

## AVIATION BS, CERTIFICATE AND MINORS

### Aviation

College of Education  
 Department of Aviation  
 328 Armstrong Hall • 507-389-6116

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**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 airmanship 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.

**Accreditation** .Minnesota State Mankato is accredited by the Aviation Accreditation Board International (AABI). Accreditation status can be verified at [www.aabi.aero](http://www.aabi.aero) Additionally, the B.S. Aviation, Professional Flight emphasis area is certified by the Federal Aviation Administration (FAA) to receive the maximum time reduction allowed toward the Airline Transport Pilot (ATP) certificate. Graduates of these programs are eligible for a Restricted ATP certificate at 1,000 flight hours. Additional information regarding the Institutional Authority program under which Minnesota State Mankato has been certified under is contained in Advisory Circular 61-136 and in FAA Order 8900.225.

**Academic Map/Degree Plan at [www.mnsu.edu/programs/#All](http://www.mnsu.edu/programs/#All)**

**POLICIES/INFORMATION**

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 only enroll in 1xx and 2xx-level aviation coursework prior to admission to the major.

**Flight Training.** Flight costs are determined on an hourly basis for aircraft and flight instruction. To obtain FAA certificates, it requires FAA exams which may require an additional fee. Students seeking admission to flight training must be examined by an FAA-designated Aviation Medical Examiner and have an FAA medical certificate and student pilot certificate before the start of flight training. Applicants intending to seek a Commercial Pilot Certificate must have 20/20 vision in each eye, or be correctable to 20/20. Medical examinations should be done far enough in advance of flight training to allow any potential problems or questions to be resolved. We recommend obtaining the 1st class FAA medical certificate.

The FAA requires any pilot's license applicant to speak, read, write and understand the English language. Flight students whose home language is not English must demonstrate English language proficiency. In addition, the U.S. Transportation Security Administration (TSA) requires U.S. citizen flight students to present a government-issued photo identification document such as a driver's license and an original passport or original (raised seal) birth certificate for U.S. citizenship verification. International flight students must comply with TSA requirements for a security threat assessment as specified in the Alien Flight Student Program. Generally, this process requires approximately 30 days to complete. Refer to [www.flightschoolcandidates.gov](http://www.flightschoolcandidates.gov) for details.

**Transfer of college credit and credit for certificates and/or ratings.** The Minnesota State Mankato, Department of Aviation bases its flight education philosophy on 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 shall 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 Examination for Credit procedures.

**Prior Experience.** Students entering Minnesota State Mankato with completed FAA certificates must register for and complete the applicable ground course for that flight lab. Prior experience will be evaluated through an oral and flight examination. Successful completion of the evaluation will be annotated on a Credit by Examination form giving credit for that particular flight lab. The student is responsible for the aircraft rental required for the evaluation.

**GPA Policy.** Admission to College of Education, 2.5 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

**Required General Education**

CMST	102	Public Speaking (3)
ECON	201	Principles of Macroeconomics (3)
PHIL	224W	Business Ethics (3)
PHYS	101	Introductory Physics (3)

**Goal Area 2** (choose 4 credits) ENG 271W TechnicalCommunication (4)

ENG 272W Business Communication (4)

**Goal Area 4** (choose 4 credits)

MATH 112 or higher is required

MATH	112	College Algebra (4)
MATH	115	Precalculus Mathematics (4)
MATH	121	Calculus I (4)
MATH	122	Calculus II (4)

**Major Common Core**

AVIA	101	World of Aviation (3)
AVIA	150	Private Pilot (3)
AVIA	201	Theory of Flight (3)
AVIA	334	Aviation Management (3)
AVIA	432	Aviation Law - General (3)
AVIA	437	Aviation Safety (3)
AVIA	445	Aviation Human Factors (3)
GEOG	217	Weather (4)

**Major Emphasis: Professional Flight Concentration**

AVIA	151	Private Pilot Flight Lab (2)
AVIA	153	Private Pilot Flight Lab II (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (2)
AVIA	243	Instrument Pilot Flight Lab II (1)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (2)
AVIA	253	Commercial Pilot Flight Lab II (2)
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 (CFI-) Flight Lab (1)
AVIA	436	Flight Operations & Procedures (3)

## AVIATION CONTINUED

AVIA	450	Professional Pilot Theory (3)
AVIA	451	Professional Pilot Course (3)
AVIA	455	Aircraft Performance (3)

The Professional Flight emphasis is FAA Approved for the Restricted ATP. Contact the program coordinator for more details.

### Major Emphasis: Aviation Management Concentration

ACCT	200	Financial Accounting (3)
BLAW	200	Legal, Political, and Regulatory Environment of Business (3)
ECON	202	Principles of Microeconomics (3)
FINA	362	Business Finance (3)
MGMT	200	Introduction to MIS (3)
MGMT	330	Principles of Management (3)
MGMT	340	Human Resource Management (3)
MGMT	380	Human Behavior in Organizations (3)
MGMT	472	Project Management (3)
MRKT	310	Principles of Marketing (3)

### Option Areas

(choose 6 credits)

Choose from either Airport Management or Aircraft Dispatcher options.

AVIA	343	Airport Management (3)
AVIA	344	Airport Operations (3)
AVIA	443	Aircraft Dispatcher 1 (3)
AVIA	444	Aircraft Dispatcher 2 (3)

### Major Emphasis: Aeronautics Concentration

A plan of study must be completed and approved by the Department of Aviation for this emphasis. (choose 48 credits)

Total credits in major must equal or exceed 48 credits. Faculty advising is required.

AVIA 101 - 499

Required Minor: None.

### 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 (3)
AVIA	437	Aviation Safety (3)

#### Electives

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

#### Restricted Electives (choose 9 credits)

AVIA	151	Private Pilot Flight Lab (2)
AVIA	153	Private Pilot Flight Lab II (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (2)
AVIA	243	Instrument Pilot Flight Lab II (1)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (2)
AVIA	253	Commercial Pilot Flight Lab II (2)
AVIA	333	Airline Operations (3)
AVIA	337	Avionics (3)
AVIA	343	Airport Management (3)
AVIA	432	Aviation Law I (3)
AVIA	435	Aviation Law II (3)
AVIA	436	Advanced Flight Operations (3)
AVIA	442	Fundamentals of Air Traffic Control (3)
AVIA	443	Aircraft Dispatcher 1 (3)
AVIA	445	Aviation Human Factors (3)

### PRIVATE FLIGHT MINOR

#### Minor Core

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

#### Restricted Electives (choose 9 credits)

AVIA	151	Private Pilot Flight Lab (2)
AVIA	153	Private Pilot Flight Lab II (1)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (2)
AVIA	243	Instrument Pilot Flight Lab II (1)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (2)
AVIA	253	Commercial Pilot Flight Lab II (2)

### PROFESSIONAL FLIGHT MINOR

#### Minor Core

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

#### Required Elective

AVIA	151	Private Pilot Flight Lab (2)
AVIA	153	Private Pilot Flight Lab II (1)
AVIA	171	Multi-Engine Flight Lab (1)
AVIA	240	Instrument Pilot (3)
AVIA	241	Instrument Pilot Flight Lab (2)
AVIA	243	Instrument Pilot Flight Lab II (1)
AVIA	250	Commercial Pilot (3)
AVIA	251	Commercial Pilot Flight Lab (2)
AVIA	253	Commercial Pilot Flight Lab II (2)
AVIA	340	Flight Operations (3)
AVIA	436	Flight Operations and Procedures (3)

### PROFESSIONAL PILOT CERTIFICATE (CERT)

Note: This certificate program is not currently accepting students.

#### Certificate Core

AVIA	150	Private Pilot (3)
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

##### Helicopter or Airplane

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

##### Helicopter

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)

##### Airplane

AVIA	151	Private Pilot Flight Lab (2)
AVIA	251	Commercial Pilot Flight Lab (2)
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.

AVIA	101	World of Aviation (3)
ENG	207	Special Topics in ESL (1-4)

## 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 (3) 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 (2) 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 153 (1) Private Pilot Flight Lab II**

Continues the flight lab progression in the MSU aviation program to the second stage of the Private Pilot flight lab. The course reviews and expands the classroom knowledge received in the Private Pilot Ground Course as well as the skills developed in AVIA 151. The training flights continue the building block approach to training with student pilots gradually obtaining the skills to safely fly an aircraft and pass an FAA administered practical examination.  
Fall, Spring, Summer

**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.  
Prerequisite: 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.  
Prerequisite: 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, and celestial navigation systems and their operations and use.  
Prerequisite: 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.  
Prerequisite: AVIA 150, or equivalent  
Fall, Spring

**AVIA 241 (2) Instrument Pilot Flight Lab**

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

**AVIA 243 (1) Instrument Pilot Flight Lab II**

Continues the flight lab progression in the MSU aviation program to the second stage of the Instrument Pilot flight lab. The FAA requires each pilot to obtain their Instrument Pilot flight certificate to fly in instrument weather conditions. The course reviews and expands the classroom knowledge received in the Instrument Pilot Ground Course as well as the skills developed in AVIA 241. The training flights continue the building block approach to training with student pilots gradually obtaining the skills to fly in all instrument conditions and to pass an FAA administered practical examination.  
Fall, Spring, Summer

**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.  
Prerequisite: AVIA 151, AVIA 240  
Fall, Spring

**AVIA 251 (2) Commercial Pilot Flight Lab**

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

**AVIA 253 (2) Commercial Pilot Flight Lab II**

Continues the flight lab progression in the MSU aviation program. The FAA requires each pilot to obtain their Commercial Pilot flight certificate to be compensated for work as a pilot. This stage two course of the Commercial Pilot flight lab reviews and expands required classroom knowledge received in the Commercial Pilot Ground Course. The training flights use a building block approach to training with student pilots gradually obtaining the skills to fly the more difficult maneuvers and to pass an FAA administered practical examination.  
Fall, Spring, Summer

**AVIA 270 (3) Helicopter Pilot**

Study of Helicopter theory to meet FAA part 141 certification requirements for helicopter.  
Prerequisite: 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 300 (1) Advanced Studies Orientation**

Orientation to academic and administrative expectations of upper division students including basic academic requirements, conducting aviation research, resources available, professional and personal standards of performance, program progression, APA format, and critical thinking.  
Prerequisite: ENG 271W or ENG 272W  
Fall, Spring

**AVIA 305 (1) Aviation Professional Communications**

This course will teach students to communicate tactical and strategic messages through written and oral means. Students will develop public speaking skills specific to the aviation industry to include aviation interviewing techniques, crisis communication, and passenger communication. Students will develop their professional resume specific to their career choice.  
Fall, Spring

**AVIA 306 (1) Intercollegiate Flight Team**

Students train for and participate in intercollegiate flight competition as a member of the Minnesota State Markato Flight Team. An additional fee is required during semesters in which the team participates in competition. A maximum of 4 credits can be earned.  
Fall, Spring

**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 (3) Aviation Management**

Provides an understanding of management and financial techniques related to aviation businesses. Generally accepted 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 pilot's 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 344 (3) Airport Operations**

This course prepares students for the Airport Operations certification. It includes topics required for certification: Airport Layout, Safety, Part 139. Airport Surfaces, Marking, Signs, Lighting, Self-Inspections, Ground Vehicles, NAVAIDs, ATC, Part 77, Hazardous Materials, FOD, Wildlife, ARFF, Winter Operations, and Security.

On Demand

### **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.

Prerequisite: AVIA 150, AVIA 240, AVIA 241, AVIA 250

Fall, Spring

### **AVIA 361 (1) Initial CFI-Airplane-Multiengine Flight Lab**

Prepares advanced flight students for the in-flight requirements needed to obtain the FAA Multi-Engine Flight Instructor's Certificate.

Fall, Spring

### **AVIA 362 (1) Add-on CFI-A-Single Engine Flight Lab**

Prepares advanced flight students with the in-flight requirements needed to obtain the FAA Certified Flight Instructor's Certificate.

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.

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.

Prerequisite: 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.

Prerequisite: 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.

Prerequisite: 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).

Prerequisite: AVIA 340

### **AVIA 437 (3) 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) Aircraft Dispatcher 1**

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.

Prerequisite: GEOG 217, AVIA 240, AVIA 250, AVIA 340

Spring

### **AVIA 444 (3) Aircraft Dispatcher 2**

Preparation for the Federal Aviation Administration (FAA) Aircraft Dispatcher Certificate through an in-depth understanding of regulations, meteorology, navigation, aircraft systems, communications, air traffic control, emergency and abnormal procedures and practical dispatch applications. At the completion of the course, students will be prepared for the Federal Aviation Administration Aircraft Dispatcher oral examination.

Spring

Prerequisite: AVIA 240, AVIA 250, AVIA 340, AVIA 443

### **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. Prerequisite: AVIA 251, AVIA 340, AVIA 436  
Co-requisite: 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. Prerequisite: AVIA 251  
Co-requisite: AVIA 450  
Fall, Spring

### **AVIA 452 (3) Professional Aviator Course**

This is a stand-alone course designed for the person who is not a Minnesota State Mankato 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. Prerequisite: 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**

Co-requisite: 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