

Department of Aerospace

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Programs in the Department of Aerospace lead to the Bachelor of Science degree with a major in Aerospace and concentrations in Administration, Maintenance Management, Professional Pilot, Technology, and Flight Dispatch and Scheduling. A minor in Aerospace is also available. All of these programs are designed to prepare students for professional positions in the air transportation or aerospace manufacturing industry or in operations supporting allied areas.

Aerospace Core Requirement

All Aerospace majors will take AERO 1010, 1020, 3020, 3030, and 4040.

In all curricular listings, (Area __) refers to the General Studies requirements as outlined on pages 59-61.

Major in Aerospace

Concentration: Administration

The Administration concentration offers instruction designed for students who are interested in careers in the various aspects of aerospace administration and management. Selected General Studies and minor courses are interwoven with aerospace courses to provide students with a foundation for such careers. This concentration requires the completion of

1. 39 semester hours in aerospace courses as listed below;
2. a minor as recommended by the faculty advisor and approved by the department chair and dean;
3. other specific required courses as listed below.

Recommended Sequence and Curriculum Requirements

FRESHMAN		SOPHOMORE	
AERO 1010, 1020;		AERO 2230 or 2140	3
TRNS 1610	9	AERO 2010	3
English (Area I-A)	6	English (Area II-A)	6
BIOL 1030 (Area IV-A)	4	CHEM 1010, 1011, 1020,	
MATH 1730 (Area IV-B)	4	1021, or PHYS 2010,	
PHED or M S (Area V)	2	2011, 2020, 2021	
History (Area III-A)	6	(Area IV-A)	8
COMM 2200 (Area I-B)	3	PHED or M S (Area V)	2
	34	CSCI 1150 or INFS 2200	
		or 3100 or equivalent	3
		ECON 2410 (Area III-B)	3
		Electives	6
			34

JUNIOR

AERO 3030, 3020;	
TRNS 3630	9
Gen. Studies (Area II-B)	3
MGMT 3610	3
Accounting	3
BMOM 3510 or ENGL 3520	3
MATH 2020	3
Minor	9
	33

SENIOR

AERO 4110, 4150,		
4100, 4040	12	
Aerospace elective	3	
MGMT or MKT elective	3	
Statistics	3	
MKT 3820	3	
Minor	9	
	33	

Concentration: Flight Dispatch and Scheduling

The Flight Dispatch and Scheduling concentration offers instruction designed to meet the aviation industry's needs by preparing professional, corporate, and airline flight dispatchers and schedulers. Selected General Studies and minor courses are interwoven with required aerospace courses to provide students with a foundation for careers in this area. This concentration requires the completion of

1. 40 hours of aerospace courses as listed below;
2. a minor of 18 semester hours to be selected from one of the following: Geography/Geology, Computer Science, Information Systems, or other science or business-related field;
3. other specific required courses as listed below.

Recommended Sequence and Curriculum Requirements

FRESHMAN		SOPHOMORE	
AERO 1010, 1020, 2010	9	AERO 2220, 3030, 3170,	
English (Area I-A)	6	3020	12
BIOL 1030 (Area IV-A)	4	English (Area II-A)	6
MATH 1730 (Area IV-B)	4	PHYS 2010, 2011, 2020,	
GEOG 2000 or PSY 1410		2021 (Area IV-A)	8
(Area III-B)	3	History (Area III-A)	6
CSCI 1150 or INFS 2200	3	PHED or M S (Area V)	2
COMM 2200 (Area I-B)	3		34
PHED or M S (Area V)	2		
	34		

JUNIOR

AERO 3210, 3080, 3230,	
4530	10
BMOM 3510 or ENGL 3520	3
MATH 2020	3
MGMT 3610, 4680	6
Minor and electives	6
Gen. Studies (Area II-B)	3
PHIL 2110	3
	34

SENIOR

AERO 4580, 4590, 4040	9
GEOG 3410 or GEOL 4050	3
Minor and electives	10
ECON 4510 or MGMT 4510	3
PSY 2180, 3320	6
	31

Concentration: Maintenance Management

The Maintenance Management concentration offers instruction designed for students who are interested in careers as skilled technicians or managers in aircraft manufacturing, aircraft repair, engine overhaul, or space vehicle maintenance. The fundamental skills needed in aerospace vehicle repair and maintenance are stressed together with management skills for such careers. MTSU is an approved Federal Aviation Administration (FAA) FAR Part 147 maintenance technician school for airframe and powerplant mechanics. This concentration requires the completion of

1. 45 hours of aerospace courses as listed below;

- a minor that complements the major recommended by the faculty advisor and approved by the department chair and dean;
- other specific required courses as listed below.

Recommended Sequence and Curriculum Requirements			
FRESHMAN		SOPHOMORE	
AERO 1010, 1020, 1340	9	AERO 1380, 3030, 3020	9
English (Area I-A)	6	English (Area II-A)	6
BIOL 1030 (Area IV-A)	4	PHYS 2010, 2011, 2020,	
General Studies (Area III-B)	3	2021 (Area IV-A)	8
MATH 1730, 2020 (Area IV-B)	7	History (Area III-A)	6
PHED or M S (Area V)	2	PHED or M S (Area V)	2
ETIS 1310	4	Gen. Studies (Area I-B)	3
	35		34

JUNIOR		SENIOR	
AERO 3392, 3301, 4311, 3322	12	AERO 4310, 3362, 4371, 4040	12
Gen. Studies (Area II-B)	3	AERO 4440 or 4342	3
ET 3600 or 3610	4	MGMT 4510	3
MGMT 3610 or ET 3910	3	Upper-division electives and minor	13
Upper-division minor and electives	9		31
CSCI 1150 or INFS 2200 or 3100 or equivalent	3		
	34		

NOTE: Additional aerospace maintenance courses are required if FAA certification is sought. Substitution of certain aerospace courses may be allowed if FAA certification is not sought. Students enrolled in the Airframe and Powerplant Technician's Program are required to pass a comprehensive qualification examination prior to receiving authorization to take the FAA examination or prior to receiving a Certificate of Completion from MTSU.

Concentration: Professional Pilot

Admission to the Professional Pilot concentration is by separate application to the Aerospace Department. Admission to the University does not guarantee admission to this concentration. Contact the Aerospace Department for requirements prior to March 1 and October 1. Enrollment is limited and selection is made from eligible candidates who are best qualified. Transfer students and persons applying for advanced standing will be evaluated on additional appropriate criteria. Specific policies are available from the department. The candidate must meet the following minimum standards:

- have a college grade point average of 2.50 (or if entering freshman, a high school GPA of 2.80);
- have a current second class FAA medical examination;
- be in good standing within the department and University (if a transfer, candidate cannot be on probation in any form);
- have no physical disability that would prohibit the student from completing the course requirements.

The Professional Pilot concentration requires the completion of

- 48 semester hours in aerospace courses as listed below;
- a minor that complements the Professional Pilot major, recommended by the faculty advisor and approved by the department chair and dean;
- other specific required courses as listed below; and

- Commercial Certificate, instrument, and multi-engine ratings prior to graduation (ratings completed at MTSU).

Retention in the program is based on maintaining a GPA of 2.50 or better and making consistent and satisfactory progress in flight training. Violation of any FAA regulation will result in immediate termination.

Students admitted to the Professional Pilot Program are expected to receive all required flight training beyond the Private Pilot Certificate with the MTSU Flight School. Transfer students who have already completed the instrument rating may be admitted; however, they must complete the Commercial Pilot Certificate plus two additional ratings/certificates at the MTSU Flight School.

Recommended Sequence and Curriculum Requirements			
FRESHMAN		SOPHOMORE	
AERO 1010, 1020, 2010, 3202	10	AERO 2220 or 2230, 3203, 3210, 3215	10
English (Area I-A)	6	English (Area II-A)	6
BIOL 1030 (Area IV-A)	4	PHYS 2010, 2011	4
MATH 1730, 2020 (Area IV-B)	7	History (Area III-A)	6
PHED or M S (Area V)	2	PHED or M S (Area V)	2
COMM 2200 (Area I-B)	3	PSY 1410 (Area III-B)	3
CHEM 1010, 1011 (Area IV-A)	4	Minor	3
	36		34

JUNIOR		SENIOR	
AERO 3204, 3030, 3440, 3020, 4310	13	AERO 3260, 4110 or 4100 4130, 4440, 4040	15
Gen. Studies (Area II-B)	3	Upper-division minor	9
ET 3610	4	Upper-division electives	5
Statistics	3	MGMT 3610	3
Minor	6	BMOM 3510 or ENGL 3520	3
CSCI 1150 or INFS 2200 or equivalent	3		35
	32		

Concentration: Technology

The Technology concentration is designed for students interested in technical careers in aerospace and as preparation for those who seek more advanced study at the graduate level. Students will receive a strong background in mathematics, the sciences, industrial studies, and the more technical courses in aerospace. This concentration requires the completion of

- 36 semester hours of aerospace courses as listed below;
- minors in Mathematics and Engineering Technology and Industrial Studies;
- two semesters of general chemistry and two semesters of calculus-based physics;
- other specific required courses as listed below.

Recommended Sequence and Curriculum Requirements			
FRESHMAN		SOPHOMORE	
AERO 1010, 1020, and 2010 or 2220	9	AERO 3030, 3020	6
English (Area I-A)	6	English (Area II-A)	6
BIOL 1030 (Area IV-A)	4	CHEM 1120, 1121 (Area IV-A)	4
MATH 1730, 1910 (Area IV-B)	8	MATH 1920, 3110 (Area IV-B)	8
CHEM 1110, 1111 (Area IV-A)	4	History (Area III-A)	6
ET 2310	4	PHYS 2110, 2111 (Area IV-A)	4
	35	PHED or MS (Area V)	2
			36

JUNIOR		SENIOR	
AERO 3440, 4310	6	AERO 2140 or 4071 or 4160	3
MATH 3120, 2010	6	AERO 4110 or 4150 or 4100	3
ET 3600, 3810, 3830	10	AERO 4440, 4170, 4040	9
PHYS 2120, 2121 (Area IV-A)	4	CSCI 1150	3
PHED or M S (Area V)	2	ECON 2410 (Area III-B)	3
Gen. Studies (Area II-B)	3	ET 3840, 3860, 4850	9
COMM 2200 (Area I-B)	3		
	34		30

Minor in Aerospace

A minimum of 18 semester hours is required for the minor. The minor may emphasize administrative, piloting, or technical subject matter. Courses are chosen with the approval of the student's minor advisor.

Accreditation

In addition to regional accreditation, the following programs are formally approved by the Council on Aviation Accreditation: Aerospace Administration, Aerospace Maintenance Management, Aerospace Technology, and Professional Pilot.

Academic Common Market

Since the Aerospace Department is a participant in the Academic Common Market, students from selected southern states may enroll at MTSU on an **in-state** fee basis. Further information is available from the department or Admissions Office.

Professional Relationships

MTSU holds membership in the Aviation Technical Education Council, the Council on Aviation Accreditation, the National Business Aircraft Association, the National Intercollegiate Flying Association, and the University Aviation Association.

Advanced Standing

Specific aerospace course credit may be granted to holders of FAA Airframe/Powerplant Certificates. Such aeronautical credential-based credit awards are applicable to MTSU enrollments only and will not transfer to other institutions.

Maintenance Management Advanced Standing

Only students pursuing the Maintenance Management concentration may receive advanced standing for certificates held.

Students seeking advanced standing on the basis of possession of the Airframe or Powerplant (or both) Technician Certificates must produce documentation to substantiate prior training to the dean of the College of Basic and Applied Sciences through the chair of the Aerospace Department. In addition, each applicant will be required to pass an oral or written examination covering the course content of each course for which advanced standing is requested. Twenty-four semester hours will be the maximum credit allowed for both certificates.

Holders of an FAA Airframe Technician Certificate may be granted credit for the following courses:

AERO 1020	Theory of Flight
AERO 1380	Aerospace Maintenance Shop Practices
AERO 3301	Sheet Metal Structures
AERO 4310	Aerospace Vehicle Systems

Holders of an FAA Powerplant Technician Certificate may be granted credit for the following courses:

AERO 3030	Propulsion Fundamentals
AERO 3392	Reciprocating Engine Maintenance Repair
AERO 3322	Aerospace Reciprocating Engine Overhaul
AERO 3362	Advanced Aerospace Engine Systems Maintenance and Repair

Holders of FAA Repairmen Certificates and former military mechanics who are not holders of an FAA Maintenance Technician Certificate may not be granted specific course credit for their experiences.

Professional Pilot Advanced Standing

Transfer credit may be granted to Professional Pilot Program majors only for documented flight training completed at an accredited institution of higher learning prior to enrolling at MTSU. However, at least three pilot certificates or ratings must be completed subsequently at the MTSU Flight Education Center.

Air Traffic Control Training

MTSU is a participant in the FAA Collegiate Training Initiative (CTI). Students who successfully complete this program are recommended to attend the FAA's Air Traffic Controller Training Course in Oklahoma City. CTI participation is open to all MTSU students regardless of their academic majors.

Students wishing to enroll in the CTI Program must

1. be at least 16 years of age and possess a high school diploma;
2. hold United States citizenship;
3. obtain employment as an FAA Air Traffic Controller by age 31;
4. pass an FAA physical examination (to include hearing and vision tests and drug screening);
5. pass a background security suitability examination; and
6. complete the following aerospace courses:

AERO 1010	Introduction to Aerospace
AERO 1020	Theory of Flight
AERO 1230	Aviation Laws and Regulations
AERO 2010	Aviation Weather
AERO 2220	Navigation
AERO 3210	Flight Instruction II - Instrument
AERO 3230	Crew Resource Management
AERO 4530	Air Traffic Control
AERO 4560	Advanced Air Traffic Control

NOTE: Additional requirements and disqualifying conditions pertain to enrollment in this program. For further information, contact the Aerospace Department at (615) 898-2788.

Aircraft Maintenance Training

The Aerospace Department offers maintenance training which will qualify students for the FAA's Airframe and Powerplant

Mechanics Certificate. The following courses are required for this qualification.

AERO	1020	Theory of Flight
AERO	1340	Introduction to Aerospace Management
AERO	1380	Aerospace Maintenance Shop Practices
AERO	2331	Airframe Inspection
AERO	2342	Powerplant Inspection
AERO	2371	Aircraft Welding
AERO	2381	Non-Metallic Structures: Dope, Fabric, and Finishing
AERO	3030	Propulsion Fundamentals
AERO	3392	Reciprocating Engine Maintenance Repair
AERO	3301	Sheet Metal Structures
AERO	4311	Aerospace Accessory Systems Maintenance and Repair
AERO	3322	Aerospace Reciprocating Engine Overhaul
AERO	4332	Reciprocating Engine Troubleshooting
AERO	3371	Aircraft Finishing and Non-Destructive Inspection
AERO	3020	Aerospace Materials
AERO	4310	Aerospace Vehicle Systems
AERO	3362	Advanced Aerospace Engine Systems Maintenance and Repair
AERO	4371	Advanced Aerospace Vehicle Systems Overhaul
AERO	4381	Advanced Aerospace Accessory Systems Maintenance and Repair
AERO	4392	Aerospace Turbine Engine Maintenance and Overhaul
AERO	4301	Advanced Aerospace Vehicle Structural Repair
AERO	4312	Turbine Engine Systems
AERO	4342	Turbine Engine Inspection and Troubleshooting
ET	3610	Introduction to Electricity and Electronics
ETIS	1310	Basic Technical Drawing and Sketching
MATH	1710	College Algebra
		OR
MATH	1730	Algebra and Trigonometry
PHYS	2010	Non-Calculus-Based Physics I
PHYS	2011	Physics Problems Laboratory I

Flight Training

The Aerospace Department offers flight training to MTSU students pursuing the Professional Pilot concentration. All training will be conducted in University-owned and maintained aircraft by a select group of flight instructors screened and trained for their positions by MTSU. All flights will be conducted from the Murfreesboro Municipal Airport. Flight fees will be paid directly to MTSU, and students must maintain a positive balance in their training accounts at all times. Financial aid support materials may be obtained from the faculty coordinator in the Aerospace Department.

NOTE: Students interested in military flying careers should contact their local Armed Forces recruiting officer or MTSU's Reserve Officer Training Corps (ROTC) program representatives. Air Force ROTC program information can be obtained by calling (615) 963-5931. For information regarding the Army ROTC Program, call (615) 898-2470. Please see page 89.

Student Organizations

Recognized student organizations in aerospace are Alpha Eta Rho, international aviation fraternity (co-ed); Flying Raiders, intercollegiate competitive flight team; AERO Maintenance Club of MTSU, aircraft maintenance organization; Future Airport Executives (FAE), student chapter of the American Association of Airport Executives; and Women in Aviation, student chapter of Women in Aviation International.

Courses in Aerospace [AERO]

- 1010 (101) Introduction to Aerospace.** Three credits. History of aerospace, opportunities in the field, fundamentals of flight, navigation, meteorology, and Federal Aviation Regulations. Open to all students desiring a general and practical knowledge of aviation.
- 1020 (102) Theory of Flight.** Three credits. Basic aerodynamics with emphasis on lift, weight, thrust, and drag forces acting upon an airplane in flight. Five-hour flight demonstration required at student expense. Fee required.
- 1230 (103) Aviation Laws and Regulations.** Three credits. Those portions of Titles 14 and 49 of the U.S. Code of Federal Regulations concerning airman certification and aircraft operations.
- 1340 (104) Introduction to Aerospace Maintenance.** Three credits. Organization and operation of aircraft maintenance activities. Federal regulations and aviation maintenance law. Maintenance management function in practical settings.
- 1380 (108) Aerospace Maintenance Shop Practices.** Three credits. Use of common tools, measuring devices, and special aircraft tools. Shop layout for aircraft maintenance management.
- 2010 (201) Aviation Weather.** Three credits. Atmosphere, measurement of meteorological elements, and effects of these on air operations.
- 2140 (204) Civil Aviation.** Three credits. Historical development and present status of air transportation facilities; state and federal regulations; legal characteristics of aerospace industry; problems and services of commercial air transportation.
- 2201 (200A) Private Pilot Flight Laboratory.** One credit. Prerequisite: Simultaneous completion of AERO 2230. Flight instruction leading to the FAA Private Pilot Certificate. The certificate must be completed during this course. Fee required.
- 2220 (202) Navigation.** Three credits. The principles of pilotage, dead reckoning, and radio/electronic methods of navigation as applied to cross-country flight planning.
- 2230 (203) Flight Instruction I.** Three credits. Aeronautical subject matter pertaining to the Private Pilot Certificate.
- 2331 (213) Airframe Inspection.** Three credits. Requirements, techniques, and procedures.
- 2342 (214) Powerplant Inspection.** Three credits. Requirements, techniques, and procedures.
- 2371 (217) Aircraft Welding.** Three credits. Various types of aircraft welding techniques and procedures.
- 2381 (218) Non-Metallic Structures: Dope, Fabric, and Finishing.** Three credits. Aircraft fabric covering and finishing.
- 2930 (293) Cooperative Education.** Three credits. Provides students with opportunities for on-the-job experiences related to academic major. Consult department. Pass/Fail.
- 2940 (294) Cooperative Education.** Three credits. Provides students with opportunities for on-the-job experiences related to academic major. Consult department. Pass/Fail.
- 3020 (320) Aerospace Materials.** Three credits. Explores materials used in aerospace applications throughout their development from the standpoint of their properties, economic impact, and

future possibilities. The need for new materials to fill current requirements included.

- 3030 (303) Propulsion Fundamentals.** Three credits. Principles of operations, major components, and important features of typical propulsion systems used in aircraft and missiles, from reciprocating to reaction.
- 3050 (315) Women in Aviation.** Three credits. Explores the many roles of women in this non-traditional field. Research on the history of women in aviation and their political and social impact on aviation, industry, and the country.
- 3080 (328) Aviation Weather II.** Three credits. Prerequisite: AERO 2010. Advanced weather concepts, forecasting, and applications to flight dispatch problems. Preparation for NWS observers license.
- 3100 (330) Aerospace in Our Lives.** Three credits. Open course for non-majors which allows exploration of the aerospace world in which we live. Credit not applicable to Aerospace major.
- 3170 (307) Flight Safety.** Three credits. Prerequisite: AERO 1020. Safety rules and regulations and aircraft accident investigation.
- 3202 (300A) Instrument Flight Laboratory I.** One credit. Prerequisite: Private Pilot Certificate. Flight instruction leading to the FAA Instrument Rating-Airplane, single engine land. Students should consult with the chief instructor pilot for a scheduled flight slot. Fee required.
- 3203 (300B) Instrument Flight Laboratory II.** One credit. Prerequisites: Private Pilot Certificate, AERO 3202 or equivalent, and have completed AERO 3210 or be taking it simultaneously. Flight instruction leading to the FAA Instrument Rating-Airplane, Single Engine Land. The instrument rating must be completed during this course. The student should consult with the chief instructor pilot for a scheduled flight slot. Fee required.
- 3204 (300C) Commercial Flight Laboratory.** One credit. Prerequisites: Private Pilot Certificate, Instrument Rating-Airplane, single engine land, AERO 2010, 2220, 3030 or equivalent for each, and have completed AERO 3215 or be taking it simultaneously. Flight instruction leading to the Commercial Pilot Certificate-Airplane, Single Engine Land. The commercial certificate must be completed during this course. Students should consult with the chief instructor pilot for a scheduled flight slot. Fee required.
- 3205 (300D) Conventional Landing Gear Airplane Laboratory.** One credit. Prerequisite: Private Pilot Certificate. Flight and ground instruction leading to conventional landing gear operation endorsement. Course includes flight and ground instruction. Fee required.
- 3206 Advanced Conventional Landing Gear Flight Laboratory.** One credit. Prerequisite: AERO 3205. Flight and ground instruction in a high performance conventional landing gear aircraft leading to a log book endorsement in this type of aircraft. Fees required. NOTE: This is not an FAA Part 141 course.
- 3207 Flight Instructor - Airplane Lab.** One credit. Prerequisites: Current FAA Commercial Pilot Certificate, AERO 3220, and consent of the instructor. Flight and ground instruction leading to the FAA Flight Instructor - Airplane Certificate. Covers all topics of the Flight Instructor - Airplane Practical Test Standards. Flight fees required. NOTE: This is not an FAA Part 141 course.
- 3208 Flight Instructor - Instrument Lab.** One credit. Prerequisites: Current FAA Commercial Pilot Certificate with an instrument rating, AERO 3210, and consent of the instructor. Flight and ground instruction leading to the FAA Flight Instructor - Instrument Certificate. Covers all topics of the Flight Instructor - Instrument Practical Test Standards. Flight fees required. NOTE: This is not an FAA Part 141 course.
- 3209 Flight Instructor - Multi-engine Lab.** One credit. Prerequisites: Current FAA Commercial Pilot Certificate with an Instrument rating, AERO 3260, and consent of the instructor. Flight and ground instruction leading to the FAA Flight Instructor - Multi-engine Certificate. Covers all topics of the Flight Instructor - Multiengine Practical Test Standards. Flight fees required. NOTE: This is not an FAA Part 141 course.
- 3210 (301A) Flight Instruction II - Instrument.** Three credits. Prerequisite: Private Pilot Certificate. Flight instruction and academics required for the instrument airplane rating.
- 3215 (301B) Flight Instruction II - Commercial.** Three credits. Prerequisite: Private Pilot Certificate. Flight instruction and academics required for the Commercial Pilot Certificate.
- 3220 (302) Flight Instruction III.** Three credits. Prerequisites: Commercial Pilot Certificate, Instrument Rating-Airplane. Ground instruction leading to the Certificated Flight Instructor - Airplane, Single Engine Land. At least one FAA Ground Instructor Certificate must be completed during the course. Fee required for ground instructor exams. Students should consult with the chief flight instructor for a scheduled flight slot. Fee required.
- 3222 High Altitude Aircraft Operations Laboratory.** One credit. Prerequisite: AERO 3240. Simulator and ground instruction in an aircraft simulator leading to a high altitude log book endorsement. Fees required: NOTE: This is not an FAA-approved Part 141 course.
- 3223 High Performance Aircraft Flight Laboratory.** One credit. Prerequisite: AERO 3204. Flight and ground instruction in a high performance aircraft leading to a log book endorsement in this type of aircraft. Fees required. NOTE: This is not an FAA-approved Part 141 course.
- 3225 (322) High Altitude Aircraft Operations.** One credit. Prerequisite: Department head or chief pilot approval. A specialized flight-related course for certifying pilots for the ground portion of high altitude flight in accordance with Federal Aviation Administration regulations.
- 3230 (332) Crew Resource Management.** Three credits. Augments the student's ability to understand the emotional and logical gaps in communication in the present-day aviation crew environment by developing a better understanding of the student's relational style and personality traits in himself/herself and others. Personality profile is optional and confidential.
- 3240 (324) Advanced Flight Operations.** Three credits. Prerequisites: Commercial Pilot Certificate, Instrument Rating-Airplane, Multiengine Rating-Airplane, MTSU Aerospace student. Two-hour blocks of instruction in classroom and flight simulator for students who desire first officer preparation and turbine engine transition. First officer candidates for the MTSU owned or operated passenger-transporting aircraft will be required to complete this course. Fee required.
- 3241 Air Charter Flight Laboratory.** One credit. Prerequisites: AERO 3202, 3203, 3204, 3223, 3240, and 3260; consent of instructor. Air charter operation. Students will be utilized as co-pilots during transportation of university personnel. NOTE: This is not an FAA-approved Part 141 course.

- 3250 (305) Flight Simulator.** Three credits. Instruction in the use of the flight simulator and development of proficiency to fly under instrument conditions.
- 3260 (306) Multi-Engine Rating.** Three credits. Prerequisite: Commercial Pilot/Instrument Rating. Flight and ground instruction pertaining to the multi-engine rating. Students should consult chief flight instructor for a scheduled flight slot. The multi-engine rating must be completed during the course. Fee required.
- 3301 (310) Sheet Metal Structures.** Three credits. Provides practical experience in the repair of sheet metal structures, including major repairs and alterations.
- 3322 (312) Aerospace Reciprocating Engine Overhaul.** Three credits. Completion of a major overhaul on an aircraft engine, including procedures and acceptable techniques used in engine disassembly, inspection, repair, reassembly, and operational testing.
- 3362 (416) Advanced Aerospace Engine Systems Maintenance and Repair.** Three credits. The operation of powerplant component systems; induction, exhaust, instrumentation, engine electrical and propeller systems.
- 3371 (317) Aircraft Finishing and Non-Destructive Inspection.** Three credits. Fundamentals of non-destructive inspection techniques including dye penetrant, magnetic particle, eddy current, and ultrasonic inspection.
- 3392 (309) Reciprocating Engine Maintenance Repair.** Three credits. Reciprocating engines including theory, construction, fuel metering, ignition, and operational maintenance procedures. Inspection and repair processes are applied to operating engine systems.
- 3440 (314) Fundamentals of Aerodynamics.** Three credits. Prerequisites: PHYS 2010 and MATH 1730 or equivalent. Aerodynamics of powered flight. Includes theories of lift and drag and fundamentals of stability and control.
- 3970 (397) Cooperative Education.** Three credits. Provides students with opportunities for on-the-job experiences related to academic major. Consult department. Pass/Fail.
- 3980 (398) Cooperative Education.** Three credits. Provides students with opportunities for on-the-job experiences related to academic major. Consult department. Pass/Fail.
- 4040 (440) Aerospace Seminar.** Three credits. Prerequisite: Senior status or final semester of aerospace program. A capstone course involving analysis, synthesis, and integration of relevant academic experiences. Required of all aerospace students prior to graduation.
- 4050 (405) Aerospace Internship I.** Three credits. Prerequisites: Junior standing and consent of department chair. Student is employed by an acceptable airline, airport director, or aerospace industry for 300 hours of field work. Pass/Fail.
- 4060 (406) Aerospace Internship II.** Three credits. Prerequisites: Junior standing and consent of department chair. A continuation of the internship program with a different employer and place of work or a significant job category change. Pass/Fail.
- 4071 (407) Problems in Aerospace.** One to three credits. Individual directed study in the field of aerospace.
- 4075 Selected Readings in Aerospace.** Three credits. Guided readings in aviation or space; alternates each semester. Topics range from historical events to possible future developments. Discussion, presentations, and critical analysis of material.
- 4100 (423) Airline Management.** Three credits. Airline operation and implementation of sound management practice.
- 4110 (411) Airport Management.** Three credits. Airport operations and development of airport master plan.
- 4130 (413) Aerospace Physiology.** Three credits. Instruction, readings, and structured experiences to insure familiarity with the various physiological and health-related factors affecting a flyer's safety and performance.
- 4150 (415) Fixed Base Operations Management.** Three credits. The FBO operator and the essential role played in general aviation.
- 4160 (465) Aviation Law.** Three credits. Legal responsibility in the aviation industry.
- 4170 (437) Airport Planning and Design.** Three credits. Methods utilized; the relationship of the airport and the community.
- 4220 (402) Flight Instruction VI.** Three credits. Prerequisite: Certified Flight Instructor Certificate. Ground and flight instruction leading to the instrument and multi-engine instructor ratings. Flight training for this course is to be taken at the MTSU Flight School. The ratings must be completed during the course. Students should consult with the chief flight instructor for a scheduled flight slot. Fee required.
- 4230 (433) Advanced Air Navigation.** Three credits. Advanced navigation equipment and operation procedures, GPS, and LORAN.
- 4240 (422) Aircraft Systems Management.** Three credits. Instruction and requirements pertaining to the activities of a flight engineer.
- 4301 (420) Advanced Aerospace Vehicle Structural Repair.** Three credits. Non-typical structures including bonded and plastic structures. Includes planning and organizing of major structural repair projects and rebuilding of severely-damaged aircraft.
- 4310 (401) Aerospace Vehicle Systems.** Three credits. Design, use, and function of typical hydraulic, mechanical, and electrical systems used on transport category aircraft. Designed for potential pilots, flight engineers, and managers.
- 4311 (311) Aerospace Accessory Systems Maintenance and Repair.** Three credits. A laboratory course providing experience in the maintenance, inspection, and repair of aircraft system components.
- 4312 (421) Turbine Engine System.** Three credits. Advanced course in the maintenance of complex systems.
- 4332 (313) Reciprocating Engine Troubleshooting.** Three credits. A laboratory course providing practical experience in inspecting and troubleshooting problems with reciprocating engines and powerplant systems.
- 4342 (424) Turbine Engine Inspection and Troubleshooting.** Three credits. A laboratory course providing practical experience in turbine engine inspection to include hot section inspection, engine operation, and troubleshooting.

- 4371 (417) Advanced Aerospace Vehicle Systems Overhaul.** Three credits. Complete repair and overhaul of complex aerospace vehicle systems including hydraulics, electric, pneumatics, fuel, and oil. Shop layout and quality control procedures stressed.
- 4381 (418) Advanced Aerospace Accessory Systems Maintenance and Repair.** Three credits. Repair and overhaul of complex accessory systems and subsystems. Practical experience in overhaul of air conditioning, pressurization, power brakes, constant speed drives, and jet fuel controls.
- 4392 (419) Aerospace Turbine Engine Maintenance and Overhaul.** Three credits. A laboratory course in field maintenance and repair of turbine engines and components. Includes limited overhaul procedures and techniques. Management procedures stressed.
- 4400 (450) Space.** Three credits. History of global space exploration and the successes and failures of manned and unmanned efforts in the race to the moon.
- 4440 (414) Aircraft Performance.** Three credits. Prerequisites: MATH 1730 and PHYS 2010 or equivalent. Determination of performance from basic lift, drag, power, and structural characteristics of the airplane. Use of flight charts. Effects of loading on performance.
- 4490 (409) Aerospace Science for Teachers.** Three credits. An introduction to the total aviation and space effort.
- 4530 (403) Air Traffic Control.** Three credits. FAA Air Traffic Control system used to regulate air traffic during enroute and terminal phases of flight, with emphasis on communication, navigation, control equipment, and procedures.
- 4560 (466) Advanced Air Traffic Control.** Four credits. Prerequisites: AERO 2220, 3210, and 4530. Capstone course for FAA Collegiate Training Initiative. Focuses on mastery of concepts acquired in AERO 4530. Includes computer simulations conducted in high-density, high-workload conditions. Emphasizes situational analysis, decisive action, and problem-solving ingenuity in terminal and enroute ATC environments. One three-hour lecture and one one-hour laboratory.
- 4580 (408) Flight Dispatch/ATP Written Preparation.** Three credits. Prerequisite: Approval of instructor. Academics for the ATP written. If flight is desired, student will meet FAR 61. Fee required.
- 4590 (428) Flight Dispatch.** Three credits. Prerequisite: AERO 4580. A capstone to those seeking flight dispatch as a career. This course should be the last one in the student's program.
- 4730 (430H) Honors Seminar in Aviation Psychology.** Three credits. Application and physiological testing and research techniques in aviation education, management, and technology.

Courses in Transportation [TRNS]

- 1610 (111) Introduction to Transportation.** Three credits. Transportation development, identification, and evaluation of the elements of the transportation system including historical, legislative, and trend analysis.
- 2620 (222) Transportation Freight Systems.** Three credits. An overview of cargo systems and transportation freight rates. Includes an analysis of transportation issues and the relationship between the shipper, the modes of transportation, and the consumer.
- 3630 (333) Transportation Systems.** Three credits. Prerequisite: TRNS 1610 or permission of instructor. An overview of the structure and management of a logistics distribution system. Distribution logistics as a function area and as a strategic element of the total transportation system.

Graduate Study

The Aerospace Department offers the Master of Science in Aviation Administration and the Master of Education in Aerospace Education. Requirements for these degrees and a list of the courses offered for graduate credit are published in the Graduate Catalog.

Honors College

The Department of Aerospace offers periodically 1020, 4071, and 4730.

