

Unmanned Aircraft Systems Operations

Bachelor of Science in Aeronautics (B.S. Aero)

With airspace to conduct large and small UAS operations, come to Grand Forks and you'll join a robust UAS ecosystem that puts you on the cutting edge of what's next in the industry.

Unmanned aircraft systems (UAS) have gone from strictly military use, to a wide variety of life-saving and commercial applications. Now rapidly growing as an industry and taking a foothold in North Dakota, you'll learn to fly unmanned aircraft and find solutions to tomorrow's problems alongside innovative start-ups, established industry giants, and government agencies.

Program type: Major

Format: On Campus

Est. time to complete: 4 years

Credit hours: 120

Why become an unmanned aircraft systems operator?

Application Deadlines

Fall: Aug. 15

Spring: Dec. 15

Summer: May 1

Note for International Students - UAS Operations (B.S. Aero) requires U.S. Citizenship due to export controlled technology and curriculum. International students are able to obtain a minor in UAS Operations.

With 50 years of experience in aviation education, training, and research, UND was the first to offer a UAS degree in 2009. We continue to be national leaders in UAS education today. When you enroll in our unique UND program, you'll gain the expertise in unmanned aircraft to execute and manage applications in the military, firefighting, disaster relief, law enforcement, surveillance, aerial photography, transports and future uses of this rapidly evolving area. You'll gain expertise to work in a crew environment as a pilot operator, sensor operator, or other key team member of unmanned aircraft systems. You'll also gain a clear understanding of National Airspace System (NAS) safety and operations procedures.

UND is one of the first universities to enter into a long term relationship with the Federal Aviation Association (FAA) and become part of the Unmanned Aircraft Systems Collegiate Training Initiative (CTI-UAS) program. We are poised to deliver up-to-date UAS education that matches the requirements of the NAS. This ongoing collaboration with the FAA will further ensure you as a UND student are qualified to enter into careers involving Unmanned Aircraft Systems.

Our Grand Forks campus has been called "the Silicon Valley of unmanned aircraft systems" by the New York Times. UND students are given the opportunity to interact with small and large UAS companies and agencies such as Northrop Grumman, General Atomics, SkySkopes, Grand Sky, and Customs Border Protection in a comprehensive UAS ecosystem. In the region, you'll be given options beyond traditional internships to get real-world experience. For example, at the UND Center of Innovation, you can work alongside a legion of UAS startups to solve real-time problems. Flights are conducted regularly where UND flight students are jointly flying next to unmanned aircraft in the National Airspace System.

UAS Degree

UND offers a comprehensive UAS Aviation degree. It includes relative topics such as:

- Human factors
- Crew resource management
- Autonomous systems
- Counter UAS applications
- Experience in small, medium and large UAS operations
- Safety management
- Aircraft systems

The UAS degree offers two career tracks to specialize in:

- Low Altitude UAS Commercial Applications and Operations
- Medium/High Altitude Long Endurance UAS Commercial Applications and Operations

AABI Accredited UAS Degree

UND Aerospace was the first four year degree UAS Operation program to receive Aviation Accreditation Board International (AABI) Accreditation for Unmanned Aircraft Systems (UAS).

Student Achievement Data

Unmanned Aircraft Systems at UND

- Learn the skills to perform and coordinate strategies in UAS operational environments, as well as solve problems as they arise.
- Gain UAS airmanship skills commensurate with a Commercial Pilot Certificate with Instrument Rating.
- Gain essential knowledge in UAS related topics such as industry trends, ground and flight systems, remote sensing, aerodynamics, human factors, safety, crew resource management, UAS law and policy. These are all key principles common to UAS operations.
- Various UAS Internships are available locally. Upon receiving a Part 107 Remote pilot certificate, various UAS Internships are available locally for summ / part-time employment.
- UND was among the first institutions selected for the Federal Aviation Administration's (FAA) new Collegiate Training Initiative for unmanned aerial systems (UAS).
- In 2020, students in UND's flight training programs (plane, helicopter, UAS) broke a record for hours flown (126,000).
- UND received the most FAA grants to study drones in 2021. UND is the lead research university on mitigating GPS and automatic dependent surveillance-broadcast risks, shielded UAS operations-detect and avoid (DAA), and UAS flight data.
- UND signed an agreement with the U.S. Department of Homeland Security to collaborate on UAS operations, training and research.
- Non-aviation majors also have the opportunity to obtain a minor in UAS Operations to use in their particular discipline.

What can you do with a degree in unmanned aircraft systems?

83K Average starting salary for a UAS pilot in the U.S.

- Salary.com

100K Number of drone-related jobs created by 2025

- DroneBlog

As the as the first university accredited for UAS by AABI, UND has been at the forefront of educating the first generation of UAS pilot operators and professionals in related fields. We are also dedicated to preparing students for complex careers of the future in areas like counter UAS and Beyond Visual-Line-of-Sight (BVLOS).

The aviation industry continues to expand with the advent of UAS operations. It has also opened an unlimited number of industries who can now safely and cost effectively integrate UAS operations. These industries need aviation professionals who understand the various aspects of what it means to integrate UAS and autonomy into the National Airspace System. With large employers in various industries seeking the unique and specialized UAS skills to deploy and manage programs, graduates can expect plentiful opportunities.

UND graduates with a B.S. in Unmanned Aircraft System can expect exciting opportunities in many industries, including:

- Oil and Gas
- Windmill Inspection
- Construction
- Agriculture
- Military and defense
- Law enforcement
- Firefighting
- Transport
- Surveillance
- Aerial photography
- Air and rescue

Unmanned Aircraft Systems Operator Jobs

Our comprehensive UAS degree gives you the strategic skills you need, including:

- Project Management
- Strategic Planning
- Operations Management
- Commercial Operations
- Aviation Safety

Unmanned Aircraft System Operations alumni have gone on to a variety of successful careers with:

- General Atomics
- Northrop Grumman Corporation
- Isight RPV
- Northern Plains UAS Test Site
- Cargill
- ArgenTech Solutions Inc.

UAS Degree Courses

UAS Flight Systems

AVIT 331. UAS Flight Systems. 4 Credits.

This course introduces the student to the aircraft and ground operations and support systems common to remotely piloted or autonomous aircraft with focus on those that differ significantly from their conventional counterparts. Specific emphasis is placed upon mission requirements and their impacts on required systems. Powerplants, potential energy systems, aircraft configurations, autopilot and flight stabilization systems, airborne and ground communications systems, launch and recovery systems, and ground control systems. Hands-on experiential learning is required. Prerequisite: *AVIT 240* and a minimum GPA of 2.6. F,S.

UAS Remote Sensing

AVIT 333. UAS Remote Sensing. 4 Credits.

This course presents the theory and operations of common sensors used by the operators of remotely piloted and autonomous aircraft systems. Theory is combined with operational scenarios in order to provide the student with the ability to match specific sensors with anticipated missions. Lab portion is included with special emphasis on photogrammetry and processing data into mission deliverables. Prerequisite: *AVIT 238* and a minimum GPA of 2.6. F,S.

Counter UAS Applications

AVIT 450. Counter UAS Applications. 3 Credits.

Counter UAS application is designed to educate and explore the emerging threat of remotely piloted and autonomous type aircraft systems to the nation's airspace and infrastructure. This course will be divided into four sections (overview, detect, identify and defeat), to cover all current and future lines of effort in a unified approach to counter UAS. Prerequisite: *AVIT 240* and a minimum GPA of 2.6. F,S.

UAS Operations

AVIT 438. UAS Operations. 4 Credits.

This course of instruction will develop the student's knowledge and skills that are needed to safely employ remotely piloted and autonomous type aircraft systems. Course content includes aircraft operating software, launch and recovery operations, payload operations, normal and emergency procedures, and mission planning and execution. Specific emphasis will be placed upon aircraft and payload selection based upon proposed mission analysis. Students must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: *AVIT 126, AVIT 238, AVIT 323 or AVIT 445, AVIT 331, AVIT 337*, and a minimum GPA of 2.6. F,S.

Aviation Safety

AVIT 208. Aviation Safety. 3 Credits.

This course provides the student with a detailed introduction into aspects of aviation safety, aviation safety programs, risk management, and the associated components of pilot psychology, physiology, human factors, and accident review and investigation. Prerequisite: A minimum GPA of 2.6. Prerequisite or Corequisite: *AVIT 102 or AVIT 105 or AVIT 142*. F,S,SS.

Aerodynamics

AVIT 323. Aerodynamics - Airplanes. 3 Credits.

This course will provide the student a study of the physical principles of airplane aerodynamics, thereby fostering an appreciation of the factors affecting aircraft performance, stability and control, and special flight conditions often experienced by commercial pilots of fixed-wing aircraft. The student must complete the appropriate flight lessons to satisfactorily complete the course. Prerequisite: *AVIT 222*; open to Aviation majors and minors only; minimum GPA of 2.6. F,S,SS.

Best Drone Training Schools

Our unmanned aircraft operations program consistently ranks among the best for educational quality, affordability, and career outcomes.

#8 BEST DRONE TRAINING COLLEGE

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Looking to connect with the college or find a similar degree?

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