Code # EN04

**New/Special Course Proposal-Bulletin Change Transmittal Form**

**Undergraduate Curriculum Council** - Print 1 copy for signatures and save 1 electronic copy.

**Graduate Council** - Print 1 copy for signatures and send 1 electronic copy to [mmcginnis@astate.edu](mailto:mmcginnis@astate.edu)

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| --- |
| **New Course or**  **Special Course (Check one box)**  *Please complete the following and attach a copy of the catalogue page(s) showing what changes are necessary.* |

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| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **COPE Chair (if applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **Department Chair:** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **General Education Committee Chair (If applicable)** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date… **College Dean** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Graduate Curriculum Committee Chair** |
|  | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…  **Vice Chancellor for Academic Affairs** |

1. Proposed Course Prefix and Number (For variable credit courses, indicate variable range.)

CE 3471 Experiments in fluid phenomena which emphasizethetopics covered in CE 3473. Formal laboratory reports are required. Laboratory two hours per week. Corequisite CE 3473. Spring

2. Course Title – if title is more than 30 characters (including spaces), provide short title to be used on transcripts. Title cannot have any symbols (e.g. slash, colon, semi-colon, apostrophe, dash, and parenthesis). Please indicate if this course will have variable titles (e.g. independent study, thesis, special topics).

Fluid Mechanics Laboratory

3. Will this course be lecture only, lab only, lecture and lab, activity, dissertation, experiential learning, independent study, internship, performance, practicum, recitation, seminar, special problems, special topics, studio problems, student exchange, occupational learning credit, or course for fee purpose only (e.g. an exam)? Please choose one.

Laboratory only

4. What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental)?

standard grade

5. Is this course dual listed (undergraduate/graduate)?

undergraduate only

6. Is this course cross listed? (If it is, all course entries must be identical including course descriptions. It is important to check the course description of an existing course when adding a new cross listed course.)

Enter text...

7. Brief course description (40 words or fewer) as it should appear in the bulletin.

Experiments in fluid phenomena which emphasizethetopics covered in CE 3473. Formal laboratory reports are required. Laboratory two hours per week. Corequisite CE 3473. Spring

8. Indicate all prerequisites and if this course is restricted to a specific major, which major. (If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

a. Are there any prerequisites?

Prerequisites C or better in MATH 3254 and ENGR2403

b. Why?

Academic maturity level of Calculus IIII and ability to determine force balances in basic engineering mechanics are required to be successful in this course

9. Course frequency(e.g. Fall, Spring, Summer). Not applicable to Graduate courses.

Spring

10. Contact Person (Name, Email Address, Phone Number)

Yeonsang Hwang, [yhwang@astate.edu](mailto:yhwang@astate.edu), 972-2088

11. Proposed Starting Term/Year

spring 2015

12. Is this course in support of a new program? Yes/No

If yes, what program?

no

13. Does this course replace a course being deleted? Yes/No

If yes, what course?

yes, ENGR 3473

Has this course number been used in the past? Yes/No

*Submit Course Deletion Proposal-Bulletin Change Transmittal Form.*

14. Does this course affect another program? No

If yes, provide contact information from the Dean, Department Head, and/or Program Director whose area this affects.

Enter text...

15. Justification should include:

a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

Building on the student’s Physics and basic Engineering science courses, this course allows students to visualize and quantify basic fluid relationships for transport phenomena of common fluids and corresponding mathematical models

b. How does the course fit with the mission established by the department for the curriculum? If course is mandated by an accrediting or certifying agency, include the directive.

This is a common laboratory requirement in undergraduate Civil Engineering programs

c. Student population served.

Civil Engineering majors

d. Rationale for the level of the course (lower, upper, or graduate).

Enter text...

16. Outline (The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

1. Course introduction and laboratory safety

2. Fluid statics and center of pressure calculation/comparison

3. Report corrections and formal report procedures

4. Determination of fluid properties

5. Fluid flow measurements and uncertainty calculations

6. Reynolds number calculation for flow laminar or turbulent regime determination

7. Determination of flow losses.

8. Mid-term exam.

9. Pelton wheel turbine demonstration and power measurement

10. Open channel gravity flows

12. Sluice gate center of pressure calculation and hydraulic jump demonstration for open channel flows

13. Dams and levees.

14. Final exam

17. Course requirements (e.g. research papers, projects, interviews, tests, etc.)

formal laboratory reports and lab exams

18. Special features (e.g. labs, exhibits, site visitations, etc.)

Laboratory exercises, and video demonstrations

19. Department staffing and classroom/lab resources (Will this require additional faculty, supplies, etc.?)

No., the laboratory and equipment are in place as part of the former General engineering program

20. What is the primary intended learning goal for students enrolled in this course?

The course is designed to expose students to proper techniques for determining fluid locomotive requirements and a basic understanding of possible non-linear fluid phenomena that can potentially have adverse effects on engineering designs

21. Reading and writing requirements:

a. Name of book, author, edition, company and year

Instructor-prepared laboratory assignments as handouts

b. Number of pages of reading required per week: 5-8

c. Number of pages of writing required over the course of the semester: 75

22. High-Impact Activities (Check all that apply)

Collaborative assignments

Research with a faculty member

Diversity/Global learning experience

Service learning or community learning

Study abroad

Internship

Capstone or senior culminating experience

Other Explain: Enter text...

23. Considering the indicated primary goal (in Box #20), provide up to three outcomes that you expect of students after completion of this course.

**Outcome #1:** (For example, what will students who meet this goal know or be able to do as a result of this course?)

Students will be able to quantify basic fluid properties as required according to professional engineering standards

Learning Activity:(For example, what instructional processes do you plan to use to help students reach this outcome?)

Laboratory instruction and student feedback regarding proper dissemination of technical data for fluid mechanics

Assessment Tool: (For example, what will students demonstrate, represent, or produce to provide evidence of their learning?)

Graded laboratory reports

*(Repeat if needed for additional outcomes 2 and 3)*

**Outcome #2:**

Students will be able to use the equations that model fluid flow to specify realistic design parameters as fluid flow phenomena are scaled from laboratory measurements to industrial applications

Learning Activity:

Laboratory instruction and industrial case studies with corresponding video and photographic descriptions

Assessment Tool:

Graded laboratory reports and evaluation of design calculations as compared to professional engineering standards

**Outcome #3**:

Enter text...

Learning Activity:

Enter text...

Assessment Tool:

Enter text...

24. Please indicate the extent to which this course addresses university-level student learning outcomes:

* 1. Global Awareness

Minimally  
Indirectly  
Directly

* 1. Thinking Critically

Minimally  
Indirectly  
Directly

* 1. Using Technology

Minimally  
Indirectly  
Directly

**From the most current electronic version of the bulletin, copy all bulletin pages that this proposal affects and paste it to the end of this proposal.**

**To copy from the bulletin:**

1. Minimize this form.
2. Go to <http://registrar.astate.edu/bulletin.htm> and choose either undergraduate or graduate.
3. This will take you to a list of the bulletins by year, please open the most current bulletin.
4. Find the page(s) you wish to copy, click on the “select” button and highlight the pages you want to copy.
5. Right-click on the highlighted area.
6. Click on “copy”.
7. Minimize the bulletin and maximize this page.
8. Right-click immediately below this area and choose “paste”.
9. For additions to the bulletin, please change font color and make the font size larger than the surrounding text. Make it noticeable.
10. For deletions, strike through the text, change the font color, and enlarge the font size. Make it noticeable.

ADD

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