REQUEST FOR A NEW COURSE
University of Central Oklahoma

Course Subject (Prefix), Number, and Title:
Course Subject | Number | Recommended Course Title (maximum of 30 characters)
ENGR | 4842 | CE Senior Engineering Design I

*Remember when abbreviating names, this is how they will appear on student's transcripts.

Course Title: (full title of course if longer than 30 characters)
Computer Engineering Senior Engineering Design I

For information regarding CIP codes contact your department chair or visit: http://www.uco.edu/academic-affairs/ir-program_inventory.asp
CIP Code: 14.0901

For graduate courses, please attach a syllabus for this course. (See syllabus requirement policy 2.2.)

Course description as it will appear in the appropriate catalog.
Course description only Do not include prerequisites or enrollment restrictions, these should be added under questions 6-12. (Please use standard American English including full sentences.)

Through discussions with the course instructor, faculty members, and industry liaisons, students will determine a design-related engineering problem they wish to study. A detailed written project proposal will be submitted and approved by the chosen faculty project director. Working as a member of a design team, students will apply the design process by developing projects from the proposal stage to the test, evaluation, and implementation stages. Students are expected to follow this course with ENGR 4892 Senior Engineering Design II.

Engineering & Physics
Department submitting the proposal

Nesreen Alsbou
nalsbou@uco.edu
5093

Person to contact with questions
email address
Ext. number

Approved by:

Department Chairperson
Date

College Dean
Date

College Curriculum Committee Chair
Date
(Please notify department chair when proposal is forwarded to dean.)

Academic Affairs Curriculum or Graduate Council
Date

Effective term for this new course
(Assigned by the Office of Academic Affairs.)
1. Does this course have an undergraduate/graduate counterpart?
   Yes [ ] No [X]

2. Is this proposal part of a larger submission package including a program change?
   Yes [X] No [ ]

3. Does this new course affect a teacher preparation program? (All courses required for any teacher preparation program must have approval from the Council on Teacher Education (CTE) before approval from AACC or Graduate Council.)
   Yes [ ] No [X] If yes, send copy of proposal to the Education Curriculum Committee Chair, Dr. Darla Fent.
   CTE Approval (Stamp or initial) ___________

4. Has this course been previously taught as a common course (4910 seminar, 4960 institute, etc.)?
   Yes [ ] No [X]

5. Does this course affect majors or minors outside the department?
   Yes [X] No [ ] If yes, provide name(s) of department chair(s) contacted, dates, and results of discussion.
   This new course is part of the curriculum for the currently-proposed Computer Engineering B.S., which the Department of Engineering & Physics developed as a joint degree through discussions in 2019 and 2020 with Dr. Gang Qian from Computer Science.

6. Prerequisite courses:
   Example 1: MATH 1213 and (MATH 2165 or MATH 2185) and CHEM 1213
   Example 2: (ACCT 2113 and 2213) and (MGMT 3013 or ISOM 3133)
   ENGR 3323, ENGR 3331, ENGR 3403, ENGR 3421, ENGR 3303, ENGR 3613, CMSC 3613, CMSC 3621, CMSC 3833, and SE 3103

7. Co-requisite(s): Which of the above prerequisite courses, if any, may be taken in the same semester as the proposed new course?
   None

8. Concurrent enrollment: Courses that must be taken the same semester. Example: lab courses.
   None

9. Will this course have enrollment restrictions?
   Yes [X] No [ ] If No, go to question 13.

10. Specify which major(s) may or may not take this course. Specifying a major, excludes all other majors from enrolling.
    Check one: May [X] May not [ ]

11. Which of the following student classification(s) may enroll in this course?
    Check all that apply:
    Graduate (2) 19+ hours
    Graduate (1) 0-18 hours
    Post Baccalaureate*
    Senior
    Junior
    Sophomore
    Freshman
    * Graduate level courses are not open to Post Baccalaureate students.

12. Check or list other restrictions for this course.
    Admission to Graduate Programs
    Admission to Nursing Program
    Admission to Teacher Education
    Other

Academic Affairs Form
August, 2015

Functional Review: CF
(undergraduate proposals only)
13. Course objectives: Objectives should be observable, measurable and include scholarly or creative activities to meet the course level characteristics. Course objectives should also be in line with the course description. (Please refer to instructional objectives documents at: http://www.uco.edu/academic-affairs/faculty-staff/aacc.asp#FAQ/Helpful%20Hints.)

At the end of this course, students should be able to:

- Identify an engineering or research problem and state the problem with realistic constraints through literature review and discussions with Engineering and Physics Faculty;
- Prepare a written proposal for a project that contains engineering design solutions or a research plan that will satisfy stated constraints;
- Propose a plan of work to complete the solution to an engineering or research problem to meet a deadline;
- Work as a team member or an individual to develop, evaluate, test, and implement a solution to an engineering or research problem;
- Demonstrate ability to write a technical report that includes an executive summary concerning the solution to the engineering or research problem;
- Demonstrate ability to orally present the results of a completed engineering or research project to technical staff and other executives.

Course Detail Information:

14. Contact Hours (per week)
   - Lecture hours (in class)
   - Lab hours (also studios)
   - Other (outside activities)

15. Repeatable course.
   - Number of times this course can be taken for credit.

16. Schedule type: (select one only)
   - Activity P.E. (A)
   - Lab only (B)
   - Lecture/Lab (C)
   - Lecture only (L)
   - Recitation/Lab (R)
   - Student Teaching (STU)
   - Studio Art/Design (XSU)

17. List existing course(s) for which this course will be a prerequisite. Adding a "new course" as a prerequisite to an existing course will likely cause enrollment problems. (Please submit a prerequisite change form for each course for which this course will serve as a prerequisite.)

   ENGR 4892

18. What resources, technology or equipment must be acquired to teach this course? List items, which must be purchased and estimate cost. (Be specific; e.g., technology software, equipment, computer lab; etc.)

   None, all supplies and materials required by the course are available in the department.

19. The UCO Library has the required library resources available for this new course?
X Yes  No  If yes, provide names of Librarian/Faculty Liaisons contacted, dates, and results of discussion.

Librarian Deborah Thompson was contacted on July 20, 2020. Resources are currently available for this course. Databases, journals, books, and electronic access sites are available to students through the UCO virtual library and interlibrary loan system.

If no, what additional library resources must be acquired for this new course?  List items which must be purchased and estimated cost. (Be specific, e.g., books, magazines, journals, etc.)

20. Names of current faculty qualified to teach this course.
   - Charles Hughes, Alaeddin Abuabed, Mohamed Bingar, Evan Lemley, Weldon Wilson, Yuhao Jiang, Morshed Khandaker, Abdellah Ait moussa, Mohammad Hossan, Benjamin Tayo, Gang Xu, Nesreen Alsou, Scott Mattison

21. Additional faculty (adjunct or full-time) required and specific competencies required to teach this course:
   None

22. How will this course be staffed and equipped? Identify the additional costs associated with this new course.  If no costs, explain why not.
   There will be no additional costs for this course. This course meets at the same time and with the same instructor as the Senior Design 1 courses in EE, ME, EP, and BME.

23. Identify the source(s) of funds for any additional costs for the new course.  i.e. internal reallocations, special fees from students, etc.  If you plan to propose special fees be assessed for this course, be aware there is a separate approval process for special fees.
   N/A

24. Projected enrollment for two academic years following approval of new course:

<table>
<thead>
<tr>
<th>Semester</th>
<th>2021-2022</th>
<th>2022-2023</th>
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<tbody>
<tr>
<td>Fall</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Spring</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Summer</td>
<td>N/A</td>
<td>N/A</td>
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25. Using State Regents' definition of liberal arts and sciences (quoted below), characterize the course as follows:
   X Non-liberal arts and sciences
   ___ Liberal arts and sciences

"The liberal arts and sciences are defined as those traditional fields of study in the humanities; social and behavioral sciences; communications; natural and life sciences, mathematics; and the history, literature, and theory of fine arts (music, art, drama, dance). Courses in these fields whose primary purpose is directed toward specific occupational or professional objectives, or courses in the arts which rely substantially on studio or performance work are not considered to be liberal arts and sciences for the purpose of this policy. Courses required for the General Educational Program are not necessarily synonymous or mutually exclusive with the liberal arts and sciences."  State Regents Policy and Procedures.  Chapter 2, Section 5, "Degree Requirements" part 1, (2), P. II-2-86

26. Please provide a concise, yet comprehensive, statement that explains the reasons for requesting the new course. Include documentation or assessment information supporting the specific request (if possible).  Indicate the expected source of student enrollment (majors, minors, programs etc.)
   This course will serve as part one of a two-part capstone course for all Computer Engineering Majors. Although this course will meet at the same time and place and with the same instructor as our other Senior Design 1 courses, it is necessary to have a unique course number to ensure that students enrolling in this course have the necessary prerequisites to effectively
contribute to the senior design capstone projects that are at the heart of this course. This creates added transparency for students and reduces faculty advisement load.

27 Which of the six transformative learning tenets does this course incorporate? (check all that apply or only those that apply) This question was a directive from the Provost and is used for informational purposes.

<table>
<thead>
<tr>
<th>Tenet</th>
<th>X</th>
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<tbody>
<tr>
<td>Discipline Knowledge</td>
<td>X</td>
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<tr>
<td>Leadership</td>
<td></td>
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<td>Research, Scholarly and Creative Activities</td>
<td>X</td>
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<tr>
<td>Service Learning and Civic Engagement</td>
<td></td>
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<tr>
<td>Global and Cultural Competencies</td>
<td>X</td>
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<td>Health and Wellness</td>
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28. Clearly explain how the characteristics of this course meet or exceed those outlined in Course Level Characteristics. (Copy and paste table from “Course Level Characteristics” document for the appropriate course level of proposed course. Document may be found on: http://sites.uco.edu/academic-affairs/files/course-level-characteristics-table.doc)

4000 LEVEL COURSES

<table>
<thead>
<tr>
<th>Course Level Characteristics</th>
<th>Please describe how this course meets this requirement.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It is assumed that students in these courses have completed sufficient course work to have attained senior standing.</td>
<td>This course requires senior level standing and is a capstone course utilizing knowledge from all previous and concurrent engineering courses.</td>
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<tr>
<td>2. It is assumed that students in these courses have a substantial background in the area of inquiry equivalent to 15 hours of study. Area of inquiry is defined broadly, including courses in the offering department, as well as courses in other departments that relate to the subject of study.</td>
<td>This course is a capstone course utilizing knowledge from all previous and concurrent engineering courses. It includes 27 hours of prerequisite engineering courses.</td>
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<tr>
<td>3. These courses should be offered at a level of sophistication of instruction and of expected student performance that is beyond that of other undergraduate courses. In short, 4000 level courses should offer more in-depth study than courses offered at the 3000 level and below.</td>
<td>This course will provide students with an in-depth, hands-on experience in practical application of the engineering design process. Students will be immersed in the first part of a year-long project in engineering design.</td>
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<td>4. Students in these courses should be required to undertake a substantial scholarly activity in addition to classroom instruction, such as a written research project, library assignment, juried performance, or creative work.</td>
<td>This course involves a capstone level project where students identify an engineering challenge, draft a proposed solution to this problem, develop a prototype of this solution, and perform quantitative analysis of the product’s function.</td>
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<td>5. Included among 4000 level courses would be capstone courses that review and integrate previous learning, practicums and student teaching, and courses in which a major instructional responsibility is placed on the student (as in individual studies, directed readings, and seminars).</td>
<td>This is a capstone course. Students will be expected to perform significant research on the background of their engineering challenge, existing solutions, and existing ethical and safety regulations related to their project.</td>
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