

Aviation

College of Education

Department of Aviation

328 Armstrong Hall • 507-389-6116

Nihad Daidzic, Joel Patrick McKinzie, Jeff Peterson, Thomas Peterson

Aviation Program Mission Statement. The mission of Minnesota State University, Mankato's aviation program is to educate students today who will become professionals responsible for the safe and efficient design, management, and operation of the aviation system tomorrow. The program combines all elements of a substantive university education with aviation, flight, and management components to graduate well prepared aviation professionals. Acquisition of airman-ship knowledge, skills, and ability while in college develops professionalism, responsibility, self-reliance and marketable skills for early career progression, and provides important experiences which ensure a level of understanding and competency essential to becoming an effective leader in an aviation profession.

Advising. Aviation students will be assigned a faculty advisor following an initial or transfer orientation session. Faculty advising appointments may be scheduled directly with your faculty advisor. College of Education Student Relations Coordinator, is available for general education advisement. Students may make appointments with the College of Education Academic Advising Office in 117 Armstrong Hall, phone # 507-389-1215.

Admission to Major. Coordinator for Admission to Major, Mymique Baxter, 117 Armstrong Hall.

All students must submit an unofficial transcript or DARS report (available at the Campus Hub).

Students must meet the following requirements:

- a minimum of 32 earned semester credit hours.
- a minimum cumulative GPA of 2.50.

Students may enroll in 100 and 200 aviation coursework prior to admission to major.

POLICIES/INFORMATION

Flight Lab. Flight costs are determined on an hourly basis for aircraft and flight instruction. To obtain FAA certifications requires FAA exams which may require a fee.

Transfer of college credit and credit for certificates and/or ratings. The Minnesota State Mankato Department of Aviation bases its flight education philosophy in a four-year university degree. Consequently, students who have obtained flight certificates/ratings without earned college credit may not have satisfied the academic and flight requirements for the aviation major. Students must demonstrate that they have received the full breadth and depth of knowledge, skills, abilities, and attitudes consistent with an education received at Minnesota State Mankato. Once enrolled at Minnesota State Mankato, students are expected to complete all subsequent flight training within Minnesota State Mankato's aviation program.

Transfer credits. To satisfy aviation curriculum requirements, students with pilot certificates and ratings earned with college credit through an Aviation Accreditation Board International (AABI) accredited university may transfer those credits without demonstration of proficiency. College credits obtained through a non AABI accredited institution will be reviewed by the Department of Aviation to ensure the issuing institution follows policies and practices consistent with AABI accreditation standards. In the event credits do not transfer, students may be required to follow Credit for Experience procedures.

Prior Experience. Students entering Minnesota State Mankato with completed FAA certificates must register for and complete the requirements for the applicable ground school and flight lab courses. Prior flight experience will be evaluated by the faculty and may result in advanced standing in flight labs. Students are responsible for aircraft rental required for the evaluation.

GPA Policy. Admission to College of Education, 2.0 cumulative GPA.

P/N Grading Policy. Only elective and general education courses may be taken P/N, unless offered P/N only.

AVIATION BS

Degree completion = 120 credits

Major Common Core

AVIA	101	World of Aviation (3)
AVIA	150	Private Pilot (4)
AVIA	334	Aviation Management (4)
AVIA	437	Aviation Safety (4)
AVIA	445	Aviation Human Factors (3)

Major Emphasis: Professional Flight Concentration

AVIA	151	Private Pilot Flight Lab (3)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	338	Advanced Aircraft Systems (3)
AVIA	340	Flight Operations (3)
AVIA	360	Flight Instructor (3)
AVIA	361	Initial CFI-Airplane-Multiengine Flt Lab (1)
AVIA	362	Add-on CFI-A Single Engine Flt Lab (1)
AVIA	363	CFI-Instrument Airplane (CF-I) Flight Lab (1)
AVIA	432	Aviation Law-General (3)
AVIA	436	Flight Operations & Procedures (3)
AVIA	450	Professional Pilot Theory (3)
AVIA	451	Professional Pilot Course (3)
AVIA	455	Aircraft Performance (3)

Restricted Electives (choose 9 credits)

AVIA	102	Aviation Terminology (3)
AVIA	201	Theory of Flight (3)
AVIA	202	Principles of Air Navigation (3)
AVIA	333	Airline Operations (3)
AVIA	336	Basic Aircraft Systems (3)
AVIA	337	Avionics (3)
AVIA	339	Aerospace Propulsion (3)
AVIA	343	Airport Management (3)
AVIA	435	Aviation Law-Transactions (3)
AVIA	442	Fundamentals of Air Traffic Control (3)
AVIA	458	Aeromedical Factors (3)
AVIA	490	Aviation Workshop (1-10)
AVIA	497	Aviation Internship (1-12)
AVIA	499	Individual Study in Aviation (1-6)

Major Emphasis: Aviation Management Concentration

ACCT	200	Financial Accounting (3)
AVIA	343	Airport Management (3)
AVIA	432	Aviation Law-General (3)
AVIA	435	Aviation Law-Transactions (3)
BLAW	200	Legal, Political, and Regulatory Environment of Business (3)
ECON	201	Principles of Macroeconomics (3)
ECON	202	Principles of Microeconomics (3)
FINA	362	Business Finance (3)
MGMT	200	Introduction to MIS (3)
MGMT	330	Principles of Management (3)
MRKT	310	Principles of Marketing (3)

Restricted Electives (choose 15 credits)

AVIA	102	Aviation Terminology (3)
AVIA	151	Private Pilot Flight Lab (3)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	201	Theory of Flight (3)

AVIA	202	Principles of Air Navigation (3)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	333	Airline Operations (3)
AVIA	336	Basic Aircraft Systems (3)
AVIA	340	Flight Operations (3)
AVIA	360	Flight Instructor (3)
AVIA	436	Flight Operations & Procedures (3)
AVIA	442	Fundamentals of Air Traffic Control (3)
AVIA	443	Airline Dispatch (3)
AVIA	490	Aviation Workshop (1-10)
AVIA	497	Aviation Internship (1-12)
AVIA	499	Individual Study in Aviation (1-6)

Major Emphasis: Aeronautics Concentration

A plan of study must be completed and approved by the Aviation Department for this emphasis.

(choose 48 credits)

AVIA	102	Aviation Terminology (3)
AVIA	151	Private Pilot Flight Lab (3)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	201	Theory of Flight (3)
AVIA	202	Principles of Air Navigation (3)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	333	Airline Operations (3)
AVIA	336	Basic Aircraft Systems (3)
AVIA	337	Avionics (3)
AVIA	338	Advanced Aircraft Systems (3)
AVIA	340	Flight Operations (3)
AVIA	343	Airport Management (3)
AVIA	360	Flight Instructor (3)
AVIA	361	Initial CFI-Airplane-Multiengine Flt Lab (1)
AVIA	362	Add-on CFI-A Single Engine Flt Lab (1)
AVIA	363	CFI-Instrument Airplane (CF-I) Flight Lab (1)
AVIA	432	Aviation Law-General (3)
AVIA	435	Aviation Law-Transactions (3)
AVIA	436	Flight Operations & Procedures (3)
AVIA	442	Fundamentals of Air Traffic Control (3)
AVIA	450	Professional Pilot Theory (3)
AVIA	451	Professional Pilot Course (3)
AVIA	455	Aircraft Performance (3)
AVIA	458	Aeromedical Factors (3)
AVIA	490	Aviation Workshop (1-10)
AVIA	497	Aviation Internship (1-12)
AVIA	499	Individual Study in Aviation (1-6)

AERONAUTICS MINOR

An Aeronautics minor in Aviation is obtained after completing 16 required aviation core courses and 10 aviation electives. The minor provides fundamentals of the Aeronautical and Aviation sciences that may result in the candidate obtaining pilot certificates provided the required flight training is completed and all practical tests passed.

Minor Core

AVIA	101	World of Aviation (3)
AVIA	150	Private Pilot (4)
AVIA	437	Aviation Safety (4)

Elective

A plan of study must be completed and approved by the Aviation Department.

Restricted Electives (choose 9 credits)

AVIA	151	Private Pilot Flight Lab (3)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	333	Airline Operations (3)
AVIA	337	Avionics (3)
AVIA	343	Airport Management (3)
AVIA	432	Aviation Law - General (3)
AVIA	435	Aviation Law - Transactions (3)
AVIA	436	Flight Operations & Procedures (3)
AVIA	442	Fundamentals of Air Traffic Control (3)
AVIA	443	Airline Dispatch (3)
AVIA	445	Aviation Human Factors (3)

PRIVATE FLIGHT MINOR

Minor Core

AVIA	101	World of Aviation (3)
AVIA	150	Private Pilot (4)
AVIA	437	Aviation Safety (4)

Restricted Electives (choose 9 credits)

AVIA	151	Private Pilot Flight Lab (3)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)

PROFESSIONAL FLIGHT MINOR

Minor Core

AVIA	101	World of Aviation (3)
AVIA	150	Private Pilot (4)
AVIA	437	Aviation Safety (4)

Required Elective (choose 22 credits)

AVIA	151	Private Pilot Flight Lab (3)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (3)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	340	Flight Operations (3)
AVIA	436	Flight Operations & Procedures (3)

PROFESSIONAL PILOT CERTIFICATE (CERT)

Note: This certificate program is not currently accepting students.

Certificate Core

AVIA	150	Private Pilot (4)
AVIA	201	Theory of Flight (3)
AVIA	202	Principles of Air Navigation (3)
AVIA	240	Instrument Pilot (3)
AVIA	250	Commercial Pilot (3)
GEOG	217	Weather (4)
GEOG	218	Weather Laboratory (1)

Certificate Restricted Electives

CHOOSE 2 CLUSTER:

Helicopter or Airplane

Select one group, either the helicopter option (12 credits) or the airplane option (10 credits).

AVIATION

(choose 12 credits)

AVIA	152	Private Pilot Helicopter Flight Lab (3)
AVIA	242	Instrumental Pilot Helicopter Flight Lab (3)
AVIA	252	Commercial Pilot Helicopter Flight Lab (3)
AVIA	270	Helicopter Pilot (3)

(choose 10 credits)

AVIA	151	Private Pilot Flight Lab (3)
AVIA	251	Commercial Pilot Flight Lab (3)
AVIA	261	Instrument Pilot Flight Lab (3)
AVIA	371	Multi-Engine Flight Lab (1)

Domestic or International Students

Pick one option. The first is intended for domestic students, the second offers courses in English for Aviation for non-native English speakers. Advisor approval is necessary for your selection.

(choose 6 credits)

AVIA	101	World of Aviation (3)
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(choose 8 credits)

ENG	207	Special Topics in ESL (1-4)
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COURSE DESCRIPTIONS

AVIA 101 (3) World of Aviation

Provides an expanded study of the changing and shrinking world brought on by the introduction of technology using the medium of aviation, especially the fixed-wing airplane, throughout the course of history. Students will analyze the significant impact and rapid changes aviation has had on cultures, commerce, wars, economics, and transportation. The effect the introduction and expansion aviation technology has had throughout the world created many of the same effects the expansion of the internet has had over the last 20 years.
Fall, Spring

AVIA 102 (3) Aviation Terminology

Aviation Terminology teaches international students the terms and meanings of airports, aircraft, and aviation in general. The course will also include instruction in proper pilot and air traffic control radio procedures and methods when in flight and on the ground. The course should reduce future difficulties in follow-on aviation management or professional flight courses.
Fall

AVIA 150 (4) Private Pilot

A study of basic aeronautical knowledge including principals of flight, aerodynamics, aviation regulations, weather, visual and instrument navigation, and emergencies. The course meets, but is not limited to, FAR part 61.105 (a, 1-6). Satisfactory completion of this course may result in an endorsement for the FAA Private Pilot written exam.
Fall, Spring

AVIA 151 (3) Private Pilot Flight Lab

Provides beginning flight student with the in-flight requirements needed to obtain the FAA Private Pilot's Certificate.
Fall, Spring

AVIA 152 (3) Private Pilot Helicopter Flight Lab

Provides initial flight student with the in-flight training requirements needed to obtain the FAA private Pilot Helicopter Certificate.
On-Demand

AVIA 171 (1) Multi-Engine Flight Lab

Prepares advanced flight student with the in-flight requirements needed to obtain the FAA Multi-Engine Pilot rating.
Pre: AVIA 151, or equivalent
Fall, Spring

AVIA 201 (3) Theory of Flight

A study of physics and aerodynamic principals of flight and propulsion systems. The nature of aerodynamic forces are explained. Flight principals of lighter-than-Air, airplane, glider, rotocraft and powered lift are covered in detail.
Pre: AVIA 101, AVIA 150
Fall, Spring

AVIA 202 (3) Principles of Air Navigation

A study of fundamental air navigation principles and how it is applied to flight. Pilotage and dead reckoning. Great circle navigation. Charts and conformal projects. Celestial navigation systems and their operations and use.
Pre: AVIA 150
Spring

AVIA 240 (3) Instrument Pilot

A study of the aeronautical knowledge including aviation regulations, weather, instrument navigation, and instrument emergencies. The course meets, but is not limited to, FAR part 61.65 (b, 1-4). Satisfactory completion of this course may result in an endorsement for the FAA Instrument Pilot written exam.
Pre: AVIA 150, or equivalent
Fall, Spring

AVIA 241 (3) Instrument Pilot Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Instrument Pilot rating.
Pre: AVIA 151, or equivalent
Fall, Spring

AVIA 242 (3) Instrument Pilot Helicopter Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Instrument Pilot Helicopter rating.
Pre: AVIA 152
On-Demand

AVIA 250 (3) Commercial Pilot

A study of advanced aeronautical knowledge, including aerodynamics, aviation regulations, weather, visual and instrument navigation, and emergencies. The course meets, but is not limited to, FAR part 61.125 (a, 1-4). Satisfactory completion of this course may result in an endorsement for the FAA Commercial Pilot written exam.
Pre: AVIA 151, AVIA 240
Fall, Spring

AVIA 251 (3) Commercial Pilot Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Commercial Pilot's Certificate.
Pre: AVIA 151, or equivalent
Fall, Spring

AVIA 252 (3) Commercial Pilot Helicopter Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Commercial Pilot Helicopter Certificate.
Pre: AVIA 152, AVIA 242
On-Demand

AVIA 270 (3) Helicopter Pilot

Study of Helicopter theory to meet FAA part 141 certification requirements for helicopter.
Pre: AVIA 150, AVIA 250, AVIA 260
On-Demand

AVIA 275 (3) Helicopter Flight Theory

This course covers all the knowledge areas required for the FAA helicopter private, instrument and commercial pilot certification at a deeper and more academic level.
Variable

AVIA 333 (3) Airline Operations

Designed to cover the complex area of operation techniques and problems confronting the airlines today. Entails a study of marketing research, passenger trends, feasibility route studies, etc.
Fall, Spring

AVIA 334 (4) Aviation Management

Provides an understanding of management and financial techniques related to aviation businesses. Generally accepted and proven business techniques and proven business techniques are applied to the aviation setting.
Fall, Spring

AVIA 336 (3) Basic Aircraft Systems

Aircraft systems for light and medium category general aviation aircraft, includes the study of structure, control, electrical, fuel, environmental, landing gear, and engine systems. Examples of general aircraft category aircraft systems will be discussed from the pilots perspective.
Fall

AVIA 337 (3) Avionics

Principles of Avionics is an expanded course on the theory and Applications of Aviation Electronics for future pilots and students of aviation and aeronautics. The course highlights modern synthetic displays, navigation, automatic flight control, FMS, and other essential aircraft equipment.
Variable

AVIA 338 (3) Advanced Aircraft Systems

Hydraulic, pneumatic, electrical, pressurization, environmental, and other systems for large-transport category aircraft are covered. Also turbine engines, primary and secondary flight controls, and miscellaneous important systems are examined. Examples of systems in large transport-category jets will be discussed from the pilot operational perspective.

AVIA 339 (3) Aerospace Propulsion

The course provides basic principles of operation and components description of the traditional and modern propulsion systems used in atmospheric and space transportation vehicles. Reciprocating engines with propellers, turbine jet engines, and chemical rockets are covered.
Spring

AVIA 340 (3) Flight Operations

Introduces students to airline training, regulations, and flight management systems (FMS). Students will develop an understanding of airline operations as they experience an FAA Part 121 style basic indoctrination. Students will be trained on procedures, requirements, and limitations for airline operations through all phases of flight and ground in a simulated Advanced Qualifications Program (AQP) style course. Students will also develop technical and procedural knowledge of FMS.
Fall, Spring

AVIA 343 (3) Airport Management

Course provides students with an overview of airport management. Studies include the day-to-day operations of air carrier and general aviation airports as well as planning, design, construction, finance and public relations associated with airport management. Students are exposed to many career opportunities in this area. The course includes a case study of the Minneapolis/St. Paul metropolitan area airport system and several site visits.
Spring

AVIA 360 (3) Flight Instructor

A study of the fundamentals of instruction including the learning process, effective teaching evaluation, course development, lesson planning, and instructing techniques. The course meets, but is not limited to, FAR part 61.187 (a, 1-6). Satisfactory completion of this course may result in an endorsement for the FOI and CFI-A written exam.
Pre: AVIA 150, AVIA 240, AVIA 241, AVIA 250
Fall, Spring

AVIA 361 (1) Initial CFI-Airplane-Multiengine Flt Lab

Prepares advanced flight students for the in-flight requirements needed to obtain the FAA Multi-Engine Flight Instructor's Certificate.
Pre: AVIA 251 and AVIA 241, or equivalent
Fall, Spring

AVIA 362 (1) Add-on CFI-A-Single Engine Flt Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Certified Flight Instructor's Certificate.
Pre: AVIA 251 and AVIA 241, or equivalent
Fall, Spring

AVIA 363 (1) CFI-Instrument Airplane (CFI-I) Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Instrument Flight Instructor's Certificate.
Pre: AVIA 251 and AVIA 241, or equivalent
Fall, Spring

AVIA 383 (1) Flight Instructor Helicopter Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Certified Flight Instructor Helicopter Certificate.
Pre: AVIA 252
On-Demand

AVIA 392 (1) Instrument Instructor Helicopter Flight Lab

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Instrument Helicopter Flight Instructor Certificate.
Pre: AVIA 242, AVIA 252
On-Demand

AVIA 432 (3) Aviation Law - General

To instruct the student relative to legal implications of aircraft ownership, leases, rentals, and overall aircraft operation. Emphasis is placed on the understanding of liability and negligence from the operator and pilot standpoints.
Fall

AVIA 435 (3) Aviation Law - Transactions

This course will take an in-depth look at several legal topics that touch the aviation industry. The course will use the case study method to look at several aviation-related cases, including commercial airline accidents, pilot certificate actions, airline security violation cases, international aviation law, and several other current legal matters that involve the airline industry.
Pre: AVIA 432
Spring

AVIA 436 (3) Flight Operations & Procedures

Introduces advanced professional flight students to FAR Part 121 style standardized flight training in a regional jet. Course will include aircraft systems, procedures training, and techniques used in high performance turbine aircraft. Emphasis on standard operating procedures (SOP), crew resource management (CRM), and line oriented flight training (LOFT).
Pre: AVIA 340

AVIA 437 (4) Aviation Safety

The understanding and implementation of safe operating procedures. Assists the student in arriving at proper decisions related to periods of stress when operating as pilot in command. Various FAA regulations and standard and safe operating procedures are also discussed.
Fall, Spring

AVIA 442 (3) Fundamentals of Air Traffic Control

To provide the student with the basic knowledge of ATC as a career and the fundamentals necessary for FAA certification.
Fall

AVIA 443 (3) Airline Dispatch

Introduces the workings of the complex system of air control in the US and abroad. Covers such subjects as radio communications, airspace classification, radar control, and operation as well as aircraft separation. Looks at present and future air traffic control systems.

Spring

AVIA 445 (3) Aviation Human Factors

A study of various techniques designed to enhance management and leadership methods. Emphasizes decision-making and judgment skills as well as methods to improve effective communication and skills to develop a productive work environment for flight crew and other airline personnel.

Fall, Spring

AVIA 450 (3) Professional Pilot Theory

This course is designed to develop students technical understanding of information and knowledge required for Air Transport Pilots. Students will participate in a capstone research project and present their findings in a research paper and oral presentation. Course completion requirements will include preparation for the FAA ATP written exam.

Pre: AVIA 251, AVIA 340, AVIA 436

Coreq: AVIA 340, AVIA 436, AVIA 451

Fall, Spring

AVIA 451 (3) Professional Flight Course

Prepares students who desire careers as professional pilots. Emphasizes complete ground tutoring and flight instruction relating to instrument maneuvers, SOP's, regulation interpretation, pilot discipline, and professional procedures. Crew resource management, LOFT, and turbine-transition flights in an advanced jet flight simulator are used. This course is taken in conjunction in the same semester as AVIA 450.

Pre: AVIA 251

Coreq: AVIA 450

Fall, Spring

AVIA 452 (3) Professional Aviator Course

This is a stand-alone course designed for the person who is not an MSU aviation major. The course offers a complete jet aircraft transition training program.

Summer

AVIA 455 (3) Aircraft Performance

The fundamental principles and calculation of the performance in various phases of flight: takeoff and land, climb and descent performance, maximum-range and maximum-endurance cruise, single-engine performance in multi-engine aircraft, standard atmosphere and basic subsonic and supersonic aerodynamics is covered.

Pre: AVIA 201

Variable

AVIA 458 (3) Aeromedical Factors

Covers aeromedical factors that are essential for high-altitude flying aircraft. Hypoxia, hyperventilation, dysbarism, basic gas laws. Armstrong line, vision in flight, day and night. Pressurization systems, pressurized suits, danger of loss of cabin pressure, future HSCT and LEO commercial flights.

Variable

AVIA 490 (1-10) Aviation Workshop

Coreq: ANTH 491 or ANTH 492 or ANTH 493 or ANTH 494

Variable

AVIA 497 (1-12) Aviation Internship

Supervised experience in business, industry, state or federal institutions.

Fall, Spring

AVIA 499 (1-6) Individual Study in Aviation

Allows the student an individual course of study on an aviation topic to be arranged with the department.

Fall, Spring