Ohio | Department of Higher Education

John R. Kasich, Governor
John Carey, Chancellor

INITIAL INQUIRY
REQUEST TO OFFER A NEW PROGRAM

Date of submission: *To come*

Name of institution: Kent State University

Primary institutional contact for this request: Therese E. Tillett,
Associate Vice President of Curriculum Planning and Administration,
Office of the Provost
330-672-8558 / ttillet1@kent.edu

Name of program: Unmanned Aircraft Systems–Design and Integration major
Bachelor of Science degree

Classification of Instructional Program (CIP): 15.0801 Aeronautical/Aerospace Engineering Technology/Technician. A program that prepares individuals to apply basic engineering principles and technical skills in support of engineers and other professionals engaged in developing, manufacturing and testing aircraft, spacecraft and their systems. Includes instruction in aircraft/spacecraft systems technology, design and development testing, prototype and operational testing, inspection and maintenance procedures, instrument calibration, test equipment operation and maintenance and report preparation.

Proposed start date: Fall 2020
Start date is contingent upon final approval from the Ohio Department of Higher Education and the Higher Learning Commission.

Type of request:
☐ New degree designation
☒ New program within an existing degree (e.g., major, minor, concentration)

Delivery options:
☒ Campus-based
☐ Online/hybrid delivery
☐ Flexible or accelerated delivery
☐ Offering the program at a new offsite location
☐ Offering the program at an existing offsite location
☐ Program contains off-campus experiences (e.g., internship, clinical, practicum, student teaching)

The institution will be seeking specialized accreditation for the program:

☐ No ☒ Yes

Kent State will be seeking accreditation from the Aviation Accreditation Board International (AABI). Presently, AABI accredits Kent State's undergraduate Aeronautics major.

Provide a brief description of the request.

Kent State University seeks to establish a B.S. degree in Unmanned Aircraft Systems–Design and Integration. This proposed major will be one of two degree programs in unmanned aircraft systems (the second proposed major—in operations—will be sent separately). The degree program will be offered by the College of Aeronautics and Engineering on the Kent Campus.

The Unmanned Aircraft Systems–Design and Integration major will focus on the details of constructing and implementing unmanned aircraft systems and developing and incorporating unmanned aircraft into the national economy and infrastructure.

Explain the academic unit's rationale for making the request.

An unmanned aircraft system (UAS), sometimes called a drone, is an aircraft without a human pilot onboard; instead, the UAS is controlled from an operator on the ground. While unmanned aerial vehicles have been used in military since the mid-1800s, the first non-military drone use began only a decade ago. Since then, the unmanned/autonomous aircraft has become the disruptive technology in aviation. Government agencies have used drones for disaster relief, border surveillance and wildfire fighting, while corporations began using drones to inspect pipelines and spray pesticides on farms. In 2013, Amazon announced the company would seek ways to integrate drones into their delivery operations.[1] Other companies, such as Uber, are working to provide on-demand autonomous air mobility services to transport people.[2]

NASA is leading a nationwide effort to enable UAS integration into the national airspace.[3] The *Wall Street Journal* reports that U.S. regulators expect the number of commercial drones to quadruple over the next five years, with approximately 450,000 drones operating in domestic airspace by 2022.[4]

The technologies behind UAS require that employees have a background in computer science and hardware, electronics, UAS construction and integration, sensor integration, manufacturing and aerodynamics.

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[1] McNeal. G. (2014, July 11). Six things you should know about Amazon's Drones. Forbes Media. Retrieved from www.forbes.com/sites/gregorymcneal/2014/07/11/six-things-you-need-to-know-about-amazons-drones/#795f4ac16777.

[2] Holden, J. & Goel, N. (2016, October 27). Fast forwarding to a future of on-demand urban air transportation. UBER Elevate. Retrieved from www.uber.com/elevate.pdf.

[3] National Aeronautics and Space Administration. Unmanned aircraft system traffic management. Retrieved from https://utm.arc.nasa.gov/index.shtml.

[4] Pasztor, A. (2018, March 18). FAA projects fourfold increase in commercial drones by 2022. *Wall Street Journal*. Retrieved from www.wsj.com/articles/faa-projects-fourfold-increase-in-commercial-drones-by-2022-1521407110.

Currently, there are no institutions in Ohio offering a bachelor's degree in UAS. Regionally, universities offering similar degree programs include Lewis University (Ill.), Purdue University (Ind.), Indiana State University and Kansas State University.

Kent State has offered an undergraduate UAS minor since 2013. Enrollment in the basic UAS introductory course (which provides FAA Part 107 remote UAS pilot certification) has seen continuous increases in enrollment and has since doubled over the past three offerings.

Indicate whether additional resources (e.g., faculty, staff, facilities, technology) will be needed to support the proposed request.

Due to the existing UAS undergraduate minor, the base infrastructure and coursework for the proposed major is in place, which allows the college to leverage several courses already in existence and offered for Kent State's B.S. degree in Aeronautics.

Courses specific to unmanned aircraft will need to be created for the new degree program. The college will hire one or two tenure-track faculty members for the program.

Kent State's airport and the air traffic control simulator on the Kent Campus will be used for unmanned operations and research. The college has plans—currently in the design and fundraising phase—for a new wing to its Kent Campus building that will include a multi-story atrium to serve as an indoor flight facility. The degree program will also require a well-developed electronics laboratory to provide hands-on instruction and laboratory experience for students.

To support the program, the college will need to increase its drone inventory, which consists currently totally of rotary-wing assets, in addition to procuring fixed-wing platforms. While the total inventory will hinge upon student enrollment, the desired fleet will number 10-15 aircraft.