Proposal Form For Addition And Revision Of Courses

1. Proposing College / School: Engineering
   Department: Civil Engineering

2. Course Prefix and Number: CIVL 5130
   3. Effective Term: Spring 2012

4. Course Title: Hydraulic Design of Pressurized Systems
   Abbreviated Title (30 characters or less): Hydraulic Design

5. Requested Action:
   ☐ Renumber a Course
   ☐ Add a Course
   ☐ Revise a Course

6. Course Credit:
   Contact/Group Hours
   Scheduled Type
   (e.g.: Lab, Lecture, Practicum, Directed Study)
   Weekly or Per Term?
   Credit Hours
   Anticipated Enrollment

   Maximum Hours (Repeatability): 3

   3 Lecture
   Weekly 3 25

   Total Credit Hours: 3

7. Grading Type:
   ☐ Regular (ABCDF)
   ☐ Satisfactory/Unsatisfactory (S/U)
   ☐ Audit

8. Prerequisites/Corequisites:
   Use "P:" to indicate a prerequisite, "C:" to indicate a corequisite, and "P/C:" to indicate a prerequisite with concurrency.
   P: CIVL 3110 or departmental approval.

9. Restrictions: List specific restriction in space above.
   ☐ College ☐ Major ☐ Standing ☐ Degree

10. Course Description:
    (20 Words or Less; exactly as it should appear in the Bulletin)
    Pressurized flow applications; Pump-Pipeline design optimization; Multiple reservoir operation; Flow measurement/control systems; Distribution manifolds; Fundamentals of unsteady flows.

11. May Count Either:
    CIVL 5130 or CIVL 6130
    (Indicate if this particular course cannot be counted for credit in addition to another)

12. Affected Program(s):
    (Respond "N/A" if not included in any program; attach memorandum if more space is required)
    Program Type
    (e.g.: minor, major, etc.)
    Program Title
    (e.g.: MS in Chemistry, Performance Option, Minor in Art)
    Requirement or Elective?
    (required or optional?)
    ☐ Major ☐ Civil Engineering ☐ Elective

13. Overlapping or Duplication of Other Units' Offerings:
    (If course is included in any other degree program, is used as an elective frequently by other unit(s), or is in an area similar to that covered by another college/school, attach correspondence with relevant unit)
    ☐ Applicable
    ☐ Not Applicable
14. Justification:

This course will provide a needed hydraulic elective in Civil Engineering. It aims to provide students with fundamentals of the design of pressurized flow systems, focusing on applications to urban water supply systems. Course content will include the design of pumping systems, valve selection, flow measurement and control systems, and distribution manifolds. The course will also address waterhammer, pressure surges, and strategies to mitigate adverse impacts of transient flows. These topics are important to the practicing civil engineer.

(Include a concise, yet adequate rationale for the addition/revision of the course, citing accreditation, assessments (faculty, graduate, and/or external) where applicable)

15. Resources:

This course will be taught by our current Hydraulic Engineering faculty in the Civil Engineering Department. Therefore, no additional resources are required.

(Indicate whether existing resources such as library materials, classroom/laboratory space, and faculty appointments are adequate to support the proposed addition/revision; if additional resources are required, indicate how such needs will be met, referencing the appropriate level of authorization – i.e.: Dean – where necessary; if no additional resources or shifting of resources will be necessary, respond "Not Applicable")

16. Student Learning Outcomes:

See attached: Objectives.

(State in measurable terms (reflective of course level) what students should be able to do when they have completed this course)

17. Course Content Outline:

See attached.

(Provide a comprehensive, week-by-week breakdown of course content, including assignment due dates)

18. Assignments / Projects:

See attached.

(List all quizzes, projects, reports, activities and other components of the course grade -- including a brief description of each assignment that clarifies its contribution to the course's learning objectives)

19. Rubric and Grading Scale:

See attached.

(List all components of the course grade -- including attendance and/or participation if relevant -- with point totals for each; indicate point totals and ranges or percentages for grading scale; for S/U grading, detail performance expectations for a passing grade)

20. Justification for Graduate Credit:

N/A

(Include a brief statement explaining how the course meets graduate educational standards (i.e.: rigorous standards for evaluation, development of critical thinking and analytical skills, etc.))

(Included below are standard statements regarding course policies. If necessary, a statement may be altered to reflect the academic policies of individual faculty members and/or the academic unit or department, provided that there is no conflict with the Tiger Cub, Faculty Handbook, or any existing university policy.)

POLICY STATEMENTS

Attendance: Although attendance is not required, students are expected to attend all classes, and will be held responsible for any content covered in the event of an absence.

Excused Absences: Students are granted excused absences from class for the following reasons: illness of the student or serious illness of a member of the student's immediate family, the death of a member of the student’s immediate family, trips for student organizations sponsored by an academic unit, trips for university classes, trips for participation in intercollegiate athletic events, subpoena for a court appearance, and religious holidays. Students who wish to have an excused absence from class for any other reason must contact the instructor in advance of the absence to request permission. The instructor will weigh the merits of the request, and render a decision. When feasible, the student must notify the instructor prior to the occurrence of any excused absences, but in no case shall such notification occur more than one week after the absence. Appropriate documentation for all excused absences is required. Please see the Tiger Cub for more information on excused absences.

Make-Up Policy: Arrangement to make up a missed major examination (e.g.: hour exams, midterm exams) due to properly authorized excused absence must be initiated by the student within one week of the end of the period of the excused absence(s). Except in unusual circumstances, such as the continued absence of the student or the advent of university holidays, a make-up exam will take place within two weeks of the date that the student initiates arrangements for it. Except in extraordinary circumstances, no make-up exams will be arranged during the last three days before the final exam period begins.

Academic Honesty Policy: All portions of the Auburn University student academic honesty code (Title XII) found in the Tiger Cub will apply to university courses. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.
Disability Accommodations: Students who need special accommodations in class, as provided for by the Americans With Disabilities Act, should arrange for a confidential meeting with the instructor during office hours in the first week of classes (or as soon as possible if accommodations are needed immediately). The student must bring a copy of their Accommodation Letter and an Instructor Verification Form to the meeting. If the student does not have these forms, they should make an appointment with the Program for Students with Disabilities, 1288 Haley Center, 844-2698 (V/TT).
CIVL 5130 Hydraulic Design of Pressurized Systems

1. **Course Title:** Hydraulic Design of Pressurized Systems

2. **Credit Hours:** 3 (two 75-minute lectures per week)
   
   **Prerequisites:** CIVL 3110 or department approval
   
   **Corequisites:** None

3. **Textbook and other resources:**
   
   
   - Handouts provided by the instructor

4. **Course Description:**
   
   Pressurized flow applications; Pump/Pipeline design optimization; Multiple reservoir operation; Flow measurement/control systems; Distribution manifolds; Fundamentals of unsteady flows

5. **Course Objectives:**
   
   - Provide students with practical knowledge on different aspects of pressurized hydraulic systems design, including:
     
     - Pipeline optimized design based on cost and resistance requirements
     
     - Anchor block design
     
     - Operation of multiple reservoirs
     
     - Pumping system design
     
     - Valve selection
     
     - Pipeline flow measurement and control systems
     
     - Design of wastewater outfall structures
     
     - Aspects of unsteady flow hydraulics and analysis techniques based on lumped inertia approach, and pressure transient mitigation strategies

   - Develop skills in conducting literature review and synthesizing materials from journal papers (graduate students)

6. **Course Content and Schedule:**
   
   - Design considerations for water pipelines (2 classes)
   
   - Diameter, class and material optimized selection for gravity mains (3 classes)
   
   - Multi-reservoir analysis (2 class)
   
   - Anchor block design (1 class)
   
   - Pump/pipeline system design and optimization (5 classes)
   
   - Valve selection (2 classes)
   
   - Pipeline flow measurement and control systems (4 lectures)
• Design of outfall structures (3 classes)
• Basics of unsteady flows, Joukowsky equation and lumped inertia analysis (4 classes)
• Strategies to mitigate pressure surges caused by flow transients (2 classes)
• Exams (2 classes)

7. **Course Evaluation:**

Students will be evaluated based on the following components: homework and individual projects (20% total), two midterm exams (25% each) and comprehensive final exam (30%). All exams are closed book. Individual projects will require students to solve various hydraulic problems by developing procedures and algorithms using Microsoft Excel. Graduate students may optionally develop numerical codes using Microsoft Visual Basic.

Students must earn an overall grade of 60% or greater to receive a grade of D or better in this course. The following is the grading scale that will be followed: A if Grade ≥ 90, B if 80 ≤ Grade <90, C if 70 ≤ Grade <80, D if 60 ≤ Grade <70, and F if Grade < 60. Note: May vary somewhat depending upon the instructor.

8. **Class Policy Statements:**

It may have unannounced quizzes. Regular attendance is recommended. It is student's responsibility to obtain all information presented in each class he/she missed. When a student has accumulated six unexcused class meetings he/she will be recommended for dismissal from the course. No make-up exams except in extraordinary circumstances. All portions of the Auburn University student academic honesty code found in the Tiger Cub will apply to this class.

9. **Accommodations for Students with Disabilities:**

It is the policy of Auburn University to provide accessibility to its programs and activities and reasonable accommodation for qualified students with disabilities. Students desiring addition information should contact the Program for Students with Disabilities, 1244 Haley Center, and Voice (334) 844-2096. Students requiring special accommodations are asked to arrange a meeting during office hours of the first week of classes. If a conflict with the office hours occurs, alternate time can be arranged. Bring a copy of the Accommodation Memo and an Instructor Verification Form to the meeting.