Please type or select the requested information. Print completed forms, add appropriate paper attachments, and route through MSU's curricular process for recommendations and decisions.

College: Science, Engineering and Technology  □ Undergraduate  □ Graduate
Department: Electrical and Computer Engineering  □ Graduate
Program: Electrical and Computer Engineering  □ CIP #
Type of Change: COURSE PROPOSALS
Proposed Change in Credits: □ T.H.C.
Title Current: Principles of Engineering Design II
Title Proposed: Principles of Engineering Design IV
24-Char. Abbrev: Engineering Design IV

Course Designator and Number | Number of Credits
--- | ---
EE477 | 2
EE477 | 1

Include a course or program description for the Bulletin (30-40 words maximum for courses, 100 for programs):

Course description should remain the same

Prerequisite: EE477 and Senior Standing

Rationale or Justification for change:
The need to more completely balance content across all department courses. Reorganization of material into other department courses will allow more rapid coverage of concepts

### For General Education or Cultural Diversity Courses Only

<table>
<thead>
<tr>
<th>GE Category #</th>
<th>GE Category Name (Maximum of 3 Categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>N/A</td>
<td></td>
</tr>
</tbody>
</table>

For Writing Intensive Courses, attach a description of the kind and quantity of writing.
For Upper Division Courses, include a description of the respects in which it is broad and general rather than narrow and specific, and so suitable as GE.

Attach paper copies of the following:
1. Syllabus or course outline.
2. Course's student learning outcomes associated with each GE competency or CD designation.
3. List of strategies to be used to assess students' achievement of each GE competency or CD designation.

### For New Courses

<table>
<thead>
<tr>
<th>Instructional Type:</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course is an elective.</td>
<td></td>
</tr>
<tr>
<td>Course is required for program</td>
<td>Electrical and Computer Engineering Programs</td>
</tr>
<tr>
<td>Pre- or Co-requisites:</td>
<td>EE 467 and Senior Standing</td>
</tr>
<tr>
<td>Other courses are being changed or eliminated. (Explain.)</td>
<td>Addition of EE 234, EE235, EE 106 and EE 107</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course will be offered:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall Semester</td>
<td></td>
</tr>
<tr>
<td>Spring Semester</td>
<td></td>
</tr>
<tr>
<td>Summer Session</td>
<td></td>
</tr>
</tbody>
</table>

Course content or title is similar to courses in other departments. (Attach copy of letter of agreement with other program(s) contacted. Indicate the nature of the discussions and/or resolution of differences or potential conflicts.)

Attach paper copies of the following:
1. Syllabus or course outline.
2. Course's student learning outcomes.
3. A list of resources required to offer and support this course.
4. A description of how teaching this course will affect department staffing.
5. If 400/500 level course, an explanation of added expectations of graduate students.
<table>
<thead>
<tr>
<th>Section</th>
<th>Recommendation</th>
<th>Comments</th>
<th>Signature</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department</td>
<td>X (Recommended)</td>
<td></td>
<td>Willa R. Hudson</td>
<td>10-29-06</td>
</tr>
<tr>
<td>College Curriculum Committee</td>
<td>X (Recommended)</td>
<td></td>
<td>Karen C. Chen</td>
<td>11-6-06</td>
</tr>
<tr>
<td>College Dean</td>
<td>X (Recommended)</td>
<td></td>
<td>Dean</td>
<td>11-6-06</td>
</tr>
<tr>
<td>General Education Subcommittee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undergraduate Curriculum and Academic Policy Committee</td>
<td>X (Recommended)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Faculty Association Graduate Committee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Dean</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Affairs Council</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sr. Vice President and Vice President for Academic Affairs</td>
<td>X (Approved)</td>
<td></td>
<td></td>
<td>4/20/07</td>
</tr>
</tbody>
</table>

Revised September 2002
Tentative Syllabus

Semester: Spring 2007
Course Number: EE 477
Course Title: Principles of Engineering Design II
Course Description: Completion of design projects and reports. Lectures on ethics, issues in contracting and liability, concurrent engineering, ergonomics and environmental issues, economics and manufacturability, reliability and product lifetimes. Lectures by faculty and practicing engineers.
Textbook: No Required Textbooks – reference suggestions will be made during the semester
Prerequisite: Successful completion of EE 467 and Senior Standing
Class Lecture Time: Wednesday 1:00 – 1:50
Class Location: TBD

Instructor: William B. Hudson, Ph.D.
Office: Trafton South 137
Phone: (507) 389-5747
Email: William.Hudson@mnsu.edu
Office Hours: Monday 10:00 – 11:00
TR S135
Tuesday 10:00 – 11:00
Wednesday 10:00 – 11:00
Thursday 9:00 – 10:00

Other times by appointment- Please schedule these with Margaret!

Summary of Points Possible:

Lab Notebooks (reviewed team members 3 times instructor 1 time) 40
Group Meetings with Instructor (3 times - agenda and recap required) 30
Concepts and Requirements Document 30
Project Plan 60
Final Project Presentation 60
Project Functionality 90
Final Project Report 120
Ethics Presentation – must provide an executive summary at time of presentation 30
Design Tool or Instrument Presentation (Video how to and certification activities) 30
Certification of Classmates (5 points per topic) 55
Group Member Assessment (3 and final) Possible grade reduction
Update Memos (4 required) copies must be included in final report 40
Class Activities 30
TOTAL 615

Tentative Grading Scale:
A 605 - 570
B 569 - 540
C 539 – 510
Notes:

You must be registered for the course to receive credit.
Attendance is Mandatory—Not attending this class will result in a failing grade—YOU ARE REQUIRED TO BE IN ATTENDANCE!

You must be present for all activities and turn in all assignments if you want to pass the course. You must participate with your team!!!! All assignments must be completed at or above a 60 percent competency level in order for you to pass this course. If you do not function as part of an effective team you may receive a failing grade for this course!

1 Recap memo in hardcopy due within 72 hours of meeting and must be turned in with a copy of meeting agenda.

Project Approval: Your project must be approved by the course instructor before you begin. This is to make sure that your project contains all of the components necessary to satisfy the course requirements.

Cheating: Cheating will be dealt with in a manner that is consistent with the action. The severity of the penalty may be a simple reprimand or may result in failure of the course. The goal is for you to learn the material. If you are experiencing trouble in the course discuss it with the instructor—learning the material is easier and far more satisfying than cheating.

Documentation: It is expected that documentation and reports for this course will be prepared in a manner that would be acceptable in the work environment.

Promptness: It is expected that assignments and obligations will be accomplished in a fashion that would be acceptable in the work environment. In the event you determine that you will be unable to complete an assigned task on time, let the instructor know in a timely fashion. Timely notification does not guarantee that a due date can be extended—some things just have to be completed as scheduled. It should be expected that late assignments will be penalized at a rate of at least 25% per day. Please plan on turning in all assignments on time.

ADA: It is the intent of the instructor of this course to provide a learning environment that is as conducive to learning and the expression of abilities as is possible. If any student in this course has any condition that requires special accommodation to allow them to master or demonstrate mastery of concepts they are asked to contact the instructor as soon as possible.

Participation: Conduct consistent with ethical and supportive business practices will be expected. In paraphrasing the Sprint Code of Conduct—be on time for meetings—be prepared for meetings—do not interrupt—criticize ideas not people—respect each other—
provide solutions not just problems. It is expected that all of you will give your attention to class – this means that it is expected that you will not be using laptops and other electronic devices during class time.

Incompletes: Incompletes are given for circumstances beyond a student’s control. I don’t interpret this to cover poor planning.

All assignments will be turned in during class with the group number and group members clearly listed. All assignments are expected to be done in a professional manner.

All materials must be provided in electronic form at the end of the semester on a CD – this is in addition to the hardcopies that are required throughout the semester.

**Project Completion Format - Teamwork**

The project completed as if part of a design team. Team members and the course instructor will assess each team member’s contribution to the effort. You must function as a team member in order to pass this course.

**Group Meeting Intents:**

**Group Meeting One**
- Review project selection
- Review project specifications
- Review project timetable
- Determine and approve ethics topics from your suggestions
- Determine and approve design tool from your suggestions
- Evaluate group dynamics
- Other topics as requested

**Group Meeting Two**
- Define competencies for design tool from your recommendations
- Review project status
- Review design for test specifications and project functionality for end of semester
- Group dynamics
- Other topics as requested

**Group Meeting Three**
- Project update
- Review of project functionality form for class evaluation
- Group dynamics
- Debrief on class competency testing
- Project presentation plan
- Other topics as requested
Upon completion of this course, students should demonstrate the ability to:

1. Design and implement a design based on analog, digital and microprocessor systems
2. Function on interdisciplinary design teams and develop assessment skills for evaluation of team members
3. Complete designs with adherence to real world constraints
4. Demonstrate appropriate verbal communication skills through project presentations
5. Demonstrate appropriate written communication skills through project documentation including: Engineering Change Orders, Project Budgets, Project Plans, Testing Plans, Specifications, and Final Project Reports
6. Manage design and development of projects
7. Present, analyze and critique ethics scenarios
8. Prepare an appropriate engineering notebook.
9. Evaluate and document software and hardware trade offs.
10. Design and have manufactured printed circuit boards.
11. Use “tools” that are appropriate to the practice of engineering to include CAE tools for schematic capture, printed circuit board layout and circuit simulation as well as tools associated with “soft engineering” such as word processors and spreadsheets.
Tentative Syllabus

Semester: Spring 2006
Course Number: EE 477
Course Title: Principles of Engineering Design II
Course Description: Completion of design projects and reports. Lectures on ethics, issues in contracting and liability, concurrent engineering, ergonomics and environmental issues, economics and manufacturability, reliability and product lifetimes. Lectures by faculty and practicing engineers.
Textbook: No Required Textbooks – reference suggestions will be made during the semester
Prerequisite: Successful completion of EE 467
Class Lecture Time: Monday and Wednesday 11:00 – 11:50
Class Location: AH 304

Instructor: William B. Hudson, Ph.D.
Office: Trafton South 137
Phone: (507) 389-5747
Email: William.Hudson@mnssu.edu
Lab Hours: Monday 3:00 – 4:30
TR C114
Tuesday 2:00 – 4:00
Wednesday 1:30 – 3:00
Thursday 1:00 – 2:30

Office Hours: Monday 10:00 – 11:00
TR S135
Tuesday 10:00 – 11:00
Wednesday 10:00 – 11:00
Thursday 9:00 – 10:00
Other times by appointment- Please schedule these with Margaret!

Summary of Points Possible:
Lab Notebooks (reviewed team members 3 times instructor 1 time) 40
Group Meetings with Instructor (3 times - agenda and recap required) 30
Concepts and Requirements Document 30
Project Plan 60
Final Project Presentation 60
Project Functionality 90
Final Project Report 120
Ethics Presentation – must provide an executive summary at time of presentation 30
Design Tool or Instrument Presentation (video how to and certification activities) 30
Certification of Classmates (5 points per topic) ~55
Group Member Assessment (3 and final) Possible grade reduction
Update Memos (4 required) copies must be included in final report 40
Class Activities 30
TENTATIVE

Tentative Grading Scale:
A 605 - 570
B 569 - 540
C 539 - 510
D 509 - 470
F below 469

Notes:
You must be registered for the course to receive credit.
Attendance is Mandatory – Not attending this class will result in a failing grade – YOU ARE REQUIRED TO BE IN ATTENDANCE!

You must be present for all activities and turn in all assignments if you want to pass the course. You must participate with your team!!!! All assignments must be completed at or above a 60 percent competency level in order for you to pass this course. If you do not function as part of an effective team you may receive a failing grade for this course!

1 Recap memo in hardcopy due within 72 hours of meeting and must be turned in with a copy of meeting agenda.

Project Approval: Your project must be approved by the course instructor before you begin. This is to make sure that your project contains all of the components necessary to satisfy the course requirements.

Cheating: Cheating will be dealt with in a manner that is consistent with the action. The severity of the penalty may be a simple reprimand or may result in failure of the course. The goal is for you to learn the material. If you are experiencing trouble in the course discuss it with the instructor – learning the material is easier and far more satisfying than cheating.

Documentation: It is expected that documentation and reports for this course will be prepared in a manner that would be acceptable in the work environment.

Promptness: It is expected that assignments and obligations will be accomplished in a fashion that would be acceptable in the work environment. In the event you determine that you will be unable to complete an assigned task on time, let the instructor know in a timely fashion. Timely notification does not guarantee that a due date can be extended – some times things just have to be completed as scheduled. It should be expected that late assignments will be penalized at a rate of at least 25% per day. Please plan on turning in all assignments on time

ADA: It is the intent of the instructor of this course to provide a learning environment that is as conducive to learning and the expression of abilities as is possible. If any student in this course has any condition that requires special accommodation to allow them to master or demonstrate mastery of concepts they are asked to contact the instructor as soon as possible.
Participation: Conduct consistent with ethical and supportive business practices will be expected. In paraphrasing the Sprint Code of Conduct – be on time for meetings – be prepared for meetings – do not interrupt – criticize ideas not people – respect each other – provide solutions not just problems. It is expected that all of you will give your attention to class – this means that it is expected that you will not be using laptops and other electronic devices during class time.

Incomplete: Incompletes are given for circumstances beyond a student’s control. I don’t interpret this to cover poor planning.

All assignments will be turned in during class with the group number and group members clearly listed. All assignments are expected to be done in a professional manner.

All materials must be provided in electronic form at the end of the semester on a CD – this is in addition to the hardcopies that are required throughout the semester.

**Project Completion Format - Teamwork**

The project completed as if part of a design team. Team members and the course instructor will assess each team member’s contribution to the effort. You must function as a team member in order to pass this course

**Group Meeting Intents:**

**Group Meeting One**
- Review project selection
- Review project specifications
- Review project timetable
- Determine and approve ethics topics from your suggestions
- Determine and approve design tool from your suggestions
- Evaluate group dynamics
- Other topics as requested

**Group Meeting Two**
- Define competencies for design tool from your recommendations
- Review project status
- Review design for test specifications and project functionality for end of semester
- Group dynamics
- Other topics as requested

**Group Meeting Three**
- Project update
- Review of project functionality form for class evaluation
- Group dynamics
- Debrief on class competency testing
- Project presentation plan
- Other topics as requested
Week 1
Course Introduction
Review of all course format and grading criteria
(Project overview is due by end of week)

Week 2
Correct tool usage and prototyping techniques
(First group meeting must be completed)(First update memo due)

Week 3
Industry Presentation
(Concepts and Requirements document due)

Week 4
Industry Presentation
(Project plan due) (First Notebook review due)
Surface Mount Technology

Week 5
Surface Mount Technology
(Assessment #1 due)(Second update memo due)
Ethics Presentations

Week 6
Ethics Presentations
(Design Tool video due)

Week 7
Ethics Presentations

Week 8
Product economics
(Assessment #2 due)(Third update memo due)

Week 9
Concurrent Engineering

Week 10
Ergonomics
Product Life Times
(Third Notebook review due)

Week 11
Environmental Issues
(Assessment #3 due)(Final update memo due)
(Third group meeting must be completed)

Week 12
Reliability
Safety

Week 13
Contracting and liability
Project Functionality Presentation

Week 14
Project Functionality Presentations

May 1 (Final assessments due) (Notebooks due to instructor)
Project Functionality Presentations
(Project Reports due)

Week 15
Project Functionality Presentations -- Course Evaluations
Jan 18 - Course Introduction
Jan 23 - Review of all course format and grading criteria

Jan 23 (Project overview is due)
Jan 25 Correct tool usage and prototyping techniques
Jan 30 Correct tool usage and prototyping techniques

Jan 30 (First group meeting must be completed)(First update memo due)
Feb 1 Industry Presentation
Feb 6 TBD

Feb 6 (Concepts and Requirements document due)
Feb 8 Industry Presentation
Feb 8 (Project plan due) (First Notebook review due)
Feb 13 Surface Mount Technology
Feb 15 Surface Mount Technology
Feb 15 (Assessment #1 due)(Second update memo due)
Feb 20 Ethics Presentations
Feb 22 Ethics Presentations
Feb 27 Ethics Presentations

Feb 27 (Design Tool video due)
Mar 1 Ethics Presentations
Mar 6 Ethics Presentations

Mar 6 (Second group meeting must be completed) (Second Notebook review due)
Mar 8 Product economics
Mar 8 (Assessment #2 due)(Third update memo due)
Mar 13 - Spring Break
Mar 15 - Spring Break
Mar 20 Concurrent Engineering
Mar 22 Concurrent Engineering
Mar 27 Ergonomics
Mar 29 Ergonomics
Apr 3 Product Life Times

Apr 3 (Third Notebook review due)
Apr 5 Environmental Issues
Apr 5 (Assessment #3 due)(Final update memo due)
Apr 10 Environmental Issues

Apr 10 (Third group meeting must be completed)
Apr 2 Reliability
Apr 17 Safety
Apr 19 Safety

Apr 19 (Certifications must be complete)
Apr 24 Contracting and liability
Apr 26 Project Functionality Presentation
May 1 Project Functionality Presentations

May 1 (Final assessments due) (Notebooks due to instructor)
May 3 Project Functionality Presentations

May 3 (Project Reports due)

Final Exam Period Thursday May 11 10:15-12:15 Project Functionality Presentations – Course Evaluations
Resources required to support EE477

c. Resources to support this course will result from allocation of existing department resources and with the assistance of the College of Science Engineering and Technology to support and growth and advancement of ECET programs.

d. Staffing resources to support this course will result from allocation of existing department resources and with the assistance of the College of Science Engineering and Technology to support and growth and advancement of ECET programs.