5-17-2019

Educational Policies Committee Program Proposal, College of Engineering, May 17, 2019

Utah State University

Utah System of Higher Education
New Academic Program Proposal
Cover/Signature Page - Abbreviated Template

Institution Submitting Request:	**Utah State University**
Proposed or Current Program Title:	**Mechanical and Aerospace Engineering**
Sponsoring School, College, or Division:	**Engineering**
Sponsoring Academic Department(s) or Unit(s):	**Mechanical and Aerospace Engineering**
Classification of Instructional Program Code[1] :	**14.1901**
Min/Max Credit Hours Required of Full Program:	**15 / 15**
Proposed Beginning Term[2]:	**Fall 2019**
Institutional Board of Trustees' Approval Date:	

☐	Certificate of Proficiency	☐ Entry-level CTE CP	☐ Mid-level CP
☐	Certificate of Completion		
☒	Minor		
☐	Graduate Certificate		
☐	K-12 Endorsement Program		
☐	NEW Emphasis for Regent-Approved Program		
☐	Out of Service Area Delivery Program		

Chief Academic Officer (or Designee) Signature:
I, the Chief Academic Officer or Designee, certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Please type your first and last name _____ Date:

☐ I understand that checking this box constitutes my legal signature.

[1] For CIP code classifications, please see http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55.
[2] "Proposed Beginning Term" refers to first term after Regent approval that students may declare this program.

Utah System of Higher Education
Program Description - Abbreviated Template

Section I: The Request

Utah State University requests approval to offer the following Minor: Mechanical and Aerospace Engineering effective Fall 2019. This program was approved by the institutional Board of Trustees on .

Section II: Program Proposal/Needs Assessment

Program Description/Rationale

Present a brief program description. Describe the institutional procedures used to arrive at a decision to offer the program. Briefly indicate why such a program should be initiated. State how the institution and the USHE benefit by offering the proposed program. Provide evidence of student interest and demand that supports potential program enrollment.

There is a strong demand from industry for electrical engineers to have a better background in mechanical engineering topics. To address this need, the Mechanical and Aerospace Engineering Department developed the proposed requirements for a Minor in Mechanical Engineering. The program consists of existing classes (no new classes needed).

This need was first mentioned to us by our industrial advisory board. In addition, the following article: https://www.asme.org/engineering-topics/articles/technology-and-society/does-silicon-valley-have-enough-engineers outlines the need for cross disciplinary electrical engineers with a better background in mechanical engineering and similarly mechanical engineers with a better background in electrical engineering. The article states that "someone who has experience with industrial assets and mechanical engineering as well as IT skills will be the most sought after... Those people are not easy to find." Both the Mechanical and Electrical engineering departments at USU are developing minors to their BS degree programs to address this need. We currently have Electrical Engineering students taking classes from the Mechanical Engineering department and Mechanical Engineering students taking Electrical Engineering classes to make themselves more attractive to potential employers. What is lacking is formal recognition of these efforts on the students transcripts.

There is also interest from students in the Biological Engineering for a minor in Mechanical Engineering. This minor would be appropriate for any students in the engineering or physics programs at USU. Currently the Mechanical Engineering Departments at the University of Utah and the University of Idaho offer minors in their departments.

Labor Market Demand

Provide local, state, and/or national labor market data that speak to the need for this program. Occupational demand, wage, and number of annual openings information may be found at sources such as Utah DWS Occupation Information Data Viewer (jobs.utah.gov/jsp/wi/utalmis/gotoOccinfo.do) and the Occupation Outlook Handbook (www.bls.gov/oco).

According to https://jobs.utah.gov/jsp/utalmis/#/occupation/17-2141.00/report website, both Mechanical and Electrical Engineers have a 5 star rating for Occupation Outlook. Our graduates currently don't have difficulty finding good paying jobs. As mentioned above, students with cross disciplinary backgrounds are highly sought after on both a state and national level. Putting forth this minor is a way for students to get that recognized for their cross disciplinary background.

Consistency with Institutional Mission/Impact on Other USHE Institutions

Explain how the program is consistent with the institution's Regents-approved mission, roles, and goals. Institutional mission and roles may be found at higheredutah.org/policies/policyr312/ . Indicate if the program will be delivered outside of designated service area; provide justification. Service areas are defined in higheredutah.org/policies/policyr315/ .

This minor would only be available at Utah State University and would be consistent with the institution's mission, roles, and goals.

Finances

What costs or savings are anticipated in implementing the proposed program? If new funds are required, indicate expected sources of funds. Describe any budgetary impact on other programs or units within the institution.

No additional costs are anticipated with this change. The number of students anticipated to participate in the minor will be small enough to fit into our current class enrollments.

Section III: Curriculum

Program Curriculum

List all courses, including new courses, to be offered in the proposed program by prefix, number, title, and credit hours (or credit equivalences). Indicate new courses with an X in the appropriate columns. The total number of credit hours should reflect the number of credits required to receive the award. ***For NEW Emphases, skip to emphases tables below.***
For variable credits, please enter the minimum value in the table below for credit hours. To explain variable credit in detail as well as any additional information, use the narrative box below.

		Course Number	NEW Course	Course Title	Credit Hours
		General Education Courses (list specific courses if recommended for this program on Degree Map)			
				General Education Credit Hour Sub-Total	0
		Required Courses			
+	-	ENGR 2010		Engineering Mechanics Statics	3
+	-	ENGR 2030		Engineering Mechanics Dynamics	3
+	-	ENGR 2140		Mechanics of Materials	3
+	-	MAE 2300		Thermodynamics	3
				Required Course Credit Hour Sub-Total	12
		Elective Courses			
+	-	MAE 3040		Mechanics of Solids	3
+	-	MAE 3340		Instrumentation and Measurements	3
+	-	MAE 3420		Fluid Mechanics	3
+	-	MAE 5300		Vibrations	3
+	-	MAE 5310		Dynamic Systems and Controls	3
+	-	ECE 5310		Control Systems	3
+	-	MAE 5320		Mechatronics	3
+	-	ECE 5320		Mechatronics	3
+	-	MAE 5350		Kinematics	3
+	-	MAE 5360		Advanced Dynamics	3
				Elective Credit Hour Sub-Total	3
				Core Curriculum Credit Hour Sub-Total	15

Program Curriculum Narrative

Describe any variable credits. You may also include additional curriculum information, as needed.

Only one course from the above elective course list needs to be taken. No course may be applied toward a minor in Mechanical Engineering with an earned grade of less than C-. No course may be repeated more than one time to improve the grade to a C- or better. Courses for Mechanical Engineering Minors may not be taken on a Pass/ Fail Basis.

Degree Map

Degree maps pertain to undergraduate programs ONLY. Provide a degree map for proposed program. Degree Maps were approved by the State Board of Regents on July 17, 2014 as a degree completion measure. Degree maps or graduation plans are a suggested semester-by-semester class schedule that includes prefix, number, title, and semester hours. For more details see http://higheredutah.org/pdf/agendas/201407/TAB%20A%202014-7-18.pdf (Item #3).

Please cut-and-paste the degree map or manually enter the degree map in the table below

A typical degree map could be as follows:

Year 1

Fall Semester - ENGR 2010 (Statics), 3 credits

Spring Semester - ENGR 2030 (Dynamics), 3 credits

Summer Semester - ENGR 2140 (Mechanics of Solids), 3 credits

Year 2

Fall Semester - MAE 5310 (Control Systems), 3 credits

Spring Semester - MAE 2300 (Thermodynamics), 3 credits

It is noted that ENGR 2010, 2030, and 2140 and MAE 2300 are currently taught every semester (including summer in most years) giving flexibility. Completing all the required classes for the minor will satisfy the prerequisites for all of the elective classes listed.