

Submit originals and one copy and electronic copy to Governance/Faculty Senate Office (email electronic copy to [fysenate@uaf.edu](mailto:fysenate@uaf.edu))

**REQUEST FOR A NEW MINOR**

**SUBMITTED BY:**

Department	Civil and Environmental Engineering	College/School	College of Engineering and Mines
Prepared by	David Barnes	Phone	6126
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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>	Environmental and Water Resource Engineering	
<b>*Number of credits required for completion (minimum is 15):</b>	20	
*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.		
<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 water and environmental 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 water treatment systems. 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 environmental and water resource engineering. This minor will allow them to become more of a subject matter expert in water resource and environmental engineering. The minor is most appropriate for undergraduate students seeking a bachelors of science degree in civil engineering (BSCE), however students from other engineering disciplines such as Geological Engineering may wish to pursue a minor in this field. Ultimately, students earning both a BS in an engineering discipline and a minor in environmental and water resource engineering will both be more prepared to work in the field of environmental and water resource engineering and also will be marketable.

How  
Students pursuing a minor a environmental and water resource engineering will be required to take Fluid Mechanics (ES 341), Water Resource Engineering (CE 344), Environmental Engineering (CE 341). Students will also be required to take ~~two~~ additional courses (list of approved courses is provided below). Each of these courses has additional prerequisites that will need to be satisfied by the student. 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.

<p>1. Complete the following: ES F341 – Fluid Mechanics CE F344 – Water Resource Engineering CE F341 – Environmental Engineering</p> <p>2. Complete three of the following (only 1 graduate course will be accepted): CE F442 – Environmental Engineering Design CE F445 – Hydrologic Analysis and Design GE F420 – Subsurface Hydrology ENVE F458 – Energy and the Environment ENVE F643 – Air Pollution Management ENVE F645 – Unit Processes – Chemical and Physical ENVE F646 – Unit Process - Biological ENVE F647 – Biotechnology ENVE F648 – Solid Waste Management ENVE F649 – Hazardous and Toxic Waste Management ENVE F651 – Environmental Risk Assessment CE F661 – Advanced Water Resources CE F662 – Open Channel and River Engineering CE F663 – Groundwater Dynamics CE F664 – Sediment Transport CE F683 – Arctic Hydrology and Hydraulic Engineering CE F684 – Arcite Utility Distribution</p> <p>3. Minimum credits required – 20 credits</p>
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**C. ESTIMATED IMPACT**

<p><b>WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.</b></p> <p>No impact. These courses required for this minor are regularly taught in the civil and geological engineering program</p>
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**D. IMPACTS ON PROGRAMS/DEPTS:**

<p><i>What programs/departments will be affected by this proposed action? Include information on the Programs/Departments contacted (e.g., email, memo)</i></p> <p>The only department impacted will be the Civil and Environmental Engineering Department and Geological Engineering Department.</p>
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**F. PERSONNEL DIRECTLY INVOLVED WITH THE MINOR:**

<p><i>List faculty currently teaching the required and elective (if any) courses, with a brief statement of duties and qualifications.</i></p> <p>Dr. David Barnes – Professor of Environmental Engineering, teach and conduct research in the topic area of environmental engineering. Dr. Robert Perkins – Professor of Environmental Engineering, teach and conduct research in the topic are of environmental engineering. Dr. Horacio Toniolo – Associate Professor of Water Resource Engineering, teach and conduct research in the topic area of water resource engineering.</p>
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Dr. Daqing Yang – Associate Professor of Water Resource Engineering, teach and conduct research in the topic area of water resource engineering.

Dr. Silke Schiewer – Associate Professor of Environmental Engineering, teach and conduct research in the topic area of environmental 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 environmental and water resource engineering.

**APPROVALS:**

 Date 10-10-10

Signature, Chair,

Program/Department of:

CIVIL? ENV ENV

 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.

**SAMPLE MINORS FOR REFERENCE FROM THE UAF CATALOG – 2009-2010:**

Taken from page 134, Art Degree Program:

**Minor**

1. Complete the following: \*  
ART F105—Beginning Drawing—3 credits  
ART F262—History of World Art—3 credits  
ART F365—Native Art of Alaska—3 credits
2. Complete one of the following: \*  
ART F161—Two-Dimensional Design—3 credits