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**REQUEST FOR A NEW MINOR**

**SUBMITTED BY:**

Department	Civil and Environmental Engineering	College/School	College of Engineering and Mines
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See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

**PROGRAM IDENTIFICATION:**

<b>TITLE OF MINOR:</b>	Structural Engineering	
	<b>*Number of credits required for completion (minimum is 15):</b>	27
<p>*"Unless otherwise specified by the appropriate academic unit, a course may be used more than once toward fulfilling degree, certificate, major and minor requirements. Credit hours for these courses count only once toward total credits required for the degree or certificate. Certifying that [the student has] met all major and minor requirements is the responsibility of [the student's] department faculty, who notify the Registrar's Office." From the General University Requirements section of "How to Earn a Bachelor's Degree" in the UAF Catalog.</p>		
<b>Do all the required courses currently exist?</b>		yes
<b>If not, list the corresponding New Course paperwork associated with this request:</b>		

**A. DESCRIPTION OF THE PROPOSED MINOR. Include reasons justifying its creation; objectives of the minor and relationship of the required courses to those objectives.**

Objective  
 To give students seeking BS in engineering additional background necessary to practice in the field of structural engineering.

Why  
 The number of topics engineering students must learn to allow them to practice in the field of engineering is large. These topics range from communication to design of such systems as steel buildings. The amount of material to be learned in this range of topics is large. Undergraduate engineering degrees at UAF are structured such that students entering the program with an appropriate background from high school (prepared to take calculus for example) can complete their degrees in four years. However, given the vast amount of material to be learned, there is not room in our curriculums for students to specialize very deeply into specific discipline areas such as structural engineering. This minor will allow them to become more of a subject matter expert in structural engineering. The minor is most appropriate for undergraduate students seeking a bachelors of science degree in civil engineering (BSCE). However, undergraduate student in other fields of engineering, such as mechanical engineering, may also be interested in obtaining a minor in structural engineering. Undergraduate civil engineering students already are required to take 18 credits (6 courses) of the 27 credits and have the option of taking an additional structures course as a technical elective (one technical elective course is required for a BSCE). Hence, by taking two extra courses (6 credits) a civil engineering student earning a BSCE can also earn a minor in structural engineering. Undergraduate Mechanical Engineering students already take 9 credits (3 courses) of the 27 credits required for the minor. By taking an additional 18 credits a mechanical engineering student can earn a minor in structural engineering. Ultimately, students earning both a BS in an engineering field and a minor in structural engineering will both be more prepared to work in the field of structural engineering and also will be marketable.

How  
 Students pursuing a minor a structural engineering will be required to take Statics (ES 209), Dynamics (ES 210), Mechanics of Materials (ES 311), Properties of Materials (CE 334), Structural Analysis (CE 331), Steel Design (CE 432), Reinforced Concrete Design (CE 433). These courses (except for CE 433) are all required for a BSCE. Each of these courses has additional prerequisites that will need to be satisfied by the student. Students will also be required to take two additional courses (list of approved courses is provided below). Only one graduate level course can be counted towards the minor.

**B. PROPOSED MINOR REQUIREMENTS AS THEY WILL APPEAR IN THE CATALOG:**

Samples provided on page 2 of this form.

Minor in Structural Engineering
1. Complete the following: ES F209 – Statics ES F210 – Dynamics <u>ES 331</u> ES F311 – Mechanics of Materials CE F334 – Properties of Materials CE F331 – Structural Analysis CE F432 – Steel Design CE F433 – Reinforced Concrete Design
2. Complete two of the following (only 1 graduate course will be accepted): CE F434 – Timber Design CE F424 – Introduction to Permafrost Engineering CE F422 – Foundation Engineering CE F435 – Design and Construction of Bridges CE F631 – Advanced Structural Analysis CE F633 – Theory of Elastic Stability CE F634 – Structural Dynamics CE F637 – Earthquakes: Seismic Response of Structures
3. Minimum credits required – 27 credits

**C. ESTIMATED IMPACT**

<b>WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.</b>
No impact. These courses required for this minor are regularly taught in the civil engineering program

**D. IMPACTS ON PROGRAMS/DEPTS:**

<b>What programs/departments will be affected by this proposed action?</b> Include information on the Programs/Departments contacted (e.g., email, memo)
The only department impacted will be the Civil and Environmental Engineering Department.

**F. PERSONNEL DIRECTLY INVOLVED WITH THE MINOR:**

List faculty currently teaching the required and elective (if any) courses, with a brief statement of duties and qualifications.

Dr. Leroy Hulsey – Professor of Structural Engineering, teach and conduct research in the topic area of structural engineering.  
 Dr. Andrew Metzger – Assistant Professor of Structural Engineering, teach and conduct research in the topic area of structural engineering.  
 Dr. Yongtao Dong – Assistant Professor of Structural Engineering, teach and conduct research in the topic area of structural engineering.  
 Dr. Yuri Shur – Professor of Geotechnical Engineering, teach and conduct research in the topic area of geotechnical and permafrost engineering.  
 Dr. Xiong Zhang – Assistant Professor of Geotechnical Engineering, teach and conduct research in the topic area of geotechnical engineering.  
 Dr. Jenny Lio – Assistant Professor of Materials Engineering, teach and conduct research in the topic area of materials engineering.

The above faculty are all highly qualified in the topic areas necessary for this minor and they all teach the courses required for the minor.


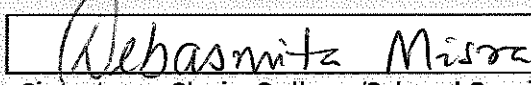

**G. RELATIONSHIP OF THE PROPOSED MINOR'S OBJECTIVES TO THE "PURPOSES OF THE UNIVERSITY".**

Include additional justifying information to support creation of the minor such as projected and present enrollments; need or public demand for the minor; support of other programs by the minor's creation, etc.

Relationship to the "Purpose of the University"

According to UAF's Development Plan (2007-2012), the goal at UAF is to "Produce graduate who are job-ready in areas of high employer demand, and conduct training and research applied to the development, planning, and management activities of the State." People with degrees in civil engineering are in high demand. This minor program allows us to prepare our students to be even more "job ready" and allows the student to be even more marketable in the area of structural engineering.

**APPROVALS:**

	Date	10-1-10
Signature, Chair, Program/Department of:	Civil and Environmental Engineering	
	Date	10/9/10
Signature, Chair, College/School Curriculum Council for:	CEM	
	Date	10/14/10
Signature, Dean, College/School of:	CEM	

**ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE**

  	Date	  
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

Final approval will be at the level of the Chancellor or Chancellor's Designee, following vote of approval by the Faculty Senate.