Unmanned Aircraft Systems
Overview of Academic Degree Programs, Research, and Support Opportunities
About ERAU

*Embr**y-Riddle Aeronautical University*

- Independent, nonprofit, nonsectarian, and coeducational university
- **70+ undergraduate and graduate degrees** (Assoc. to Ph.D.)
- **32,000** undergraduate and graduate students
- Offers synchronous, asynchronous, and blended learning environments
About ERAU - UAS

Daytona Beach

• **BS in UAS Science** (250+ students)
• UAS minor
• **MS in Unmanned and Autonomous Systems Engineering**
• Professional Education [three-day UAS workshop](#)
• UAS Clubs

Prescott

• **BS in UAS** (launched Aug 2015)
• UAS minor
• UAS Club
ERAU-Worldwide
Unmanned Systems (online)

- **BS in Unmanned Systems Applications** (Aug 2015; 135+ students)
- UAS minor and **UAS graduate specialization** (500+)
- **MS in Unmanned Systems** (Aug 2014; 275+)
- **UAS Massive Open Online Course** (Jan 2015)
- Professional Education
  - **Multirotor sUAS Familiarization** (DroneWorld, Nov 2016)
  - **Online Small UAS Professional Education** (three courses, 4 weeks each)
  - **UAS workshop**
    - Custom developed training
- **Real-World Design Challenge (RWDC)**
- **Unmanned Systems related career options** report
- **ERAU Experience**
- **sUAS Consumer Guide**
ERAU UAS Research

• FAA UAS Center of Excellence (ASSURE)-Core
• **NextGen Advance Research (NEAR) Lab**
• **UAS Simulation Lab**
• **Aerial Robotics Virtual Laboratory**
• Numerous **UAS-specific pursuits**
  – Platform design and evaluation (competitions and coursework; AUVSI, IEEE, AIAA)
  – **Small UAS Consumer Guide** (student/faculty effort)
  – **UAS application analysis framework and database** (500 platforms)
• Produced multiple peer-reviewed publications and presentations (domestic and international)
  – Association for Unmanned Vehicle Systems International
  – Interservice/Industry, Training, Simulation and Training Conference
  – Unmanned Systems Canada
  – Journal of Unmanned Vehicle Systems International
  – International Conference on Control, Robotics, and Cybernetics
  – International Conference on Applied Human Factors and Ergonomics
  – Human-Computer Interaction International
ERAU Funding Overview

• Sources
  – Internal
  – Federal (FAA, NSF, TRB, STTRs)
  – State
  – Private (resources, materials, services, financial, crowdfunding)

• Uses
  – UAS curriculum development and delivery
  – FAA/ASSURE UAS COE topics and other research
  – Public UAS educational outreach (expanding awareness and engagement)
  – Dual-enrollment (includes UAS coursework)
  – Expansion of the Aerial Robotics Virtual Laboratory
  – Acquisition of UAS related technology for exhibition/research
Support-Methods

Collaboration
- Cooperative research and development agreements (CRADAs)
- External Funding
- Classroom - development of solutions

Purchase or development of tools/resources
- Software tools (COTS, custom, data)
- Unmanned system platforms or components
- Multimedia (documentation, videos, imagery)

Support does not need to be financial
- Guidance, feedback, access to resources/data, and exhibition/observation achievable under partnership, collaboration, or mentorship would provide significant benefit
- Alignment of curricula to needs of industry
- Public UAS education and outreach
- Co-ops, internships, new-hire employment, and employee career development opportunities
Research Alignment Areas

- UAS/unmanned systems
  - Development, application, and operation
  - UAS-NAS integration and support
  - Emergency response and management
  - Platform-task suitability analysis
  - System integration->validation and verification

- Modeling and simulation

- Component/subsystem areas (coursework)
  - Engineering and design (systems, eng technology, aerospace, mechanical, and computer)
  - Operations and support (configuration, sensors, computational processing, communications, and flight training)
  - Command, control, and communication (C3)
  - Autonomy and automation
  - Sensing, perception, and processing
  - Power, propulsion, and maneuvering
  - Human factors
  - Robotics and control
Contact

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