

Office of the Registrar
FORM 40 REV. 5/11

PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

Print Form

DEPARTMENT Engineering Education

EFFECTIVE SESSION Spring 2012 (201310)

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- | | |
|---|---|
| <input checked="" type="checkbox"/> 1. New course with supporting documents | <input type="checkbox"/> 7. Change in course attributes (department head signature only) |
| <input type="checkbox"/> 2. Add existing course offered at another campus | <input type="checkbox"/> 8. Change in instructional hours |
| <input type="checkbox"/> 3. Expiration of a course | <input type="checkbox"/> 9. Change in course description |
| <input type="checkbox"/> 4. Change in course number | <input type="checkbox"/> 10. Change in course requisites |
| <input type="checkbox"/> 5. Change in course title | <input type="checkbox"/> 11. Change in semesters offered (department head signature only) |
| <input type="checkbox"/> 6. Change in course credit/type | <input type="checkbox"/> 12. Transfer from one department to another |

PROPOSED:

EXISTING:

TERMS OFFERED
Check All That Apply:

Subject Abbreviation IDE _____ Subject Abbreviation _____
Course Number 48700 _____ Course Number _____
Long Title Multidisciplinary Engineering Senior Professional Design Seminar
Short Title IDE Senior Design Seminar

Fall Spring Summer

CAMPUS(ES) INVOLVED

Calumet N. Central
 Cont Ed Tech Statewide
 Ft. Wayne W. Lafayette
 Indianapolis

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

CREDIT TYPE

COURSE ATTRIBUTES: Check All That Apply

1. Fixed Credit: Cr. Hrs.
2. Variable Credit Range:
Minimum Cr. Hrs.
(Check One) To Or
Maximum Cr. Hrs.
3. Equivalent Credit: Yes No

1. Pass/Not Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
Maximum Repeatable Credit:
4. Credit by Examination
5. Fees: Coop Lab Rate Request
Include comment to explain fee

6. Registration Approval Type
Department Instructor
7. Variable Title
8. Honors
9. Full Time Privilege
10. Off Campus Experience

| ScheduleType | Minutes Per Mtg | Meetings Per Week | Weeks Offered | % of Credit Allocated |
|--------------|-----------------|-------------------|---------------|-----------------------|
| Lecture | 50 | 1 | 16 | 100 |
| Recitation | | | | |
| Presentation | | | | |
| Laboratory | | | | |
| Lab Prep | | | | |
| Studio | | | | |
| Distance | | | | |
| Clinic | | | | |
| Experiential | | | | |
| Research | | | | |
| Ind. Study | | | | |
| Pract/Observ | | | | |

Cross-Listed Courses
RECEIVED
2012 JUL 24 AM 9:40

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Senior professional design seminar covers and assesses students in Multidisciplinary Engineering professional outcomes including teamwork, professional & ethical responsibility, communication, impact of engineering in context, lifelong learning, impact of contemporary issues, and leadership. Presentation of student's designs. Methods to obtain a professional position after graduation. Concurrent Prerequisite: IDE 30100, and ECE 40020 or THTR 59700 Theatre Production or other ENE approved major design experience course.

*COURSE LEARNING OUTCOMES:

Outcome 4 - Teams; Outcome 6 - Professional and ethical responsibility; Outcome 7 - Communication; Outcome 8 - Impact engineering in global, economic, environmental & societal context; Outcome 9 - How one learns and lifelong learning; Outcome 10 - Contemporary issues; Outcome 12 - Leadership. Students who have other major design experience alternatives approved in the future will be expected to take this one credit supplement in addition to the course they are using as a substitute for IDE 48500 or EPCS 41100/41200

| | |
|---|---|
| Calumet Department Head _____ Date _____ | Calumet School Dean _____ Date _____ |
| Fort Wayne Department Head _____ Date _____ | Fort Wayne School Dean _____ Date _____ |
| Indianapolis Department Head _____ Date _____ | Indianapolis School Dean _____ Date _____ |
| North Central Faculty Senate Chair _____ Date _____ | Vice Chancellor for Academic Affairs _____ Date _____ |
| West Lafayette Department Head _____ Date _____ | West Lafayette College/School Dean _____ Date _____ |

West Lafayette Registrar _____ Date _____

OFFICE OF THE REGISTRAR

7/27/12
WS

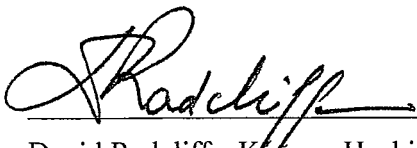
TO: The Engineering Faculty
FROM: The Faculty of the School of Engineering Education
RE: New Undergraduate Course IDE 48700 Multidisciplinary Engineering Senior Professional Design Seminar.

The Faculty of the School of Engineering Education has approved the new course listed below. This action is now submitted to the Engineering Faculty with a recommendation for approval.

IDE 48700 Multidisciplinary Engineering Senior Professional Design Seminar
Sem. 2, Class 1, Credit 1
Concurrent Prerequisite: IDE 30100, and ECE 40020 or THTR 59700 Theatre Production or other ENE approved major design experience course.
Course Attribute: Approval by Department

Course Description:
Senior professional design seminar covers and assesses students in Multidisciplinary Engineering professional outcomes including teamwork, professional & ethical responsibility, communication, impact of engineering in context, lifelong learning, impact of contemporary issues, and leadership. Presentation of student's designs. Methods to obtain a professional position after graduation.

Reason:
Since students in the Multidisciplinary Engineering program have a variety of concentrations, a more appropriate major design experience other than IDE 48500 or EPICS 41100/41200 is now allowed. For example, students in the Acoustical Engineering concentration may use ECE 40020 or THTR 59700 as alternate major design experiences. With prior approval, THTR 59700 is allowed to substitute for 3 credits of engineering. [In October 2007 the ABET PEV reviewed THTR 59700 work of one student and stated "This is engineering."] To assess the Multidisciplinary Engineering professional outcomes a new one credit course, IDE 48700, Multidisciplinary Engineering Senior Professional Design Seminar is required for students using these alternate courses. Since IDE 48700 will meet one day a week with IDE 48500, teaching loads are not increased. Since IDE 48500 requires IDE 30100 as a concurrent prerequisite, it is also required as a concurrent prerequisite for IDE 48700. The Friday class of IDE 48500 has been successfully taught four times. IDE 48700 is being taught this semester as IDE 49500.



David Radcliffe, Kamyar Haghighi Head
School of Engineering Education

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes 5/8/12 #16
Date 7/19/2012
Chairman ECC R. Cipra

Attachment 1
New Undergraduate Level Course:
IDE 48700 Multidisciplinary Engineering Senior Professional Design Seminar

One Credit. Spring Semester.

Concurrent Prerequisite: IDE 30100 and ECE 40020 or THTR 59700 Theatre Production or other ENE approved major design experience course.

Course Attribute: Approval by Department

This seminar is required for Multidisciplinary Engineering students who are not taking IDE 48500 or EPCS 41100/41200 as their major design experience course, but instead are taking ECE 40020 Sound Reinforcement Design, or THTR 59700 Theatre Production, or other ENE approved course. IDE 48700 meets with the professional seminar meeting of IDE 48500. The purpose of IDE 48700 is to ensure that all Multidisciplinary Engineering students satisfy the Multidisciplinary Engineering professional outcomes when they graduate. The following Multidisciplinary Engineering outcomes are accessed in IDE 48700:

| | |
|------------|--|
| Outcome 4 | Teams |
| Outcome 6 | Professional and ethical responsibility |
| Outcome 7 | Communication |
| Outcome 8 | Impact engineering in global, economic, environmental & societal context |
| Outcome 9 | How one learns and lifelong learning |
| Outcome 10 | Contemporary issues |
| Outcome 12 | Leadership |

Students who have other major design experience alternatives approved in the future will be expected to take this one credit supplement in addition to the course they are using as a substitute for IDE 48500 or EPCS 41100/41200.

Rationale:

Since students in the Multidisciplinary Engineering program have a variety of concentrations, a more appropriate major design experience may be available in a course other than in IDE 48500 or EPCS 41100/41200. Current examples are ECE 40020 and THTR 59700 for students in the Sound Design option of the Acoustical Engineering concentration. The professors of these courses welcome Multidisciplinary Engineering students and have requested that these courses count as major design experiences in the Multidisciplinary Engineering program. However, these alternate major design experiences do not normally include coverage or assessment of all the Multidisciplinary Engineering professional outcomes. Since the professional outcomes are taught and accessed in the professional seminar classes of IDE 48500, students using an alternate major design experience will be required to take IDE 48700, which will meet with IDE 48500 during the professional seminar sessions (currently on Friday afternoons).

Attachment 2**New Undergraduate Course IDE 48700****Syllabus for IDE 48700 being taught Spring 2012 as IDE 49500****IDE 49500: Multidisciplinary Engineering Senior Professional Design Seminar. Spring 2012****Instructor:**

| | | | |
|-----------------------|-----------|--------|--|
| Professor Phil Wankat | ARMS 3109 | 6-7531 | wankat@purdue.edu |
|-----------------------|-----------|--------|--|

Course Objective:

This seminar is required for Multidisciplinary Engineering students who are not taking IDE 48500 or EPCS 41100/41200 as their major design experience course, but instead are taking ECE 40020 Sound Reinforcement Design, or THTR 59700 Theatre Production, or other ENE approved course. IDE 48700 meets with the professional seminar meeting of IDE 48500. The purpose of IDE 48700 is to ensure that all Multidisciplinary Engineering students satisfy the Multidisciplinary Engineering professional outcomes when they graduate.

Pre- or Co-requisite:

IDE 30100 and approved major design experience course for Multidisciplinary Engineering.

Permission of instructor.

One Credit.

Spring Semester.

Course Outcomes:

The following Multidisciplinary Engineering outcomes are accessed in IDE 48700:

| | |
|------------|--|
| Outcome 4 | Teams |
| Outcome 6 | Professional and ethical responsibility |
| Outcome 7 | Communication |
| Outcome 8 | Impact engineering in global, economic, environmental & societal context |
| Outcome 9 | How one learns and lifelong learning |
| Outcome 10 | Contemporary issues |
| Outcome 12 | Leadership |

Required Texts:

None. Use class hand-outs and online resources

Course Operation and Learning Activities:

The course will meet with IDE 485 on Fridays. Exceptions are January 13, March 9, and April 20 when IDE 495 students meet without IDE 485 students.

| Wk | Date | Friday: 3:30-4:20 (ARMS 3109) |
|--------|-------------|---|
| 1 | January 13 | IDE 495 Introduction |
| 2 | January 20 | Lifelong learning and plans after graduation. Resumes due (Provide permission to give to Companies). Do worksheet in class. |
| 3 | January 27 | Job Search |
| 4 | February 3 | Decision Making |
| 5 | February 10 | Mock Interview – Bob Davis Questions on What Happens after job offer due |
| 6 | February 17 | Time Management Decision Making Homework Due |
| 7 | February 24 | What Happens After the Job Offer – Bob Davis |
| 8 | March 2 | Leadership - Time Logs (extra credit) due |
| 9 | March 9 | Oral Presentations on Projects |
| - | March 16 | Spring Break – No class |
| 10 | March 23 | Ethics & Jobs |
| 11 | March 30 | Ethics |
| 12 | April 6 | Interaction of Ethics, Globalization, society & contemporary issues |
| 13 | April 13 | no class – Schedule interview with Prof. Wankat |
| 14 | April 20 | Final Oral Presentations on Projects |
| 15 | April 27 | No class |
| Finals | | No class |

The sessions will be highly interactive and introduce a variety of topics related to obtaining a professional position and working as a professional engineer.

Course Policies

Active Participation

Students are expected to attend all class sessions, remain for the duration of each session, pay attention, ask questions, and be involved in discussion. A sign-in sheet will be passed out. Students are expected to prepare for each class session as appropriate. This may mean reading hand-outs or other materials in advance or being prepared to report on project progress.

Behaving Professionally

As professionals-in-training, all students are expected to behave in a courteous, respectful and ethical manner in all matters concerned with the course. They will adhere to the Engineering Honor Code.

Purdue policy prohibits “dishonesty in connection with any University activity. Cheating, plagiarism, or knowingly furnishing false information to the University are examples of dishonesty”. Acts of cheating, plagiarism or any other type of academic dishonesty will not be tolerated and will be dealt with according to Purdue Policy.

Assessment

Assessment of performance in this course will be done progressively during the semester based on the following items. Details of the submission and requirements for each assessment item will be provided separately. **There is no final examination**

| <i>Assessment Item</i> | <i>Weight</i> |
|--|----------------------|
| Attendance (including exit interview) and turning in copy of THTR 597 final report | 20% |
| Lifelong learning worksheet | 5% |
| Decision Making HW | 10% |
| Preliminary Oral Project Report | 15% |
| Debate written report | 10% |
| Final Oral Project Report | 30% |
| Participation (including questions on what happens after decision making) | 10% |

Course Grading: *The scale is for a guaranteed course grade.* The instructor may decide to use lower cut-offs.

| Grade | GPA Value | Range |
|--------------|------------------|--------------|
| A+,A | 4.0 | 93-100 |
| A- | 3.7 | 90.0 - 92.9 |
| B+ | 3.3 | 87.0 - 89.9 |
| B | 3.0 | 83.0 - 86.9 |
| B- | 2.7 | 80.0 - 82.9 |
| C+ | 2.3 | 77.0 - 79.9 |
| C | 2.0 | 73.0 - 76.9 |
| C- | 1.7 | 70.0 - 72.9 |
| D+ | 1.3 | 67.0 - 69.9 |
| D | 1.0 | 63.0 - 66.9 |
| D- | 0.7 | 60.0 - 62.9 |
| F | 0.0 | < 60.0 |

Due dates

Assignments will be expected at the beginning of class on the due date. Unless there are compelling extenuating circumstances, late assignments will be accepted in the same way they are treated by companies: with ill-humor and a reduction in credit.

Re-grading

Written requests for a re-grade of any assessment item must be made within one week of the date when the item was available for return. Requests after that deadline will not be considered. Such requests must be included a written statement detailing the justification for the re-grade.

Fundamentals of Engineering Examination

While it is not formally part of the assessment for this course, students are *strongly encouraged* to take the NCEES Fundamentals of Engineering Examination during the semester. Those taking the exam will receive extra credit in this course. There is also financial support available to assist with the cost of taking this examination.

MDE Objectives and Outcomes from ABET Self-Study

The Multidisciplinary Engineering *Program Educational Objectives* are:

- I. Within 3 to 6 years of graduating from the Multidisciplinary Engineering program, graduates are expected to believe that their Multidisciplinary Engineering education was valuable preparation for their careers, regardless of the fields.
- II. Within 3 to 6 years of graduating from the Multidisciplinary Engineering program, graduates are expected to achieve *one or more* of the following milestones:
 1. Advance professionally in positions that integrate engineering and other perspectives such as art, education, etc.
 2. Earn an advanced degree or an advanced certification, or become a professional engineer.
 3. Assume leadership roles in technical, community, artistic or other endeavors.
 4. Become a successful manager, consultant or entrepreneur who is developing global expertise.
 5. Written scholarly article(s), received patent(s), or have a patent pending.

The performance target for program educational objective I is that 90 % of the graduates will rate their preparation for their career in one of the top two categories on a 4 point Likert scale. The target for program educational objective II is that 90 % of the graduates satisfy this educational objective.

Fortunately, performance criteria can be defined for all of the objectives so that they can be measured. Objective I is an attitude, and is easily measured by asking the graduates to rank their satisfaction with their preparation on a 4-point Likert scale. The following question will be asked of the graduates in the graduate survey (see Appendix III-R2), "How well did your MDE education prepare you for your career on the following scale: 1 = Poor, 2 = Marginal, 3 = Acceptable, and 4 = Superior."

Objectives II.2 and II.5 are also easy to measure since we can count degrees, certifications, professional engineer licenses, articles, patents, and patents pending.

Objective II.3 is relatively easy to measure once a definition of leadership roles has been developed. In technical and job-related endeavors we define project leadership and managerial position titles as evidence of leadership. In professional societies, community and artistic organizations we define leadership as service in elected offices or service as a committee chair. Criteria for objective II.1 are similar. We can define progress in positions that integrate engineering and other perspectives as movement on a technical, artistic or managerial ladder. Examples are a senior engineer in a firm that works with the art community, an art director in a firm that works with engineers or a manager in either type of company.

Objective II.4 is the most difficult objective to measure since it includes two problematic terms: "successful" and "developing global expertise." We define a successful manager as one who can meet his/her objectives. Promotion to a higher level is one indicator. Although anyone can claim they are a consultant, we define a successful consultant as one who has repeat business and can make a living from consulting. Likewise, a successful entrepreneur is defined as one whose business survives and grows or as

one who sold the business and moved on to other endeavors. For managers we will define developing global expertise as either an extended assignment in another country or responsibility for an export or import business. For consultants developing global expertise will be measured based on international business; consulting on import and export businesses; or consulting on global competition, technology, marketing ideas or products. Entrepreneurs will be considered to be developing global expertise if they have facilities in other countries or are involved in an export/import business. Additional signs of global expertise are writing articles or presenting seminars on global business or similar topics. Note that this objective will in many cases overlap with objectives II.1 and II.3.

The *Program Outcomes* for the Multidisciplinary Engineering program are listed below. Students are expected to successfully meet the outcomes on the day they graduate. Students will have:

- 1) An ability to apply knowledge of mathematics, science, and engineering;
- 2a) an ability to design and conduct experiments
- 2b) an ability to analyze and interpret data;
- 3) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability;
- 4) an ability to function on multidisciplinary teams;
- 5) an ability to identify, formulate, and solve engineering problems;
- 6) an understanding of professional and ethical responsibility and actions that are congruent with this understanding;
- 7) an ability to communicate effectively by speaking and writing;
- 8) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
- 9) an understanding of how one learns and recognition of the need for lifelong learning;
- 10) a knowledge of how contemporary issues affect engineering and how engineering can impact these issues;
- 11) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice; and
- 12) an understanding of the principles, applications and importance of leadership.

Table B.3.
Multidisciplinary Engineering Program Outcome Assessment Tools

| Constituencies ⇒ Tools | Student | Alums | Cos. | Profs | Frequency | Perf. Target |
|--|---------|-------|------|-------|--|--|
| Direct Assessment with rubrics by Instructor, Tables B.4a & B.4b. | | | | X | IDE 301 & IDE 330, selected core courses. frequent | Formative: 90% students no U. Summative: 100% No U, 90% all ratings Acceptable minus or higher |
| Direct Assessment of Designs by Instructor. Table B.5. | | | | X | EPICS/IDE 485, other major design experiences 2x/semester | Formative: 90% students no U. Summative: 100% No U, 90% all ratings Acceptable minus or higher |
| Self-assessment using rubrics, Tables B.6 & B.7 | X | | | | IDE 301 & exit survey & interview | 100% No U, Average Acceptable minus or higher |
| Junior ABET Survey, Table B.8. | X | | | | Annually | Average increases for 12/14 items during semester |
| Senior Exit Survey & Interviews, Table B.9. | X | | | X | Dec., May, August | Outcomes: 90% rate 3 to 5. Counseling, advising & scheduling: 90% 3 to 5. |
| Alumni/Alumnae Survey Appendix III-R2. | | X | | | May 07 to May 09 grads in 2012. Aug 09 to May 10 grads in 2013 | Objective I, 90% acceptable or superior. Objective II, @ 3 years, 50% meet, @ 6 yrs, 90% meet. |
| Employer Survey, Appendix III-S. How well has graduate's MDE education prepared him/her for this job using scale: 1 = Poor, 2 = Marginal, 3 = Acceptable, and 4 = Superior | | | X | | Sample 2012 and 2013 | 90% acceptable or superior |
| E2IAC student oral exam. Table B.10 | | X | X | | Every other year | 100% No U. Average A minus or higher. |
| Fundamentals Engineering Exam* | | | | | Before graduation | 90% pass |
| Triangulation. Outcomes summary for graduate, Table B.11. | | | X | X | Before graduation | 100 % No U. Average A minus or higher |

Key: U = unacceptable, A = Acceptable

*Although voluntary, strongly encouraged and the Multidisciplinary Engineering program reimburses students who pass the FE exam the entire cost of the exam.

