May 7, 2008

Professor Deborah Harter
French Studies MS31
CAMPUS MAIL

Professor Paula Sanders
Dean of Graduate and Postdoctoral Studies
History MS42
CAMPUS MAIL

Dear Deborah and Paula,

Based on the recommendations of the Civil and Environmental Engineering Department and the George R. Brown Curriculum Committee, I endorse the degree changes proposed for the Department of Civil and Environmental Engineering in the attached Memorandum.

We would very much like to see the changes appear in the General Announcements for the fall and anything that you can do to expedite this through the processes of the Faculty Senate and the Graduate Studies Office would be very much appreciated.

Sincerely,

Sallie Keller-McNulty

SK-M/caa
MEMORANDUM

TO: Sallie Keller-McNulty  
Dean, The George R. Brown School of Engineering  
MS 364

FROM: Pedro Alvarez  
Civil and Environmental Engineering  
MS 317

SUBJECT: Request for Degree Changes

DATE: March 18, 2008

The Departments of Civil Engineering and Environmental Science and Engineering merged in 2001 to create the Department of Civil and Environmental Engineering (CEE). The next phase involved integration of departmental goals, outcomes, and curriculum. In preparation of the 2006 ABET review, the curriculum for all civil and environmental engineering degrees, with a focus on the B.S. in Civil Engineering, were reviewed in 2003-04. Once again, CEE is in the process of reviewing its degree offerings, and we have concluded that a consolidation of and reduction in our degree offerings is necessary for continued integration. The change of department name and proposed degree consolidations are part of the ongoing process of curriculum evaluation and improvement as required by ABET and SACS. CEE presently offers 10 degrees, as listed below, many of which are left over from years of earlier programs.

Undergraduate Degrees:
1. B.S. in Civil Engineering
2. B.A. in Environmental Engineering Sciences
3. B.A. in Civil Engineering

Professional Masters - non-thesis degree:
4. Master of Civil Engineering (MCE)
5. Master of Environmental Engineering (MEE)
6. Master of Environmental Science (MES)

Graduate Degrees: Masters of Science and Doctorate of Philosophy
7. M.S. in Civil Engineering
8. M.S. in Environmental Engineering
9. Ph.D. in Civil Engineering
10. Ph.D. in Environmental Engineering

The CEE faculty has approved, as a part of our ABET and SACS assessments, a plan to consolidate the degree offerings and make them more consistent with the degrees offered in other engineering departments at Rice and peer institutions. The result will streamline our review process as well as streamline choices for students, and will be accomplished primarily by consolidating degrees in civil engineering and environmental engineering with minimal modification in curriculum. We unanimously approve and propose the following degree offerings for fall of 2008:
Undergraduate Degrees:
1. B.S. in Civil Engineering
2. B.A. in Civil and Environmental Engineering

Professional Masters - non-thesis degree:
3. Master of Civil and Environmental Engineering (MCEE)

Graduate Degrees: Masters of Science and Doctorate of Philosophy
4. M.S. in Civil and Environmental Engineering
5. Ph.D. in Civil and Environmental Engineering

To implement the proposed plan for reducing the number of degree offered in CEE, consolidation will occur at all levels – undergraduate and graduate (non-thesis masters, masters, and doctoral). The B.S. in Civil Engineering is the only degree that will remain unchanged. The plan is outlined below.

The two remaining undergraduate degrees (B.A. in Civil Engineering and B.A. in Environmental Engineering Sciences) will be eliminated, and a new B.A. in Civil and Environmental Engineering created (see attachment). This new BA CEE will be a combination of the previous degrees. The B.A. degree is designed to provide access to topics of common interest to students across the disciplines at Rice University, and is tailored to the specific needs of each student by discussion and approval by the CEE departmental advisor. The new core curriculum is a consolidation of the two original degree plans, and will allow CEE students to focus on either structural and mechanical engineering or environmental engineering. Students in either of the original programs will not be affected by the change, and will be able to seamlessly transfer into the new degree program rather than remain in their original. Course offerings will generally remain the same.

To create the new Masters in Civil and Environmental Engineering (MCEE), the Masters in Civil Engineering (MCE) and Environmental Engineering (MEE) will be combined (eliminated) and the Masters in Environmental Science (MES) will be eliminated. The Masters is a professional non-thesis degree program requiring completion of 30 semester hours of approved courses. In the new consolidated program, students will focus on civil engineering or environmental engineering. Students will a B.S or B.A. in CEE are encouraged to apply. At this time, there are only two students in the CEE Professional Masters program. The new degree will not affect them at all. The elimination of the MES will have no effect on any students since there are no students in the program at present.

At present, a Master of Science degree is offered in both civil engineering and environmental engineering. We propose eliminating these degrees and creating a new consolidated M.S. in Civil and Environmental Engineering. Once again, there will be no changes to the curriculum. Students will still be required to complete at least 24 semester hours of approved courses. For students focusing on civil engineering, structural engineering, and mechanics, this must include one course each in structural engineering, mechanics, advanced mathematics, and dynamic systems. Students focusing on environmental engineering must include one course each in environmental chemistry, water treatment, hydrology, and air quality. Students in either of the original programs will not be affected by the degree change.
The general announcements and rosters of degrees conferred indicate that only one Ph.D. in Civil and Environmental Engineering is currently offered. However, for ABET and SACS, there are two degrees to be reviewed. While no change may be required, we would like to confirm that only one combined Ph.D. in Civil and Environmental Engineering exists.

The effect these changes in degree offerings on the curriculum and on students will be minimal. Essentially all viable degree options have been retained; only the names have changed with this consolidation. The core curriculum remains the same as before with students focusing on either civil or environmental engineering upon approval by their CEE departmental advisor.
BA in Civil and Environmental Engineering

The BA degree in Civil and Environmental Engineering is designed to provide access to topics of common interest to students across the disciplines at Rice University. It is to be tailored to the specific needs of each student by discussions with and approval by the CEE departmental advisor. An advisor will be assigned to the CEE department Chair, normally during the first year of study. Five core courses, plus seven in a focused area (see below for example curricula) of study are required; total CEE requirements approximately 39 hours. In addition, each student is responsible for satisfying the university distribution requirements (24 hours) and additional electives for a total of 120 hours for graduation with a BA in Civil and Environmental Engineering Sciences. Although not required, students are encouraged to double major in their focus specialty area.

The coherent and complete core curriculum is designed to give Rice Undergraduate students a consistent technological literacy through the lens of Civil and Environmental Engineering and to prepare students for graduate school in engineering, various sciences (depending upon focus), economics, business MBA, political science, law, or medicine. Select students will be invited to finish an accelerated MS/PhD degree in the CEE Dept. at Rice (talk with your advisor or department chair for details). Those students who want to obtain an ABET accredited engineering degree must follow a BS degree program in one of the engineering disciplines, including Civil Engineering; this BA degree is not ABET accredited.

A student must demonstrate proficiency in the basic concepts of mathematics, computation, chemistry, and physics. Generally, this will require that these subjects were studied previously, e.g., AP exams, or concurrent enrollment with CEVE 101 or 201.

Seven (7) courses from approved electives must include 4 courses from 1 specific focus area; 4 of these 7 courses must be 300 level, or above, and 2 of these upper-division courses must be from the CEE approved BS degree curriculum.

Five Core courses required for all B.A. CEVE majors:

- CEVE 101 Fundamentals of CEE
- CEVE 201 or Urban and Environmental Systems
- CEVE 211 Engineering Mechanics
- CEVE 203(402) Environmental Eng. Processes
- CEVE 311(312) or Mechanics of solids and structures
- CEVE 401(402) Environmental Chemistry
- CEVE 412 or Hydrology and Watershed Analysis
- CEVE 371 Fluid Mechanics

**Total Core:** 18 hrs.

Courses with laboratories. **Students taking these courses should have already had either Math 211, 212, or 221 or be able to demonstrate competence in ordinary differential equations and either COMP 110, CAAM 210, or 235.

Example focus specialty areas might include the following. These are only example focus areas; students are encouraged to prepare their own related to their career objectives in consultation with and approval by their CEE faculty advisor.

1. Environmental Engineering: CEVE 307, 406, 411, 434; ESCI 451 + 3 approved electives
2. Civil (Structural) Engineering: CEVE 304, 322, 405, 407(408), 427, 452, 460, 470, 496 + 3 approved electives
3. Civil Engineering 2:
4. Biology: BIOS 201, 202, 211, 301, CEVE 308, 406, 411
5. Chemical Engineering: CENG 301, 390, 401, 402; CEVE 411, 434, 443
6. Chemistry: CHEM 211, 212; CEVE 401, 511 + 3 approved electives
7. Economics: ECON 211, 212, 370, 450, 461; CEVE 406, 411
8. Management: ECON 211, 212, 461; ACCO. 305; POLI 336; CEVE 406, 411

Engineers Without Borders (EWB) (CEVE 315) is an important component of the CEE program. This exciting new endeavor allows undergraduate students to have an experience in a developing country where they are able to actually design and build a project to help society. Students have been attracted to the EWB program in large numbers and the local chapter is one of the most successful in America.