

Cover/Signature Page – Full Template

Institution Submitting Request: University of Utah
Proposed Title: Bachelor of Science, Construction Engineering
School or Division or Location: College of Engineering
Department(s) or Area(s) Location: Civil and Environmental Engineering
Recommended Classification of Instructional Programs (CIP) Code¹ : 14.3301
Proposed Beginning Date: 08/15/2016
Institutional Board of Trustees' Approval Date:

Proposal Type (check all that apply):

Regents' Agenda Items		
<i>R401-4 and R401-5 Approval by Committee of the Whole</i>		
SECTION NO.		ITEM
4.1.1	<input type="checkbox"/>	(AAS) Associate of Applied Science Degree
4.1.2	<input type="checkbox"/>	(AA) Associate of Arts Degree
	<input type="checkbox"/>	(AS) Associate of Science Degree
4.1.3	<input type="checkbox"/>	Specialized Associate Degree
4.1.4	<input checked="" type="checkbox"/>	Baccalaureate Degree
4.1.5	<input type="checkbox"/>	K-12 School Personnel Programs
4.1.6	<input type="checkbox"/>	Master's Degree
4.1.7	<input type="checkbox"/>	Doctoral Degree
5.2.2	<input type="checkbox"/>	(CER C) Certificate of Completion
5.2.4	<input type="checkbox"/>	Fast Tracked Certificate

Chief Academic Officer (or Designee) Signature:

I certify that all required institutional approvals have been obtained prior to submitting this request to the Office of the Commissioner.

Signature

Date: MM/DD/YEAR

Printed Name: *Name of CAO or Designee (Ruth Watkins –Signature will be collected after Board of Trustees Approval)*

¹ CIP codes must be recommended by the submitting institution. For CIP code classifications, please see <http://nces.ed.gov/ipeds/cipcode/Default.aspx?y=55>.

Executive Summary – Full Template
University of Utah
Bachelor of Science, Construction Engineering
08/15/2016

Program Description

Our goal is to develop an ABET accredited undergraduate degree in Construction Engineering. This program will prepare individuals to apply scientific, mathematical, engineering, and management principles to the planning, design, and building of commercial and residential facilities and structures. It will include instruction in civil engineering fundamentals such as structural principles, site analysis, foundations, computer-assisted design, evaluation and testing, and materials combined with construction courses related to contracting, project management, graphic communications, and applicable laws and regulations.

Role and Mission Fit

The Utah System of Higher Education and Institutional Missions and Roles (R312) states that the institution's mission is to discover, create, and transmit knowledge through education and training programs at the undergraduate, graduate, and professional levels; through research and development; and through service and extension programs associated with a major teaching and research university. Emphasis is placed on teaching, research, and service. The institution contributes to the quality of life and economic development at the local, state, and national levels. <http://academic-senate.utah.edu/wp-content/uploads/sites/6/2015/03/20121105-Agenda.pdf>.) This program fits extremely well with the mission of the University of Utah by providing graduates ready to build the critical infrastructure background required to improve the quality of life and promote economic development.

Faculty

While a few of the elective courses offered in this program will overlap our existing Civil and Environmental Engineering program, the majority of the curriculum will be introduced by new faculty. The existing courses and faculty have capacity and are prepared to support this effort. For the new courses, this year's Engineering Initiative provides the funds to hire three new full-time faculty, one tenure-track and two career-line lecturers. The tenure track position will involve a national search to find a faculty member with appropriate experience in transportation infrastructure. The two career-line positions will be posted and hired from industry professionals. Since the industry professionals are less likely to have taught, department leadership have met with Pat Tripeny from the Center for Teaching and Learning Excellence and Cory Stokes from UOnline to create a plan to mentor these new instructors, as well as help them successfully create online class content for the graduate program.

Market Demand

The rapidly growing economy in Utah and many parts of the country requires construction of new roads, houses, and commercial buildings. The US Bureau of Labor Statistics predicts a 16% growth in the need for construction managers nationally. Construction Engineering firms in Salt Lake City have confirmed the need for these graduates and have committed to help create curriculum. Select construction engineers will be invited to join the Industrial Advisory Board and provide valuable feedback to the department, new faculty hires, and recommending curriculum. Based on our initial preliminary studies, there are only a few programs currently offered around the country although that number is growing in response to aging infrastructure and sustainability concerns. ABET reports only 14 accredited programs having the title Construction Engineering and Construction Technology as part of their title.

Student Demand

There is a national trend towards design/build projects across the country that requires students to have both engineering and construction skills. Prior to this national trend, students had to choose between engineering or construction management. This is no longer the case since this degree bridges the gap. The Fundamentals of Engineering exam (a professional exam for engineering students on their way to becoming registered Professional Engineers) are now adding an entire section dedicated to Construction, so more and more students have been asking for classes in construction. In a recent Civil Engineering class discussion, students have been inquiring about the degree program for their future. We currently offer four classes in engineering management that are widely popular with students. The plan from the Engineering Initiative is to graduate an additional 20-30 BS students each year once the program becomes established.

Statement of Financial Support

Appropriated Fund.....	<input checked="" type="checkbox"/>
Special Legislative Appropriation.....	<input type="checkbox"/>
Grants and Contracts.....	<input type="checkbox"/>
Special Fees	<input type="checkbox"/>
Differential Tuition (must be approved by the Regents).....	<input checked="" type="checkbox"/>
Other (please describe).....	<input type="checkbox"/>

Faculty, adjuncts, and a staff position will be continuously provided by the legislature through the engineering initiative funding package. Differential tuition is currently attached to each upper division engineering course.

Similar Programs Already Offered in the USHE

This is a calculus-based program in construction engineering. This program will be associated with an ABET-accredited undergraduate engineering program which will be fundamentally different from any existing construction management options. Thus, there are no programs offered within the USHE institutions.

Program Description – Full Template
University of Utah
Bachelor of Science, Construction Engineering
08/15/2016

Section I: The Request

University of Utah requests approval to offer Construction Engineering effective Fall 2016. This program has been approved by the institutional Board of Trustees.

Section II: Program Description

Complete Program Description

Physical infrastructure (roads, buildings, water distribution and treatment, etc.) is needed to promote population and economic developing throughout the world. From beginning planning to final operation and maintenance, engineers are needed to ensure successful projects. Construction Engineers are educated to understand and solve the complexities that arise during the engineering and construction phases. This comprehensive approach includes initial design through the completion of the exterior building façade. The Construction Engineering degree will teach students to work in both public and private industry positions, improving graduate's skills to meet this growing trend.

Purpose of Degree

According to the American Institute of Steel Construction, three independent movements are converging to radically alter the manner in which infrastructure systems are designed and constructed. These factors represent the emergence of: 1) design/build projects, 2) 3-dimensional Building Information Modeling (BIM) software; and 3) sustainable/resilient development requirements. The national trend for Construction Engineering is very evident in both the public and private sectors. (e.g. \$1.59 billion dollar I-15 reconstruction project, 12300 South Design Build Project in Draper and Riverton Utah, both using the design/build in order to maximize cost saving and innovative design). The Construction Engineering degree requires a hybrid education consisting of a strong civil engineering foundation coupled with experiential learning in architecture and construction practices. By providing the degree online, we anticipate being able to serve all of Utah and the surrounding region to enhance the capabilities of those working in the construction industry.

Institutional Readiness

The Department of Civil and Environmental is proposing a Bachelor Degree in Construction Engineering, a Master of Science in Construction Engineering, and a Graduate Certificate in Construction Engineering. These new degrees will fit naturally with the department since we already offer many electives that can support this degree. Civil Engineering has also been working with the College of Engineering Dean's Office, UOnline, and support office to promote the best degree/education options for Construction Engineering. The Department of Civil & Environmental Engineering has also been in contact with large construction firms who support this effort and will serve on the Industry Advisory Board. The creation of the Construction Engineering BS, MS, and Graduate Certificate in Construction Engineering will not affect our existing Bachelor of Science in Civil Engineering.

Departmental Faculty

In addition to the faculty listed below, the Engineering Initiative will also provide 4-5 adjunct faculty that can be hired part-time from industry. This will allow the department to provide instruction from top individuals in industry and promote increased relationships with industry.

According to ABET, the program must demonstrate that the majority of faculty teaching courses that are primarily design content are qualified to teach the subject matter by virtue of professional licensure, or by education and design experience. The faculty must include at least one member who has had full-time experience and decision-making responsibilities in the construction industry. We will accomplish this by hiring two full time career-line lecturer with the appropriate experience.

Department Faculty Category	Dpt Faculty Headcount – Prior to Program Implementation	Faculty Additions to Support Program	Dpt Faculty Headcount at Full Program Implementation
With Doctoral Degrees (Including MFA and other terminal degrees, as specified by the institution)			
Full-time Tenured	21.5	1	22.5
Full-time Non-Tenured	1	2	3
Part-time Tenured	0	0	0
Part-time Non-Tenured	0	0	0
With Master's Degrees			
Full-time Tenured	0	0	0
Full-time Non-Tenured	0	0	0
Part-time Tenured	0	0	0
Part-time Non-Tenured	0	0	0
With Bachelor's Degrees			
Full-time Tenured	0	0	0
Full-time Non-Tenured	0	0	0
Part-time Tenured	0	0	0
Part-time Non-Tenured	0	0	0
Other			
Full-time Tenured	0	0	0
Full-time Non-Tenured	0	0	0
Part-time Tenured	0	0	0
Part-time Non-Tenured	4	4	8
Total Headcount Faculty in the Department			
Full-time Tenured	21.5	1	22.5
Full-time Non-Tenured	1	2	3
Part-time Tenured	0	0	0
Part-time Non-Tenured	4	4	8
Total Department Faculty FTE <i>(As reported in the most recent A-1/S-11 Institutional Cost Study for "prior to program implementation" and using the A-1/S-11 Cost Study Definition for the projected "at full program implementation.")</i>	26.5	X	33.5

Staff

The Engineering Initiative has allocated monies for hiring one additional staff person. This person will serve as the online coordinator in the department, advise the online students, be a point of contact for the UOnline office, marketing and promoting online education, and coordinate the creation and recording of classes. One teaching assistant was also budgeted in the request.

Library and Information Resources

The Library has verified it has sufficient resources available to provide for any faculty or student research needs.

Admission Requirements

Students are required to be admitted to the University as well as complete a separate admissions application specific to the Construction Engineering Program.

Student Advisement

The new staff hire will advise using technology for face-to-face appointments, telephone calls, email correspondence, open house events, or company presentations (marketing events with our industry partners). A faculty advisor from the three new hires will also be assigned to each student.

Justification for Graduation Standards and Number of Credits

The BS Construction Engineering degree will require 127.5 credit hours, including General Education and Bachelor Degree Requirements, of undergraduate-level coursework with a minimum engineering GPA of 2.50, in line with our existing Civil Engineering undergraduate program. Students will be expected to maintain a 2.0 cumulative GPA consistent with University of Utah GPA requirements.

External Review and Accreditation

This program will be reviewed by ABET and adhere to ABET accreditation requirements and guidelines.

ABET defined expected learning outcomes:

The following statements describe what students are expected to know and are able to do by the time of graduation:

- a). an ability to apply knowledge of mathematics, science, and engineering
- b). an ability to design and conduct experiments, as well as analyze and interpret data
- c). an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability
- d). an ability to function on multidisciplinary teams
- e). an ability to identify, formulate, and solve engineering problems
- f). an understanding of professional and ethical responsibility
- g). an ability to communicate effectively
- h). the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
- i). an ability to explain basic concepts in management, business, public policy, and leadership; and explain the importance of professional licensure
- j). a knowledge of contemporary issues

- k). an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

In addition to Student Outcomes, ABET requires Program Educational Objectives, aspirational goals for graduates to achieve three to five years post-graduation. Consistent with the Program Educational Objectives developed by the Civil and Environmental Engineering Department and the College of Engineering, the Construction Engineering PEOs are:

1. Construction Engineering graduates will be engaged in the practice of construction engineering, or related field, or will be pursuing advanced knowledge through post-graduate study and research.
2. Construction Engineering graduates will be on the path towards licensure, when appropriate, and will be active in professional organizations, seeking opportunities for professional development and participating in the betterment of their profession.
3. Construction Engineering graduates will be ascending into leadership roles and be advocating for their profession utilizing their accumulated education and experience solving complex societal issues for the broader good of the community.

Projected Program Enrollment and Graduates; Projected Departmental Faculty/Students

Data Category	Current – Prior to New Program Implementation	PROJ YR 1	PROJ YR 2	PROJ YR 3	PROJ YR 4	PROJ YR 5
Data for Proposed Program						
Number of Graduates in Proposed Program	X	0	10	20	25	25
Total # of Declared Majors in Proposed Program	X	25	30	40	45	50
Departmental Data – For All Programs Within the Department						
Total Department Faculty FTE <i>(as reported in Faculty table above)</i>	22.5	23.5	24.5	24.5	25.5	26.5
Total Department Student FTE <i>(Based on Fall Third Week)</i>	296	306	321	346	371	396
Student FTE per Faculty FTE <i>(ratio of Total Department Faculty FTE and Total Department Student FTE above)</i>	13.15:1	13.6:1	14.26:1	15.37:1	16.48:1	17.6:1
Program accreditation-required ratio of Student FTE/Faculty FTE, if applicable: (Provide ratio here: _____)	-	-	-	-	-	-

Expansion of Existing Program

This is essentially a new degree aimed at a new audience even though it does have some common elements with the Civil and Environmental Engineering curriculum.

Section III: Need

Program Need

The proposal was submitted as part of the Engineering Initiative and was approved by Dean of Engineering and the Technology Initiative Advisory Board (TIAB) for funding.

According to the American Institute of Steel Construction, three independent movements are converging to radically alter the manner in which infrastructure systems are designed and constructed. These factors represent the emergence of: 1) design/build projects, 2) 3-dimensional Building Information Modeling (BIM) software; and 3) sustainable/resilient development requirements. These factors have transformed the often contentious nature of architect-engineer-contentious dynamics into a more seamless collaborative team effort. This integrated approach has already begun to revolutionize the delivery of projects designed and constructed to meet client needs for timely delivery of high quality, economically sensitive projects that minimize environmental and energy impacts.

In speaking with several local construction firms we believe the demand for project managers with engineering backgrounds will continue to grow. In light of 2015 legislation raising the gas tax for infrastructure improvements and the law allowing local communities the option of raising sales taxes to help pay for transit, we believe the combination of transportation and construction engineering will represent a growth area for us. This is also part of a national movement with a few large universities already moving to address the long-term needs for individuals in this area.

Labor Market Demand

According to the US Bureau of Labor Statistics, employment of construction managers is projected to grow 16 percent from 2012 to 2022, faster than the average for all occupations. Construction managers will be needed as overall construction activity increases over the coming decade. Those with a bachelor's degree in construction science, construction management, or civil engineering, coupled with construction experience, will have the best job prospects. Locally, population growth projections for the state of Utah exceed the national average and we expect job demand to expand even more rapidly. Therefore, an undergraduate degree in Construction Engineering will address an important labor demand.

Student Demand

Currently our department offers four construction related courses that will be used in the Construction Engineering program. These courses are well populated by our existing students. In examining national trends and in speaking with several local construction firms we believe the demand for project managers with engineering backgrounds will continue to grow. We have discussed this with our existing students and there has been considerable interest. However, the ultimate goal is to increase the number of students by attracting individuals who have been seeking construction management options elsewhere.

Similar Programs

The Engineering Initiative proposal has been funded, faculty hires will be made from new faculty lines, and the degree will not affect our current student-base, in Civil and Environmental Engineering, since the new degree will attract a different clientele.

Collaboration with and Impact on Other USHE Institutions

There will be no impact on the other USHE Institutions.

Benefits

Population growth in the state of Utah is projected to significantly increase the need for infrastructure for the foreseeable future. There is a need to expand the number of engineering graduates having the skills to assist in constructing these roads, buildings, and water/wastewater systems. This degree will directly benefit the community and state by developing a critically needed workforce and benefit the University by attracting high caliber engineering students and building the University of Utah's reputation.

Consistency with Institutional Mission

The University of Utah contributes to the quality of life and economic development at the local, state, and national levels. <http://academic-senate.utah.edu/wp-content/uploads/sites/6/2015/03/20121105-Agenda.pdf>.) This proposed program fits extremely well with the mission of the institution by providing graduates ready to build the critical infrastructure background required to improve the quality of life and promote economic development. It is one more piece of the vital STEM workforce requirement.

Section IV: Program and Student Assessment

Program Assessment

The department will implement student surveys, consult with ABET, and query professionals from industry to make sure that trends in the industry can be adapted into the program.

Expected Standards of Performance

Program Outcomes will be routinely monitored by ABET to maintain relevancy with practicing construction professionals. Likewise, course contents will be developed that contribute to these outcomes. It is expected that our graduates will maintain a 2.50 GPA, choosing from classes that will prepare them for the marketplace.

Section V: Finance

Department Budget

This budget is an estimate and does not reflect any salary increases to faculty since it is not determined at this time.

Three-Year Budget Projection							
Departmental Data	Current Departmental Budget – Prior to New Program Implementation	Departmental Budget					
		Year 1		Year 2		Year 3	
		Addition to Budget	Total Budget	Addition to Budget	Total Budget	Addition to Budget	Total Budget
Personnel Expense							
Salaries and Wages	2,164,973	342,000	2,421,973	0	2,421,973	0	2,421,973
Benefits	669,008	118,070	780,278	0	780,278	0	780,278
Total Personnel Expense	\$2,833,981	\$460,070	\$3,202,251	\$0	\$3,202,251	\$0	\$3,202,251

Non-Personnel Expense							
Travel	1,000	0	1,000	0	1,000	0	1,000
Capital	0	0	0	0	0	0	0
Library	0	0	0	0	0	0	0
Current Expense	84,100	19,930	104,030	0	104,030	0	104,030
Total Non-Personnel Expense	85,100	19,930	105,030	0	105,030	0	105,030
Total Expense <i>(Personnel + Current)</i>	\$2,919,081	\$480,070	\$3,207,281	\$0	\$3,207,281	\$0	\$3,207,281
Departmental Funding							
Appropriated Fund	2,443,576	480,000	3,307,281	0	2,443,576	0	2,443,576
Other:	13,813	0	13,813	0	13,813	0	13,813
Special Legislative Appropriation	0	0	0	0	0	0	0
Grants and Contracts	0	0	0	0	0	0	0
Special Fees / Differential Tuition	376,432	0	376,432	0	376,432	0	376,432
Total Revenue	\$2,833,821	\$480,000	\$3,307,281	\$0	\$3,307,281	\$0	\$3,307,281
Difference							
Revenue-Expense	\$-85,260	\$0	\$6,540	\$0	\$6,540	\$0	\$6,540
Departmental Instructional Cost / Student Credit Hour* <i>(as reported in institutional Cost Study for "current" and using the same Cost Study Definition for "projected")</i>	\$	\$	\$	\$	\$	\$	\$

* *Projected Instructional Cost/Student Credit Hour* data contained in this chart are to be used in the Third-Year Follow-Up Report and Cyclical Reviews required by R411.

Funding Sources

The Engineering Initiative will fund this program along with differential tuition generated by engineering courses.

Reallocation

No reallocation is necessary.

Impact on Existing Budgets

None. This program will be managed without diverting existing budget into operations.

Section VI: Program Curriculum

In order to receive ABET Accreditation, the program must prepare graduates to apply knowledge of mathematics through differential and integral calculus, probability and statistics, general chemistry, and calculus-based physics; to analyze and design construction processes and systems in a construction engineering specialty field, applying knowledge of methods, materials, equipment, planning, scheduling, safety, and cost analysis; to explain basic legal and ethical concepts and the importance of professional engineering licensure in the construction industry; to explain basic concepts of management topics such as economics, business, accounting, communications, leadership, decision and optimization methods, engineering economics, engineering management, and cost control. The curriculum shown below was designed to accomplish these goals.

All Program Courses (with New Courses in Bold)

Course Prefix and Number	Title	Credit Hours
Required Courses		
MATH 1310	Engineering Calculus I	4
CHEM 1210	General Chemistry I	4
CHEM 1215	General Chemistry I Lab	1
WRTG 2010	Intermediate Writing	3
LEAP 1501 (BF)	Social and Ethical Implications of Engineering	3
CVEEN 1000	Introduction to Civil Engineering	2
MATH 1320	Engineering Calculus II	4
*CHEM 1220	General Chemistry II	4
PHYS 2210	Physics for Scientists and Engineers I	4
PHYS 2215	Physics for Scientists and Engineers Lab I	1
CVEEN 1400	Computer-Aided Design	3
MATH 2250	ODEs	4
GEO 1110	Introduction to Earth Systems	3
GEO 1115	Introduction to Earth Systems Lab	1
CVEEN 2000	Sophomore Seminar	0.5
CVEEN 2010	Statics	3
CVEEN 2310	Probability and Statistics	2
MG EN 2400	Surveying	3
MATH 3140	Vector Calculus and PDEs	4
LEAP 1500 (DV, HF)	LEAP Seminar in Humanities for Engineers	3
ECON 2010 (BF)	Principles of Microeconomics	3
CVEEN 2140	Strength of Materials	3

Course Prefix and Number	Title	Credit Hours
CVEEN 2300	Engineering Economics	2
CVEEN 2750	Construction Computer Tools	2
ARCH 1610 or 1615 (FF)	Architecture LEAP or Intro to Architecture	3
CVEEN 3210	Structural Analysis I	3
CVEEN 3310	Geotechnical Engineering I	3
CVEEN 3315	Geotechnical Engineering I Lab	1
CVEEN 3510	Civil Engineering Materials	3
CVEEN 3800	Construction Engineering I	3
AI Elective		3
Intellectual Exploration (HF)		3
CVEEN 3100	Technical Communication	3
CVEEN 3520	Transportation Engineering I	3
**CVEEN 3810	Contract Specifications	3
Intellectual Exploration (FF)		3
CVEEN 4221	Concrete Design I	3
**CVEEN 4810	Horizontal Construction	3
CVEEN 5830	Project Management & Contract Administration	3
CVEEN 5810	Cost Estimation and Proposal Writing	3
Intellectual Exploration (IR)		3
**CVEEN 4830	Vertical Construction	3
CVEEN 4850	Façade Engineering I	3
***CVEEN 4920	Construction Design Capstone	3
CVEEN 5820	Project Scheduling	3
Sub-Total		127.5
Elective Courses		
Sub-Total		
Track/Options (if applicable)		
Sub-Total		
Total Number of Credits		127.5

*CHEM 1225 will not be required. Dr. Atwood, in the Chemistry Department, has ensured our students will not have to take the lab as a co-requisite.

**Environmental issues in construction engineering will be addressed in these courses.

***This course will explore options for community engaged learning.

Program Schedule

First Year:

CHEM 1215 – 1 credit

WRTG 2010 – 3 credits

Fall Semester:

LEAP 1501 – 3 credits

MATH 1310 – 4 credits

CVEEN 1000 – 2 credits

CHEM 1210 – 4 credits

Total Credit Hours: 17

Spring Semester:

MATH 1320 – 4 credits
CHEM 1220 – 4 credits
PHYS 2210 – 4 credits
PHYS 2215 – 1 credit
CVEEN 1400 – 3 credits
Total Credit Hours: 16

Second Year:**Fall Semester:**

MATH 2250 – 4 credits
GEOL 1110/1115 – 4 credits
CVEEN 2000 – 0.5 credits
CVEEN 2010 – 3 credits
CVEEN 2310 – 2 credits
MG EN 2400 – 3 credits
Total Credit Hours: 16.5

Spring Semester:

MATH 3140 – 4 credits
LEAP 1500 – 3 credits
ECON 2010 – 3 credits
CVEEN 2140 – 3 credits
CVEEN 2300 – 2 credits
CVEEN 2750 – 3 credits
Total Credit Hours: 17

Third Year:**Fall Semester:**

ARCH 1610 or 1615 – 3 credits

CVEEN 3210 – 3 credits

CVEEN 3310 – 3 credits

CVEEN 3315 – 1 credit

CVEEN 3510 – 3 credits

CVEEN 3800 – 3 credits

Total Credit Hours: 16

Spring Semester:

General Education Course (FF, HF) – 6 credits

CVEEN 3100 – 3 credits

CVEEN 3250 – 3 credits

CVEEN 3810 – 3 credits

Total Credit Hours: 15

Fourth Year:**Fall Semester:**

General Education Course (IR) – 3 credits

CVEEN 4221 – 3 credits

CVEEN 4810 – 3 credits

2 CVEEN Technical Electives – 6 credits

Total Credit Hours: 15

Spring Semester:

American Institutions (AI) – 3 credits

CVEEN 4830 – 3 credits

CVEEN 4850 – 3 credits

CVEEN 4920 – 3 credits

1 CVEEN Technical Elective – 3 credits

Total Credit Hours: 15

Section VII: Faculty

All search Committees have been created, and Advisory Board members are being invited to participate so a detailed job description can be created and hired. New faculty hires will be recording online classes, mentoring with the Center for Teaching and Learning Excellence, and finalizing the curriculum for the Construction Engineering degree.

November 24, 2015

Undergraduate Council
University of Utah

Re: Department of Civil and Environmental Engineering Support for Construction Engineering

Undergraduate Council:

The Engineering Initiative funding was requested and awarded by the legislature based upon proposals submitted last December that listed the requests and how many additional graduates would be produced corresponding to each investment of new Engineering Initiative money. The Department of Civil and Environmental Engineering submitted a proposal for funding that would establish a BS degree in Construction Engineering, and has subsequently been awarded funding for new faculty and staff positions. This was confirmed in a letter from Dean Richard Brown. Therefore, to my knowledge, it has the full support of the College and Department.

I would be happy to answer any questions you have concerning this exciting new program.
Thank you for your consideration.

Sincerely,



Michael E. Barber,
Professor and Chair of Civil and Environmental Engineering

November 11, 2015

Michael E. Barber, Ph.D.
Professor and Chair
Department of Civil and Environmental Engineering
110 Central Campus Drive, Room 2000
Salt Lake City, Utah 84112

Re: BS Degree in Construction Engineering

Dear Professor Barber:

This letter communicates Marriott Library support for the proposed Bachelor of Science in Construction Engineering program within the Department of Civil and Environmental Engineering.

For many years, the Marriott Library has successfully provided strong support to the Department of Civil and Environmental Engineering. The Library has also provided support for programs closely related construction engineering, such as architecture, mining engineering, and business.

In construction engineering, the Marriott Library maintains extensive holdings of important scholarly journals, including the *Journal of Construction Engineering and Management*, the *Journal of Management in Engineering*, and the *Journal of Legal Affairs and Dispute Resolution in Engineering and Construction* from the American Society of Civil Engineers. Other journals provided by the Marriott Library include, *Cement and Concrete Research*; *Building and Environment*; *Construction and Building Materials*; *Automation in Construction*; the *Journal of Building Physics*; the *Journal of Constructional Steel Research*; *Building Services Engineering Research & Technology*; *Journal of Advanced Concrete Technology*; the *PCI Journal*; *Engineering, Construction, and Architectural Management*; *Stahlbau*; *Construction Manager*; the *International Journal of Project Management*; *Cost Engineering*; *Construction Law International*; and other similar publications. Moreover, as the scholarly communication landscape evolves, new options may exist beyond subscriptions for providing access to journal literature, and we would like to work with faculty to evaluate the most workable preferences for providing periodical literature to support the new program.

The Marriott Library annually purchases a selection of new English language scholarly books in construction engineering and management. The Library also encourages faculty to work with librarians to strengthen book collections in subject areas where it may be necessary.

We feel that Marriott Library collections are very strong in indexes, abstracts, and databases supporting the new program. The University of Utah maintains subscriptions to the following relevant databases:

- | | |
|--------------------------------------|--|
| 1. Scopus (includes Compendex) | 7. Business Source Complete |
| 2. Web of Science | 8. GeoRef |
| 3. Civil Engineering Database | 9. Factiva |
| 4. Academic Search Premier | 10. Avery index to Architectural Periodicals |
| 5. Dissertations & Theses: Full Text | |
| 6. Materials Research Database | |

The Library also has significant resources to support the multimedia communication projects that students in the new program may be undertaking. Students may take advantage of the software packages available in the Knowledge Commons as well as the expertise and equipment available in the Library.

Student difficulties in locating materials often stem not from collection weaknesses, but from the complexities of using a large research library. We offer class presentations and one-to-one consultations with library specialists who will help students find the most relevant works and suggest the most appropriate search strategies.

We look forward to working with the faculty and students in this new program.

Sincerely,



Rick Anderson, Associate Dean
Collections and Scholarly Communication
J. Willard Marriott Library



Richard B. Brown

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November 24, 2015

Undergraduate Council
University of Utah

Re: College of Engineering Support for Construction Engineering

Dear Graduate Council Members:

The Engineering Initiative funding that was awarded by the legislature was based upon proposals submitted last December that listed the requests and how many additional graduates would be produced corresponding to each investment of new Engineering Initiative money. One of the compelling proposals from our College of Engineering was for a new Construction Engineering program in which the graduates would have a full, calculus-based, Civil Engineering education, as well as a focus on construction. Graduates of this program will be welcomed into an industry that is doing more and more design/build projects of large, complex buildings. I have personally verified the opportunities for such graduates by talking to large builders and respected architects locally, and the former head of Bechtel, who has a national view of construction.

The Technology Initiative Advisory Board, which allocates the Engineering Initiative funds provided by the legislature to the eight state universities, recommended awarding the U of U \$1.8 M of ongoing funds based in part upon the Civil and Environmental Engineering proposal to implement a Construction Engineering BS and MS. The College's Engineering National Advisory Council and Industry Advisory Board are strongly supportive of this program. And I am personally enthusiastic about the proposed degree, and happy to support it using a portion of the new Engineering Initiative funding.

It is my understanding, based upon the CvEEN proposal, that they will produce at least 20 more BS and 15 more MS graduates per year. We expect that Ph.D. production within the Department will also increase as a result of having more faculty. We expect that the department's national reputation will benefit from developing this innovative degree, which will also be available for distance education. I am pleased to support the proposed Bachelor of Science degree in Construction Engineering.

Sincerely,

Richard B. Brown