

Planning – 2004-2009

Civil and Architectural Engineering

Mission

The Civil and Architectural Engineering (CAE) Department strives to provide an excellent educational opportunity for undergraduate students in our two ABET accredited programs. We provide excellent opportunities for advanced study and research in selected areas primarily associated with public and private buildings and infrastructure including natural resources. These activities include design, construction, management, assessment, operation, repair, retrofit, and remediation of man-made and human-affected natural systems. Our service efforts focus on state and national needs in these areas as well.

Primary Goals

The following are the primary goals of the Department of Civil and Architectural Engineering:

1. Enhance an already excellent undergraduate education through continuous assessment and improvement.
2. Enhance graduate education and research productivity.
3. Increase the visibility of the Department locally, regionally, nationally, and internationally.
4. Create an environment that motivates faculty to be creatively engaged in teaching, research and service enterprises.

Background

General: CAE is the third largest department at UW with 457 students (ARE=190, CE=182, Surveying = 65, Grad = 20) (UW -OAI Fall 2002¹).

Enrollments have remained relatively constant over the past decade. Both CE and ARE programs carry the highest-level of ABET accreditation². Our accreditation process is outcome based with well-defined assessment instruments and measures. During the last couple of years, our department has made significant changes in our academic programs to address issues precipitated by our assessment process, including: new courses in materials and graphical communications, modification of a course to embed the mid-level writing requirement (WB), Geographical Information System (GIS) course option, enhancement of our capstone series with pedagogic modifications, more practitioner interaction, and development of the first graduate course in Architectural Engineering. The International Engineering Program was initiated in CAE and is a growing program within the Department and College.

Our CE/ARE pass rate for the first (fundamentals) national engineering licensure examination averages about 90 percent, while the pass rate nationally is 60 percent. Sixteen of our 21 instructional faculty have professional engineering licenses and 18 have terminal degrees.

Research: Our research expenditures averaged \$1.35M per year during the past five years and our graduate student population averages approximately 35. In Fall 2003, we will have six Ph.D. candidates pursuing their research in CAE. Research-active faculty typically teach two courses per semester.

Advising: All faculty advise undergraduate and graduate students and all participate in service activities.

Students: The department has five student organizations (ASCE, AEI, ITE, ASHRAE, and Environmental Engineering Club) that are advised by the faculty. In the 2002-2003 academic year, the ASCE chapter took third overall at the regional conference and our environmental capstone design group took second nationally for their selected design problem. Our students readily gain employment.

Staff: Our office staff works well with the department head, faculty, and students. They are well organized and hard-working. Our information technology staff is exceptional. We are lacking in physical testing laboratory support, and a request for a staff engineer has been made to the Dean.

Service: Threads of service span widely. Faculty and staff serve on state and national committees, task forces, and panels that are critical to technical and policy issues. We have two service centers in CAE: Water Resources Data System Center (WRDS) and Wyoming Technology Transfer (T²) Center. Both of these are extremely important to our state. For example, in the last 12 months T² held 24 short courses, serviced several hundred requests for technical information, and had over 3000 hits on their web site. Over that same time period, WRDS serviced 538 requests for information and had 1.7M external web site hits for water resources data. Both of these centers have a director and staff support. They are externally funded.

¹ <http://www.uwyo.edu/instana/Enrollment/alpha02b.pdf>

² American Board for Engineering and Technology, Inc. (<http://www.abet.org/>)

Outreach: CAE is a UW leader in outreach. Its surveying program is one of the largest distance education programs in the country and is a leader at UW with 65 (35 FTE) students. It houses 88% of the Outreach Certificate Program and is clearly a vibrant program. Through the TEL8 consortium, our faculty teach and our students receive advanced classes many aspects of transportation systems. TEL8 is a group of eight universities and departments of transportation. Finally, we serve approximately 1900 participants in departmental short courses per year.

Summary: CAE is a large and diverse department that spans interdisciplinary areas including structural engineering, water resources, environmental systems, mechanical engineering, transportation, and geotechnical engineering. By design, CAE is an interdisciplinary unit.

1999 Action Items

The 1999 action items are listed in italics and are followed by the result/outcome.

1. *Increase enrollment* – This applies to the civil engineering programs only, unless the College is willing to reallocate a position to architectural engineering. The Department will support the College plan in this area and continue to provide additional help in terms of scholarships for freshman students.

Enrollments are relatively constant over the last decade. Nationally, CE enrollments have dropped.

2. *Increase retention* – Again the Department will support the College plan in this area and work on curriculum adjustments in the civil engineering program to make the program more attractive to freshmen and sophomores.

A new course, Civil Engineering Systems via CAD (CE 2100), for sophomores started in Spring 2003.

3. *Master's of Engineering Degree* – The department will propose within the next three years a Professional Master's degree program, which would be in addition to the existing traditional research based MS program. This will be in support of the College's move in this area.

This action item considered but not implemented due to insufficient market for such a program.

4. *Four Major Areas of Civil Engineering* – The department will allocate its 14 faculty in the civil engineering program to structures, transportation, environmental/water resources, and geotechnical engineering as faculty retire or leave.

The drop to four areas rather than five was based on Dr. Hasfurther's assessment that water resources could not be maintained with the possible loss of faculty due to CPM. Since then we were able to hire Greg Wilkerson and upgrade Greg Kerr's instructor role and bring the WRDS program into the department. Most recently we have hopefully secured a CPM position related to Dr. Pochop's retirement. These actions maintained the strength in water and allow us to maintain the five separate areas – which is much a preferred alternative.

5. *Research and Economic Development* – The Department faculty will continue to obtain funded research at a level that will support an active graduate program in the four major areas defined above. Economic development activities will be supportive of the College plan.

Completed. CAE performs R&D as a major portion of its mission. Over the review period, CAE averaged \$1.35M per year extramural funding that help to support 31⁴ graduate students per year. Faculty continue to work in economic development with spin-offs, patenting, and other activities.

6. *Service and Extension* – The Department will help provide training to practitioners through web-based materials and other communication means.

The Department offers many service and extension courses; no web-based implementation has been pursued largely because of resource limitations. CAE offers an off-campus surveying program that presently has 65 students and regularly offers short courses that average 186 attendees per year.

7. *Faculty in Architectural Engineering* – The department must have at least one additional faculty member in architectural engineering immediately. We will work with the college to provide additional faculty resources to the program or we will begin a limited enrollment policy in the Fall of 1999

Completed. One new tenure-track faculty member was added to the ARE program bringing the number from four to five.

⁴ Four-year average

National and Local Challenges – Related to our plan

From the American Society of Civil Engineers (ASCE Journal of Infrastructure):

The infrastructure supporting human activities includes complex and interrelated physical, social, ecological, economic, and technological systems such as transportation; energy production and distribution; water resources management; waste management; facilities supporting urban and rural communities; communications; sustainable resources development; and environmental protection. Increasingly, inter and multi disciplinary expertise is needed to not only design and build these systems, but to manage and sustain them as well. Typical management problems are fraught with uncertain information, multiple and conflicting objectives, and sometimes numerous and conflicting constituencies. Solutions are both complex and cross-disciplinary in nature, and require the thoughtful integration of sound engineering judgment, economic flexibility, and institutional forbearance.

Clearly, our societal infrastructure challenges fit well with the critical areas of UW’s Moving Forward III (MF III). This is not by coincidence – UW’s academic community has recognized many of these same societal needs. Expertise in environment and natural resources, advanced technologies and sensing, materials, mathematical modeling, information technology, decision science, and life sciences will all be required to address our infrastructure challenges.

The following facts illustrate the significant problems that face our engineering community (taken primarily from the ASCE Infrastructure Report Card with UW additions)⁵. These are illustrative of the vast problems that face our nation.

Our Focus

We will continue to focus on infrastructure issues, with specific emphasis on environmental engineering and natural resources, design, technical assessment, operation, repair, remediation, and risk associated with constructed facilities.

Civil and architectural engineering are naturally and traditionally broad and interdisciplinary. However, expertise in science and technology from other disciplines will be necessary to address the issues outlined above. Such breadth in both of our instructional programs will be maintained.

We will focus curriculum development, faculty hiring, and research endeavors upon these critical infrastructure issues while maintaining our robust architectural engineering program. Our International Engineering Program is new and will be supported and expanded⁶. See specific action items for what will be accomplished. Outlined below are specific issues and actions that are necessary to successfully accomplish this focus.

Areas of Distinction

Distinctive areas for research are environmental engineering/water resources and structural engineering/mechanics.

Distinctive areas for undergraduate education are the breadth in CE (ironically⁷) and that ARE is one of only 14 such programs in the US⁸. Both undergraduate programs are exceptional and have an “open and willing to help” culture among faculty and students. This open and supportive culture is a hallmark of our programs and is supported by reasonable instructor-to-student ratios. We need around 35 in undergraduate analysis -type courses, less than 30 in undergraduate design/synthesis courses, and 20 or less in our capstone courses and architectural design studio courses.

Our Plan

As outlined in the Background section, overall CAE is doing well in most areas of concern and we will continue to support and enhance our programs and academic environment as necessary. Some specific challenges will require attention in the near future. These challenges are listed below, along with our planned actions and the associated options.

Moving Forward III emphasizes interdisciplinary work; civil engineering is naturally interdisciplinary and must be so in order to address these broad issues. Many disciplines tend to be narrow and focused; civil engineers almost always work in interdisciplinary teams.

To maintain strength in our undergraduate program, we must maintain at least two faculty in each sub discipline – at least three are required for a distinctive graduate program.

⁵ <http://www.asce.org/reportcard/>

⁶MF III Diversity, Internationalization, and Access – Curricular Implementations

⁷MF III Area of Distinction - Critical professions to state, ABET and employers expect broad expertise at the BSCE/BSARE level

⁸ ABET Student Exit Interview strongly indicate that the ARE program is a major factor in the selection of UW.

Issues and Proposed Actions

Issue: Maintain our water resources expertise and service to the State⁹ -- In the near future, Dr. Pochop will retire and we need to plan accordingly. Dr. Pochop is a significant contributor through teaching in the CAE program, teaching in Engineering Science, research, and administration of the Water Research Program. This program garnered approximately \$939K in research support to UW during the previous four-year period. Clearly, water-related issues and support are paramount to the state and this is recognized and consistent with *Moving Forward III*.

Action: *We will plan to work with Dr. Pochop as his plans and timelines develop. We will focus our planning on two critical elements: replacement of a water resources professor in CAE and replacement of the Director of the Water Research Program. These two elements are critical to the water resources program in CAE as well as programs campus wide.*

This planning effort will result in a CPM request in Spring 2003, for a position to be filled in 2004. Additionally, we will work on a transition plan to the Water Research Program Directorship; we are hopeful that the Directorship will be coupled with our new hire. The associated day-to-day administrative duties may be performed by administrative support personnel. These planning efforts are currently underway.

Issue: Expand our environmental engineering program¹⁰ -- One CAE strength and clear focus is in environmental engineering and water resources. In 2002 Mr. Roy Cline, a CAE alumnus and a generous donor, created an endowment for a chaired professor in Environmental Engineering and Natural Resources. This position is to support interdisciplinary work among engineering, SENR, and others.

Action: *We will request support in the UW-CPM pool to start a search for a chaired professor in environmental engineering; this position will span across civil engineering, the School of Environmental and Natural Resources, and other disciplines with an interest and expertise in environment and natural resources, including water resources. We expect that this position will be filled at the Associate or Full Professor level. The most logical home for this professorship is in CAE and we will work to secure the necessary funding to advance the hire. The present endowment is approximately \$2.5M, which is short of the amount necessary to begin. We will propose a temporary supplement from CPM to bridge funding for the position.*

Issue: Balance ARE course demands with faculty resources^{11 12}-- The ARE program has approximately 190 students. All of these students must take ARE 4600 Architectural Design and our capstone engineering course ARE 4720 or ARE 4740 for mechanical and structural systems, respectively. Current enrollment in each of these critical synthesis courses averages approximately 41 students per semester. These are hands-on, capstone, and studio courses that require substantial instructor interaction. They require complex designs, oral presentations, and written reports. In short, they are extremely time intensive and usually require approximately 200-300 hours of student time per course. These courses should have enrollments of 20 to 25 to meet our expectations of quality and be consistent with other studios at other universities. Although these courses must be taken by all ARE seniors, they are offered only once per year due to current curricular sequencing of some courses and staffing limitations. This is a serious limitation from a student-to-instructor ratio perspective, but also creates a situation where student graduation is often postponed, if all the prerequisites are not achieved in the proper sequence. This limitation is our largest problem with respect to the quality of our program.

Finally, the Architectural Engineering Licensure Exam (new in 2003) will require significant expertise in electrical systems and construction, currently areas in which we place little focus due to resource constraints. Without curricular modifications our graduates will likely be placed at a disadvantage for professional licensure. This is a very serious consideration.

Action: *The constriction in senior-level design courses must be addressed. We will reexamine our curriculum in the ARE program during summer of 2003. Changes therein are expected. Based upon these modifications, we will reorganize our present faculty teaching assignments; develop even stronger collaboration and curricular integration with CE, ME and EE programs in reflection of the interdisciplinary nature of Architectural Engineering. We will likely need immediate and sustained funding for more adjunct instructors in design (four courses per year ARE 4720/474, or other courses permitting current faculty to serve in these courses as well). This is entirely consistent with our Department-wide approach requiring practitioner involvement in capstone courses. After these changes are made, it still may be necessary to hire one more tenure-track faculty member in the ARE program.*

⁹ MF III Area of Distinction (ENR, Critical professions to state)

¹⁰ MF III Area of Distinction (ENR, Critical professions to state)

¹¹ MF III Planning Premises, "UW's first priority is undergraduate education"

¹² MF III Enrollment Management

An alternative option is to manage ARE enrollments in a manner that will decrease the number of graduates. This decrease could be accomplished in a number of ways: stricter admissions requirements, accepting limited applicants at the second year, accepting limited applicants at the third year, etc. Students who do not make the program will need to transfer to another university or another program within UW. Although decreasing the number of students, this approach could fill UW's ARE program with premier undergraduate students. Demand for the program remains high.

In summary, the incremental resources required are relatively small to significantly improve our ARE program in the final critical year of the curriculum.

Issue: Spatial Modeling of Facilities and Environmental/Natural Resources¹³ -- Consistent with our infrastructure focus, constructed facilities will require better design and, asset management, which relates to decision science, information technologies, advanced sensing and non destructive evaluation data. Such data are being supported by GIS in many local, state, and federal agencies. Data sources contain information on both natural and constructed systems.

Action: *We plan to implement a series of actions:*

- 1. Better plan for our course offerings with GR 4200 (GIS): Examine the possibility of a subsequent engineering course to follow GR 4200 and taught by faculty in GR, CAE, or team taught. See GR Academic Plan – Links with Areas of Distinction.*
- 2. Expand our expertise in CAE related to GIS development and applications, including assigning a present faculty to develop and teach a new course. Again, see GR plan.*
- 3. Expand our expertise in CAE in decision science and facilities/infrastructure management systems [bridges, pavements, buildings, pipes, (all types of assets), water resources, wells, etc. GIS is an integral part of this. We will develop an interdisciplinary CPM request expand GIS into critical CE area(s).¹⁴]*
- 4. Expand into research areas that support the science associated with facilities management: deterioration modeling, sensing, nondestructive testing, remote monitoring, novel materials, retrofits, etc.*

Issue: Enhance our research and graduate programs -- The five-year average annual research expenditure within CAE is \$1.35M¹⁵. This averages approximately \$75K per research-active faculty member. Although quite positive, we can further expand in this area.

Action: *We will implement a series of actions associated with research:*

- 1. Increase our research base by 50% to \$2.0M per year.*
- 2. Increase our number of graduate students to 40 students. (Average of 2.5 per research-active faculty)*
- 3. Continue our focus on structures, materials, and environment/natural resources.¹⁶*
- 4. Formalize a mentoring program for untenured faculty.¹⁷*
- 5. Provide professional technical editing support for the development of papers and proposals.*
- 6. Encourage research teams within the department, within UW, and with outside collaborators. Collaborative work will be valued for both research awards and publications.*
- 7. Encourage research that will support PhD students.¹⁸ We will use state GAs to provide bridge funding for GAs supported on external funding. We will also begin to use our release-time funds as a “loan source” to accommodate project cash-flow issues, i.e., PI pays back the resources to the fund.*
- 8. Encourage research at both the state and national levels. State-supported research is important to our constituents and is certainly expected of a land grant institution. National-level and state-level work will be equally encouraged and supported.¹⁹ All research-active faculty are expected to pursue national-level funding.*

¹³ MF III Area of Distinction, “UW has made little progress in ... GIS.” GIS is a rapidly expanding area with CE.

¹⁴ CAE professor(s) to perform interdisciplinary work in infrastructure, ENR, and GR will be a forthcoming CPM request.

¹⁵ <http://uwacadweb.uwyo.edu/Research/summary.htm> (Ranked eighth at UW)

¹⁶ MF III Area of Distinction (ENR, Critical professions to state)

¹⁷ Plumb – “2003 CPM Requests – Initial Thinking”, May 13, 2003. “Good mentoring environment ...”

¹⁸ MF III Scholarship and Graduate Education

¹⁹ MF III Planning Premises – item 4

9. *When possible, hire new faculty to further support our research priorities. We will compete in all open requests such as for EPSCoR positions, international travel, sabbatical opportunities, equipment requests, and requests for eminent speakers, etc. We will insure that start-up requests are sufficient to provide a solid basis for new faculty to launch their research careers.*
10. *We will be opportunistic – looking for and aggressively pursuing opportunities in our area of interest and expertise. One simply does not know where and when opportunities may arise. Recognition of new and viable opportunities is of utmost importance.*

Issue: Assessment and improvement of teaching and learning in our culture²⁰ -- The ABET 2000 requirements for accreditation are founded upon outcomes-based assessment²¹. This approach must become part of our continual review of our academic programs (CE and ARE), and if we are truly successful, this will become part of our academic culture. Change in culture is difficult, especially in an academic environment, but CAE has a young and energetic faculty that is receptive to change.

Action: *We will implement a series of actions associated with continual assessment and improvement:*

1. *ABET 2000 requires a systematic approach – we have implemented this approach and will continue to hone it. This is formally documented in our ABET 2003 self-study review reports for CE and ARE. Feedback loops will be further developed and strengthened. The outcomes-based approach will become a major element of improvement in our academic programs.*
2. *Implement a formal mentoring program for teaching and research. The mentor for teaching will be selected in mutual agreement with the faculty, mentor, and head. This individual may be in any sub disciplinary area. The mentor for research will be selected from faculty within the sub discipline, when possible.*²²
3. *Strongly encourage participation in activities, short courses, and seminars offered by the Ellbogen CTL, American Society for Engineering Education, ASCE, government agencies and professional associations. Such participation is considered part of teaching and is considered in the evaluation of such. Documentation of our efforts is critical to demonstration of the success*²³. *The head will set measurable outcomes to be adopted by the faculty during AY 03-04.*
4. *Strongly encourage curricular and course-level innovation and maintenance of currency. Documentation of our efforts is critical to demonstration of the success.*
5. *Strongly encourage and support professional registration*²⁴.

Issue: Support our centers²⁵ -- The Wyoming Technology Transfer Center²⁶ and the Water Resources Database System Center/State Climate Office²⁷ are valuable assets to engineers, technicians, and the general public. We will continue to strongly support these programs and expand their use both on campus and off.

Action: *We will implement a series of actions associated with Center support:*

1. *Appoint a new Director for Wyoming T². Provide a one-course release for the Director.*
2. *Better market our T² program internally so faculty and administration understand its function, technical resources and importance to the state.*
3. *Better market our WRDS program both internally and externally so faculty and administration understand its function, technical resources and importance to the state.*
4. *Develop five-year plans for both centers consistent with the goals and requirements of the sponsoring agencies.*

Issue: Service and Extension – faculty participate in service at the university and national level; the level of effort to service will depend upon the faculty member, their career development, interests, and national stature. Some CAE faculty work in extremely important technical leadership roles at the national level, other junior faculty are participating in technical committee in their

²⁰ MF III Learning Environment, Assessment of student learning

²² Plumb – “2003 CPM Requests – Initial Thinking”, May 13, 2003. “Good mentoring environment”

²³ Fall 2002 – CAE faculty attended more CTL seminars than the next UW Department by a factor of two.

²⁴ CAE goal is to gain professional registration for all faculty prior to their tenure decision

²⁵ MF III Outreach and Extension Section

²⁶ <http://wwweng.uwyo.edu/wyt2/>

²⁷ <http://www.wrds.uwyo.edu/>

research areas, and everyone is expected to contribute to university service. We will continue our work with short courses and Tel8. Efforts in these activities are respected and valued.

Issue: Communications and marketing²⁸ -- Students and faculty within the CAE Department are high quality and make significant contributions. Yet we sometimes do not tell this story well. During the past six months, the department has expanded our communications efforts. These efforts will continue as outlined in the actions.

Action: *We will implement a series of actions associated with communication:*

1. *Our web pages have been significantly expanded and improved. This work is ongoing.*
2. *Our advising information has been expanded, improved and placed on-line. Maintenance and expansion will be required.*
3. *Our research programs are now on-line and more work remains here for reports, theses, presentations, videos, etc. Maintenance will be required.*
4. *Our capstone courses produce excellent content for our web site, hallway displays, and kiosks. The same is true for research work. Maintenance will be required.*
5. *Our marketing brochures have been enhanced. We will update these regularly.*

Issue: Construction/Business Emphasis²⁹ -- It is well known that civil and architectural engineers play a large role in Wyoming's infrastructure design, construction, and maintenance. Due to resource limitations in the past, we have scaled back our construction engineering coursework. It is expected that over \$200M will be spent annually for new construction in Wyoming.³⁰

Action: *If significant funds become available (ideally through development), we hope to implement construction management emphasis areas in both CE and ARE. These are traditional areas for these programs and not presently available in our programs. Additionally, course offerings will be helpful to those students particularly interested in construction but also those interested in design. Construction management skills readily transfer to other areas, such as infrastructure operations, maintenance, and energy production. Finally, construction management skills and training align with engineering management and related aspects of business.*

Issue: 128-hours Academic Programs – MF III suggests a credit limit of 128 hours for all programs. Our CAE program was reduced from 137 hours to 132 in 1991. Additionally, the University Studies Program has introduced different requirements under the new system. Issues such as embedment of oral communications and improving our WC component will require attention and adjustment. Our advisory board is not supportive of a reduction in hours. The reduction to 128 hours could affect our ability to meet our departmental outcomes. In short, many uncertainties remain.

Action: *CAE (CE and ARE Program) will examine the implementations of a reduction in hours and make a recommendation to the Dean. The timeline will be prior to Fall 2004.*

Issue: International Engineering – Our international engineering program was developed, in part, in response to the current academic plan and it is consistent with MF III. A program to offer international experiences for engineering students is forward-thinking and creates a critical area of distinction for the Department and the College. The unique opportunities afforded by international engineering will attract more and better students to UW.

Action: *The Department has a goal of attracting 5% of its undergraduate students into the international engineering programs in civil engineering and architectural engineering within the next 3 years. A 5-year goal of 10% participation is realistic. Achievement of these goals will require commitment of resources for faculty release, travel, program development and marketing. Efforts to secure extramural funding for the program will continue.*

Assessment

Assessment and improvement of Department programs are key components of our mission. A major factor driving assessment is the necessity for our undergraduate programs to remain accredited. Undergraduate programs in the College of Engineering are accredited by a national Accreditation Board for Engineering and Technology (ABET) of the Engineering Accreditation Commission (EAC). New procedures were adopted by ABET in 2000, and the College has been going through an extensive assessment process for the last three years as part of the regular ABET 6-year accreditation cycle, which culminates Fall Semester

²⁸ COE National Advisory continues to place significant importance on this (as they should).

²⁹ A very large industry in Wyoming

³⁰ MF III Area of Distinction (ENR, Critical professions to state)

2003. This effort involves (a) development and implementation of assessment methodology, (b) preparation of a program self-study report describing this assessment, and (c) a site visit by representatives of ABET, which occurred Fall Semester 2003. As part of this process, the our programs (CE/ARE) have established (a) Program Educational Objectives, which define the qualities which graduates of our program should possess three to six years after graduation from UW, (b) Program Outcomes, which are skills, understanding , knowledge, or other characteristics of undergraduate students at the time of graduation, and (2) a means of assessing program outcomes.

As a key component of the self-study, the department has adopted and implemented ten assessment tools:

1. Readiness examinations in several courses with formal communication to prerequisite instructors
2. Specific course reviews with formal rubric
3. Capstone course review (student work product, practitioner assessments, advisor board review)
4. Fundamental of Engineering Examination – a national test taken by all students
5. Mathematics Gateway Exams
6. CAE Student Exit survey conducted by the head
7. COE Student written surveys
8. COE Alumni Surveys
9. Evaluation of competitions and technical society awards
10. Self assessment of courses

Our self studies are located at:

<http://wwweng.uwyo.edu/civil/ABETARE.pdf>

<http://wwweng.uwyo.edu/civil/ABETCE.pdf>

The plan for our Graduate program assessment has been suggested to Dean Roth to align with our ABET review process, and where appropriate, to employ similar assessment tools. We await guidelines from Dean Roth in order to develop a more definitive plan.