

PROPOSED PROGRAM SUMMARY

Institution: University of Kentucky
Program Name: Aerospace Engineering
Degree Designation: BACHELOR OF SCIENCE (BS)
Degree Level : Baccalaureate

Program Description

The proposed aerospace engineering BS degree program will provide a rigorous foundation in the fundamental principles of modern aerospace science and engineering. The program's main objective is to prepare its students for aerospace research and development in industry, government, and academia. The program will offer a comprehensive aerospace engineering curriculum like those at the top aerospace programs in the US, with instructors that are internationally-recognized researchers in the aerospace community.

The program will be housed in the Mechanical Engineering Department (envisioned to become Mechanical and Aerospace Engineering) and will be the only ABET accredited Aerospace Engineering program in Kentucky. This program meets a clearly demonstrated need, as currently 30 students per year (since 2011) leave the state through the common market to pursue Aerospace Engineering studies at other SEC schools. Aerospace Engineering is the second most common major that students leave the state using the common market program. Moreover, a survey of existing students in Engineering at UK indicated 150 students with current interest in a career in Aerospace and over 60 students that would choose Aerospace Engineering if it were available. The program will prepare students either for positions in the state's growing aerospace industry immediately following graduation or for advanced graduate studies.

Will this program replace or enhance any existing programs(s) or tracks, concentrations, or specializations within an existing program? If yes, please specify

NO

CIP Code: 14.0201
Credit Hours: 127
Institutional Board Approval Date: 6/16/2021
Implementation Date: 8/16/2021

Student Demand

Year 1 - 20
Year 2 - 50
Year 3 - 80
Year 4 - 110
Year 5 - 140

Market Demand

Kentucky's aerospace exports are the third largest in the US, behind only California and Washington. The growing aerospace industry in Kentucky includes many prestigious companies, including General Electric, Lockheed Martin, Belcan Corporation, Raytheon Company, General Dynamics Group, and Sikorsky Aircraft Corporation. However, the state does not have an ABET accredited Aerospace Engineering program to support these industries.

The Kentucky Council on Postsecondary Education's (KY CPE) recent Engineering Sector Analysis in Kentucky (2020), projects a 23% increase in Aerospace Engineering demand over the next decade with over 20 new positions each year. Aerospace Engineers earn one of the highest wages among the engineering sector. At present, these employers must recruit from ABET accredited programs outside the state, and Kentucky high school students interested in an ABET accredited Aerospace Engineering program must attend other SEC schools. Approximately 30 students per year (average since 2011) leave the state to pursue Aerospace Engineering taking advantage of common market tuition. The most common destinations for these students are at the University of Alabama and Auburn University. A UK aerospace program would enhance Kentucky's aerospace industry by training proficient aerospace engineers locally and by enabling partnerships throughout the four-year program to include co-operative education and internships, student design projects, and research.

American Community Survey indicates that the average wage for individuals in this field is \$64,680 for individuals Age <30 and \$129,971 for individuals Age 30-60. Also, those Age <30 have a 3% unemployment rate and those Age 30-60 only have a 2% unemployment rate.

Employment Demand

	Regional	State	National
Type Of Job	Aerospace Engineer (Architectural, Engineering, and related services; Aerospace Product and Parts Ma		
Avg. Wage	\$81,262	\$84,542	\$81,383
# Jobs (Postings)	25	11	4410
Expected Growth	14%	14%	6%

Indicate source of market demand information

Salary data is from Burning Glass that uses actual job postings over the last 12 months and was supplemented by BLS/OES 2018 data when burning glass was unavailable. Projections are BLS/OES, 2018 data from 2016-2026.

Academic Demand

NA

Unnecessary Duplication

Similar Program(s):

Program Id	Inst code	Inst Description	Degree Designation	Program Title	Report year
14633	00197600	Morehead State University	BS	Bachelor of Science in Space Systems Engineering	

Comparison of Objectives/Focus/Curriculum to Similar Programs:

Comparison of Student Populations:

Access to Existing Programs:

Feedback from Other Institutions:

Cost

Projected Revenue over Next Five Years (\$) : 3214291

Projected Expenses over Next Five Years (\$) : 3260200

Will Additional faculty be needed? Yes

The Aerospace Engineering program will require only 3 additional faculty. The Mechanical Engineering program has over the years developed an existing focus in Aerospace research including strong support from NASA, the Departments of Defense and industry. Many of our faculty in fact have degrees in Aerospace Engineering and our existing expertise is sufficient to cover most of the proposed BS curriculum. Two of the proposed new faculty positions will address the areas of aerospace structures and aerospace design, which is not fully covered by existing expertise. While expertise for the rest of the curriculum already exists in the ME department, those faculty teach existing ME courses. Thus, the other two positions are necessary to build up additional teaching capacity, particularly for

Provide a budgetary rationale for creating this new program

The only program significantly affected by this proposal is the Mechanical Engineering program, since its existing faculty with expertise in Aerospace Engineering may begin to split their course assignments between the two programs. The newly hired faculty positions will support this needed capacity.

Typical stand-alone Aerospace Engineering programs at other universities can consist of 15 or more faculty to cover the breadth of topics in the curriculum. Combined Mechanical and Aerospace Engineering programs are quite common as there is significant overlap in much of the material covered during the Sophomore curriculum and even some courses in the Junior year. For a typical ME-AER combined department, the faculty will consist of approximately 2/3-3/4 ME faculty and 1/4-1/3 AER faculty