

Uncrewed and Autonomous Systems (UNSY)

UNSY 500 Introduction to Uncrewed Aircraft Design 3 Credits (3,0)

Overview of UAS design, including airframe, propulsion, communication, and ground control systems. Literature review and case studies.

Course Offered at: Daytona Beach, Worldwide

UNSY 502 Current Issues in Uncrewed and Autonomous Systems 3 Credits (3,0)

Examination of state-of-the-art technologies and issues in the uncrewed systems industry. Regulatory, development, and integration topics with industry relevance.

Course Offered at: Daytona Beach, Worldwide

UNSY 503 Legal and Regulatory Issues in Uncrewed and Autonomous Systems 3 Credits (3,0)

Legal and regulatory frameworks for uncrewed systems. Policy evolution, case law, and stakeholder participation in regulatory processes. Ethical and legal considerations.

Course Offered at: Daytona Beach, Worldwide, Asia

UNSY 504 Application of Uncrewed and Autonomous Systems 3 Credits (3,0)

Task-oriented application of uncrewed and autonomous systems across operational domains. Use cases, business models, legal, safety, and ethical considerations.

Course Offered at: Daytona Beach, Worldwide

UNSY 515 sUAS Operation Fundamentals 3 Credits (3,0)

Essential knowledge for regulatory-compliant UAS operation. Focus on airspace regulations, aeronautical knowledge, and best practices for FAA Part 107 certification.

Course Offered at: Worldwide, Asia

UNSY 520 sUAS Practical Application and Assessment 3 Credits (3,0)

Safe and effective performance of UAS operations for research and educational purposes. Advanced control techniques, flight planning, and real-world scenario assessment.

Prerequisites: UNSY 515

Course Offered at: Worldwide, Asia

UNSY 531 Artificial Intelligence and Emerging Technologies in Aviation/Aerospace Systems 3 Credits (3,0)

This course explores the application of artificial intelligence and emerging technologies to enhance the capabilities, autonomy, and lifecycle management of aviation/aerospace systems. Students will examine the role of AI, including generative tools, machine learning in decision-making, sensor fusion, predictive maintenance, and adaptive control. Course topics include AI-enabled autonomy, real-time data capture and processing, human-machine teaming, intelligent mission planning, edge computing, and the integration of advanced technologies such as computer vision, natural language processing, and advanced air mobility (AAM) systems. Students will also analyze regulatory, ethical, and operational implications of deploying these technologies in various operational domains.

Course Offered at: Worldwide

UNSY 599 Special Topics in Uncrewed Systems 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in uncrewed systems.

Course Offered at: Daytona Beach, Prescott, Worldwide

UNSY 603 Uncrewed and Autonomous Systems Operational Configuration 3 Credits (3,0)

Optimization of uncrewed systems configurations for operational tasks. Component and payload selection for real-world challenges while adhering to best practices and regulations.

Worldwide Prerequisites: UNSY 504

Course Offered at: Daytona Beach, Worldwide, Asia

UNSY 606 Uncrewed and Autonomous Systems Interoperability and Control 3 Credits (3,0)

Concepts and technologies for uncrewed systems interoperability and control. Command, control, communication (C3), automation, and system interaction requirements.

Worldwide Prerequisites: UNSY 504

Course Offered at: Daytona Beach, Worldwide

UNSY 620 sUAS Operational Planning and Safety Management 3 Credits (3,0)

Concepts, methods, and tools for effective sUAS planning and management. Scenario-based training, modeling, and live sUAS operations. Comprehensive application of knowledge, skills, and abilities (KSAs) to support productive and legal sUAS operations.

Worldwide Prerequisites: UNSY 520

Course Offered at: Daytona Beach, Worldwide, Asia

UNSY 625 sUAS Advanced Fixed-Wing Operations 3 Credits (3,0)

Advanced fixed-wing sUAS operations, including flight planning, control, and system management. Simulation tools and live operations for proficiency in fixed-wing sUAS applications.

Prerequisites: UNSY 515 and UNSY 520

Course Offered at: Worldwide

UNSY 635 Remote Sensing Data Analysis 3

Credits (3,0)

Advanced data collection and analysis methods for uncrewed and autonomous systems (UNSY) in remote sensing. Emphasis on data management, operational awareness, and analytical techniques for real-world applications.

Prerequisites: UNSY 504

Course Offered at: Worldwide

UNSY 638 Human Factors in Uncrewed

Aerospace Systems 3 Credits (3,0)

Human factors in UAS operations, focusing on human-machine interfaces, crew resource management, and regulatory integration.

Course Offered at: Worldwide, Asia

UNSY 690 Graduate Project 3 Credits (3,0)

Guided project in uncrewed and autonomous systems engineering.

Course Offered at: Daytona Beach

UNSY 691 Uncrewed and Autonomous Systems

Capstone Design Project I 3 Credits (3,0)

Design experience culminating in a prototype or refereed publication.

Emphasizes airframe design, propulsion, autonomy, and systems integration.

Course Offered at: Daytona Beach, Worldwide

UNSY 692 Uncrewed and Autonomous Systems

Capstone Design Project II 3 Credits (3,0)

Focusing on prototype development and system integration.

Worldwide Prerequisites: UNSY 691

Course Offered at: Daytona Beach, Worldwide

UNSY 699 Special Topics in Uncrewed

Systems 1-6 Credit (1-6,0)

Individual, independent, or directed studies of selected topics in uncrewed systems.

Course Offered at: Daytona Beach, Prescott, Worldwide

UNSY 700 Graduate Thesis 1-9 Credit (1-9,0)

A master-level research project in Uncrewed and Autonomous Systems conducted under the supervision of the students advisor and thesis committee. Submission of a final report, approved by the thesis committee, and an oral defense of the research work are required for thesis credits to be earned.

Course Offered at: Daytona Beach