MEMORANDUM

TO: Michael Bruno
Interim VC for Academic Affairs and VC for Research

FROM: Donald O. Straney, Ph.D.
Vice President for Academic Planning and Policy

SUBJECT: Approval of Authorization to Plan for BS in Construction Engineering

At the UH Officers meeting held on December 18, 2017, the Authorization to Plan for a new BS degree in Construction Engineering was approved with the following stipulation:

- UH Mānoa will engage in discussion to identify cross-campus opportunities, including alignment with community college pathways

In addition, the Office of the Vice President for Academic Planning and Policy will take advantage of your efforts with this program to organize a Sector Convening of the construction industry to hear from industry leaders what other related programs could be developed to meet their needs.

Please note that the proposal for a provisions program in Construction Engineering needs to present an analysis of your capacity, potential enrollment and a risk assessment.

Should you have any questions, please don't hesitate to contact me.

cc: Council of Chief Academic Officers
    David Lassner, Interim Chancellor, UH Mānoa
    Ronald Riggs, Interim Dean, College of Engineering, UH Mānoa
    David Ma, Interim Associate Dean, College of Engineering, UH Mānoa
    Wendy Pearson, Program Officer, UH Mānoa
MEMORANDUM

TO: Michael Bruno, Interim Vice-Chancellor for Academic Affairs
FROM: H.R. Riggs
SUBJECT: ATP1 for BS in Construction Engineering

October 23, 2017

Please find attached the request for approval to plan-1 for a BS in Construction Engineering. ABET recognizes 28 different engineering degree programs, and UHM currently only has 6. We are in the process of expanding our offering, to provide our students with more choices. We estimate that nearly 30% to 40% of the civil engineering graduates go into the construction industry. By establishing a separate construction engineering program, we will be able to service these students and this industry sector better. It will also allow the civil engineering curriculum to be a bit more innovative as they reform their curriculum. ABET accreditation of this degree will provide students a pathway to obtain professional licensure, should they so choose.

c: Panos Prevedouros, CEE Chair
David Ma, Interim Associate Dean
Request for the Authorization to Plan an Academic Program at Manoa

1. **Locus**
   University of Hawai‘i at Mānoa, College of Engineering (CoE)

2. **Degree proposed and program objectives**
   
   **Degree proposed:**
   Bachelor of Science in Construction Engineering (BSConstrE)

   **Program Objectives**
   The construction engineering program aims to produce graduates who, within a few years after graduation, will
   
   - take positions in the construction industry such as highway construction, underground utility works, and building of structures;
   
   - take positions as estimators, inspectors or auditors of planned and constructed projects;
   
   - become licensed Professional Engineers (PE) with advanced and sustainable construction technologies, communication skills, awareness of professional and ethical responsibilities, leadership development, and commitment to lifelong learning; and,
   
   - have the knowledge and technical background necessary to pursue a graduate degree with emphasis in building and infrastructure construction and related engineering or project management specialties.

3. **Alignment with the Campus and UH system mission, academic plan, or strategic direction**
   
   The proposed program is consistent with the Integrated Academic and Facilities Plan for the University of Hawai‘i System, approved by the Board of Regents on April 20, 2017. Because of the continuously high demand for construction engineers in Hawaii and the strong ties between UH and the engineering community, this program will help UH attract more great high school students locally, nationally, and internationally. As an additional opportunity for students to pursue an engineering degree, this program will also help retention and persistence of enrolled students. Engineering has already established pathways with UH community colleges for transferring students. This new program will help strengthen the pathways and create more opportunities for students from UH community colleges.
4. Justification of need

New disciplines and corresponding degrees in engineering have emerged over the last several decades. ABET, the accreditation organization for engineering programs, recognizes 28 different engineering programs, each with different program criteria. UHM has four engineering programs in the College of Engineering (Civil, Computer, Electrical, Mechanical) and two engineering programs in other units. The proposed Construction Engineering program, which is one of the 28 ABET-recognized programs, will accommodate the needs of our students and local industry within engineering’s accreditation structure. The BS in Construction Engineering will address the increasing demand of local Construction Industry for qualified construction engineers by exposing students to more focused professional training than the current degree structures and restrictions allow. The intention is to develop a program leading to an ABET-accredited degree so that its graduates will be better prepared for a future career in Construction Engineering.

Approximately 40%¹ of Civil Engineering graduates have found employment with local and mainland contractors. Also, in a 2015 internal poll of 54 CEE junior and senior students, 37% (20 out of 54) students showed an interest in specializing in Construction; and out of the 13 undecided students, 5 or 38% favored Construction Engineering.

A similar survey conducted in 2008 among 116 CEE students showed 46% (53 out of 116) expressed an interest in pursuing Construction Engineering if the program is offered.

5. **Demand for the program**

The demand for a program specifically designed for Construction Engineering is high given that many graduates of UHM's CEE program take positions in construction companies. A Construction Engineering program will prepare students for engineering and management positions in the construction industry by providing them with the educational tools they need. The curriculum will provide a solid foundation on which graduates will build their careers in the construction industry. Using the latest technology, students learn how the industry operates, what is expected of them as construction engineers and managers, and how to complete projects safely, on-time, and within budget. Hands-on project experiences coupled with theory-based instruction prepares students to become well-rounded professionals.

There are four BS programs in the College of Engineering: Civil Engineering, Computer Engineering, Electrical Engineering, and Mechanical Engineering. The proposed program in Construction Engineering would add a fifth undergraduate degree. Faculty members in CEE and Architecture can readily cover the required courses with a light to moderate added effort.

6. **Non-duplication of program**

Construction Engineering and Civil Engineering are two different ABET-recognized engineering programs and there are no similar degree programs offered at other UH institutions. The proposed Construction Engineering program does not duplicate the existing ABET-accredited BS in Civil Engineering. Construction Engineering is focused on analyzing and designing construction processes and systems in a construction engineering specialty field, explaining concepts of legal, ethical, and management topics, whereas Civil Engineering takes a broad view of analyzing and
designing a system, component, or process in Civil Engineering technical areas including environmental, geotechnical, hydraulic/hydrology, structural, and transportation.

7. **New Resources**
   
   No new resources are necessary for the proposed program.

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**Dean/Department/Division Chair:**

H. R. Riggs  
10/23/2017

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**Campus Chief Academic Officer:**

Mark Bruner  
12/6/17

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**Chancellor:**

David  
1/19/18

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College of Engineering
University of Hawaii

Request for the Authorization to Plan an Academic Program at Manoa: ATP 2

Degree proposed: Bachelor of Science in Construction Engineering

The ATP1 was approved on January 16, 2018.

A. If a similar program exists, consult with other campus(es)

As discussed in ATP-1, there is no similar program in the system or the state of Hawaii.

B. Impact on accreditation

We will seek ABET accreditation for this new program. For BS in Construction Engineering, ABET requires the satisfaction of criteria that are similar to those of the program in Civil Engineering. The proposing department of Civil and Environmental Engineering expects no difficulty in collecting the data and submitting a report to ABET for the accreditation of the proposed program in Construction Engineering. The accreditation of this program does not affect in any way the accreditation of other engineering programs. There is no adverse impact on the accreditation of any other programs or the university.

C. Timeline for submission of new program proposal to:
   a. Council of Chief Academic Officers (CCAO): Fall 2018
   b. BOR Committee on Academic and Student Affairs: Fall 2018
   c. Board of Regents: Fall 2018

Risk assessment

There is no potential risk associated with the proposed program. For example, no insurance, vendor contracts, off-site management or similar items are required.