain a 3.0 GPA will be suspended from the M.S. degree program.

Airline/Airport Management Concentration

Required Courses

AERO	6120	Aviation History
AERO	6150	Aviation Industries
STAT	6160	Advanced Mathematical Statistics I OR
QM	6000	Quantitative Methods Survey
AERO	6300	Air Transportation Systems
AERO	6610	Introduction to Aerospace Research
AERO	6640	Thesis Research

Electives - 12 hours from the following:

AERO	5075	Selected Readings in Aerospace
AERO	6130	Safety Administration and Security
AERO	6170	Scheduled Air Carrier Operations
AERO	6190	Airport Organizational Structures and Operational Activities
AERO	6220	Environmental Policy
AERO	6250	Aviation Policy and Planning
AERO	6270	Airport Design
AERO	6330	International Aviation Systems
AERO	6350	General Aviation
AERO	6370	Aviation Contracts and Leases
AERO	6450	Airport Funding Policy
INFS	6610	Information Systems Management and Applications OR
INFS	5200	Data Enhanced Internet Applications

Guided Electives

Students will select 6 hours of approved electives suited to their career goals from another department within the University. Selection will be made with appropriate guidance from faculty of both departments.

Aviation Asset Management Concentration

Required Courses

AERO	6120	Aviation History
AERO	6150	Aviation Industries
STAT	6160	Advanced Mathematical Statistics I OR
QM	6000	Quantitative Methods Survey
AERO	6300	Air Transportation Systems
AERO	6610	Introduction to Aerospace Research
AERO	6640	Thesis Research

Electives - 12 hours from the following:

AERO	5075	Selected Readings in Aerospace
AERO	6170	Scheduled Air Carrier Operations
AERO	6250	Aviation Policy and Planning
AERO	6350	General Aviation
AERO	6370	Aviation Contracts and Leases
AERO	6450	Airport Funding Policy
INFS	6610	Information Systems Management and Applications OR
INFS	5200	Data Enhanced Internet Applications
ACTG	6000	Survey of Accounting Principles
ECON	6030	Survey of Economic Theory

Guided Electives

Students will select 6 hours of approved electives suited to their career goals from another department within the University. Selection will be made with appropriate guidance from faculty of both departments.

Requirements for the Master of Education— Aerospace Education Major

Advisement for the degree is provided by graduate faculty members in the Aerospace Department and one graduate faculty member from the College of Education and Behavioral Science. Students in the M.Ed. degree program may elect either an aerospace or an education option. Both options consist of a 13-hour core and are designed to serve applicants interested in education or professional development programs and administration.

Normally, the required test score for admission to the M.Ed. program is 380 (30 on the old scale) on the Miller Analogies Test or a satisfactory score on the Graduate Record Examination.

Candidate must

1. hold a bachelor's degree from an accredited institution;
2. complete 34 semester hours with no more than 30 percent of the total degree hours dually listed as undergraduate/graduate hours (refer to the appropriate option for specific requirements);
3. be admitted by Aerospace Department's Graduate Program Committee;
4. file a degree plan with the Graduate Office prior to the completion of 21 credit hours; and
5. successfully complete a written comprehensive examination (may be taken no more than twice).

Option 1 (Aerospace)

Required - 13 hours

AERO	6100	Aviation Workshop (same as YOED 6100)
SPSE	6430	Introduction to Curriculum Development
AERO	6610	Introduction to Aerospace Research OR
FOED	6610	Analysis and Application of Educational Research
AERO	6120	Aviation History

Aerospace Electives - 12 hours

Any 5000-level aerospace course not previously taken at the 4000-level or any 6000-level aerospace course with the approval of the student's Aerospace Department advisor.

Education - the following three (3) courses or courses approved by the College of Education and Behavioral Science advisor:

FOED	6020	Educational Foundations
SPSE	6040	Supervision of Instruction
SPSE	6050	Instructional Leadership

Option 2 (Education)

Students choosing this option must have a designated College of Education and Behavioral Science advisor and should have the appropriate teaching license. The licensure requirement may be waived under special circumstances. A student seeking a licensure waiver must initiate a written request with the advisor, seek approval from the chair and dean of the College of Education and Behavioral Science, and forward the request to the Office of Teacher Licensure, McWherter Learning Resources Center 170.

66 Aerospace

Required - 13 hours

YOED	6100	Aviation Workshop
SPSE	6430	Introduction to Curriculum Development
FOED	6610	Analysis and Application of Educational Research OR
	AERO	6610 Introduction to Aerospace Research
AERO	6120	Aviation History

Electives - 12 hours

FOED	6020	Educational Foundations
SPSE	6040	Supervision of Instruction
SPSE	6050	Instructional Leadership
SPSE	6080	Studies in Leadership
SPSE	6250	Seminar in Curriculum Improvement
SPSE	6340	School Finance
SPSE	6500	Studies in Education: Administration
SPSE	6600	Microcomputers in Educational Administration

Aerospace Electives - 9 hours

Any 5000-level aerospace course not previously taken at the 4000 level or any 6000-level aerospace course except for AERO 6100 and 6610.

Courses in Aerospace [AERO]

5050 Aerospace Internship I. Three credits. Prerequisite: Consent of department chair. Student employed by an acceptable airline, airport director, or aerospace industry for field work. Minimum 300 hours work required. Pass/Fail grading.

5071- Problems in Aerospace. One to three credits. Individual directed
5073 study in the field of aerospace.

5075 Selected Readings in Aerospace. Three credits. Prerequisite: Graduate standing. Guided readings in aviation or space. Topics alternate each semester and range from historical events to possible future developments. Discussion, presentations, and critical analysis of material.

5100 Airline Management. Three credits. Airline operation and implementation of sound management practices.

5110 Airport Management. Three credits. Airport operations. Development of an airport master plan.

5130 Aerospace Physiology. Three credits. Instruction, readings, and structured experiences to ensure familiarity with the various physiological and health-related factors affecting a flyer's safety and performance.

5150 Fixed Base Operations Management. Three credits. The FBO operator and the essential role played in general aviation.

5160 Aviation Law. Three credits. Legal responsibility in the aviation industry.

5170 Airport Planning and Design. Three credits. Methods utilized in airport planning and design; relationship of the airport and the community.

5200 Flight Instruction for Teachers. Three credits. Flight instruction and discussion provide an opportunity to understand the airplane and its operation. Fee required.

5230 Advanced Air Navigation. Three credits. Advanced navigation equipment and operation procedures, GPS, and LORAN.

5240 Aircraft Systems Management. Three credits. Instruction and the requirements pertaining to activities of a flight engineer.

5310 Aerospace Vehicle Systems. Three credits. Design, use, and function of typical hydraulic, mechanical, and electrical systems used on aircraft. For potential pilots, flight engineers, and mechanics.

5400 Space. Three credits. Extensive study of the history of space exploration, the successes and failures of manned and unmanned efforts, and what the future may be for human beings in space.

5490 Aerospace Science for Teachers. Three credits. For teachers who desire an introduction to the total aviation and space effort.

5530 Air Traffic Control. Three credits. The FAA Air Traffic Control system used to regulate air vehicle traffic during enroute and terminal phases of flight, with emphasis on communication, navigation, and control equipment and procedures.

5580 Flight Instruction IV. Three credits. Academics for the ATP and dispatchers written. If flight is desired, student will meet FAR 61 and fee required.

6100 Aviation Workshop. Four credits. (Same as YOED 6100.) A first course in aerospace education; provides an overview of aerospace historically and in the future.

6120 Aviation History. Three credits. Detailed examination of the development and role of aviation and its economic, social, and political impact on the modern world. Particular emphasis on the global aspects of civilian aviation and the consequences of the transportation revolution it engendered. Specific topics analyzed in detail each semester.

6130 Safety Administration and Security. Three credits. An examination of the various programs which airport operators employ in operating and maintaining airport safety and security services. Special emphasis on federal guidelines and their applications at commercial service airports.

6150 Aviation Industries. Three credits. An overview of domestic and international air transportation businesses. Includes an analysis of extant and forecast labor requirements.

6170 Scheduled Air Carrier Operations. Three credits. An examination of contemporary problems and issues confronting airline industry policy makers, government regulators, managers, and the traveling public.

6190 Airport Organizational Structures and Operational Activities. Three credits. Prerequisite: AERO 5110 or 5170 or consent of instructor. A critical analysis of airport organizational structures, functions, and constraints affecting the airport. A detailed view of operational activities and methods to improve airport efficiency.

6220 Environmental Policy. Three credits. Airport planning and land use programs and procedures as they are currently used within the industry.

6250 Aviation Policy and Planning. Three credits. The regulatory agencies of the aviation industry and their functions. Special emphasis on current problems and issues affecting the industry.

6270 Airport Design. Three credits. Introduces the concepts of airport planning, design, and layout with particular emphasis on community characteristics and resource allocation. Students will become familiar with the Federal Aviation Administration's role in the airport design process.

6300 Air Transportation Systems. Three credits. Explores the evolution of the National Airspace and Airway System from its chaotic

start to a reasonably sophisticated system. Covers importance of technological developments to improve the system.

- 6330 International Aviation Systems.** Three credits. An in-depth analysis of international aviation with particular attention to U.S. aviation interface. Areas covered include the air traffic control systems, bilateral agreements, nationalized vs. privately owned carriers, ETOPS restrictions, marketing and operational difficulties, etc.
- 6350 General Aviation.** Three credits. Operations, supervision, and the role of administration.
- 6370 Aviation Contracts and Leases.** Three credits. An examination of the various agreements utilized by airports to define the terms and conditions for airlines, FBOs, concessionaires, air cargo operators, and other airport tenants. Analysis of the general provisions and requirements contained within airport leases and those specific to each tenant. A review of airport lease administration and compliance procedures.
- 6380 Aerostructures.** Three credits. Prerequisites: MATH 1730 or 1720 and PHYS 2010/2011. Concepts of mechanics applied to analysis of structural elements used in aerospace vehicles. Loading, deflection safety factors, and modes of possible failure.
- 6390 Advanced Aerodynamics.** Three credits. Prerequisite: AERO 3440 or equivalent. Examines the aerodynamics of aircraft flight from subsonic to hypersonic speeds, with flight through the four sonic regions discussed and solutions to problems presented.
- 6400 Aerospace Seminar.** One credit. Prerequisite: Last semester of resident enrollment. A capstone course involving the analysis, synthesis, and integration of relevant academic experiences.
- 6450 Airport Funding Policy.** Three credits. Airport subsidy funding by the local, state, and federal governments and their essential components as applied to local airports. Procedures necessary to obtain government funding and grants available for building new facilities and repairing existing buildings.
- 6540 Problems in Aerospace Education.** One, two, or three credits. (Same as YOED 6540.) Content varies with needs of individual students who are interested in making a specialized study of current problems in the field of aerospace education.
- 6610 Introduction to Aerospace Research.** Three credits. Emphasis on research as a significant component of graduate study to include methods, procedures, style, and form.
- 6640 Thesis Research.** One to six credits. Prerequisite: AERO 6610. Selection of a research problem, review of pertinent literature, collection and analysis of data, and composition of thesis. Once enrolled, student should register for at least one credit hour of master's research each semester until completion. S/U grading.
- 6700 Advanced Aviation Workshop.** Four credits. (Same as YOED 6700.) Builds on prior experiences in aviation/aerospace. Essential for the prospective teacher or aerospace education courses at any level.
- 6999 Comprehensive Examination and Preparation.** One credit. Open only to students who are not enrolled in any other graduate course and who will take the master's comprehensive examination during the term. The student must contact the graduate advisor during the first two weeks of the term for specifics regarding the details of this comprehensive examination preparatory course. Credit may not be applied to degree requirements.