

**UCC/UGC/ECCC**

Proposal for Course Change

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| --- |
| **FAST TRACK (Select if this will** **be a fast track item. Refer to**  [***Fast Track Policy***](http://www4.nau.edu/avpaa/UCCPolicy/Agenda_FastTrack_Consent.docx) **for eligibility)** |

# *If the changes included in this proposal are significant, attach copies of original and proposed syllabi in* [*approved university format*](http://www4.nau.edu/avpaa/UCCForms/syllabus.doc)*.*

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Course subject and number: | EE 476C | 2. Units: | 1 (will be 2 if approved) |

[**See upper and lower division undergraduate course definitions**](http://www4.nau.edu/avpaa/UCCPolicy/Uplow.doc).

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| --- | --- | --- | --- |
| 3. College: | CEFNS | 4. Academic Unit: | Electrical Engineering & Computer Science |

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| --- | --- |
| 5. Current Student Learning Outcomes of the course.   1. Apply the design process to a complex design problem 2. Work effectively in a team with a diverse group of people 3. Communicate effectively orally 4. Communicate effectively in writing 5. Apply technical knowledge to a realistic design project | Show the proposed changes in this column (if applicable). Bold the proposed changes in this column to differentiate from what is not changing, and Bold with strikethrough what is being deleted. *(*[*Resources & Examples for Developing Course Learning Outcomes*](http://www4.nau.edu/avpaa/Assessment/CourseLearningOutcomesPDF_090712.pdf)*)*   1. Apply the design process to a complex design problem 2. Work effectively in a team with a diverse group of people 3. Communicate effectively orally 4. Communicate effectively in writing 5. Apply technical knowledge to a realistic design project 6. **Demonstrate knowledge of cultural differences** 7. **Demonstrate motivation for lifelong learning and an ability to learn independently** |

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| --- | --- | --- |
| 6. Current **title,** **description** and **units**. Cut and paste, in its entirety,from the current on-line academic catalog\* [**http://catalog.nau.edu/Catalog/**](http://catalog.nau.edu/Catalog/).   |  | | --- | | EE 476C Project Design Procedures (1 unit)  Proposal phase for the capstone,  industry-sponsored, team design project.  Proposal includes design and build  documentation. Topics include teaming,  sponsor negotiations, proposal writing, documentation, and computer design and management tools. 3 hrs. lab. Letter grade only. Course fee required | | Show the proposed changes in this column **Bold** the proposed changes in this column to differentiate from what is not changing, and **~~Bold with strikethrough~~**what is being deleted.  EE 476C Project Design Procedures (**~~1~~** **2** unit**s**)  Proposal phase for the capstone,  industry-sponsored, team design project.  Proposal includes design and build  documentation. Topics include teaming,  sponsor negotiations, proposal writing, documentation, **global competency, lifelong learning,** and computer design and management tools. **1 hr lecture,** 3hrs lab. Letter grade only. Course fee required |

\*if there has been a previously approved UCC/UGC/ECCC change since the last catalog year, please copy the approved text from the proposal form into this field.

7. Justification for course change.

Our assessment process and ABET Accreditation has identified a need to expand the content of this class to include global cultural competency and lifelong learning. These added course modules and assignments require more units be added to this class to complete the extra work.

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| --- | --- |
| 8. Effective **BEGINNING** of what term and year? | **Fall 2015** |
| [**See effective dates calendar**](http://www4.nau.edu/avpaa/timelines/1314Effective.xls). |  |

**IN THE FOLLOWING SECTION, COMPLETE ONLY WHAT IS CHANGING**

|  |  |
| --- | --- |
| **CURRENT** | **PROPOSED** |
| Current course subject and number: | Proposed course subject and number: |
| Current number of units:  1 | Proposed number of units:  2 |
| Current short course title: | Proposed short course title (max 30 characters): |
| Current long course title: | Proposed long course title (max 100 characters): |
| Current grading option:  letter grade  pass/fail  or both | Proposed grading option:  letter grade  pass/fail  or both |
| Current repeat for additional units: | Proposed repeat for additional units: |
| Current max number of units: | Proposed max number of units: |
| Current prerequisite: | Proposed prerequisite (include rationale in the justification): |
| Current co-requisite: | Proposed co-requisite (include rationale in the justification): |
| Current co-convene with: | Proposed co-convene with: |
| Current cross list with: | Proposed cross list with: |

9. Is this course in any plan (major, minor, or certificate) or sub plan (emphasis)? Yes  No

If yes, describe the impact. If applicable, include evidence of notification to and/or response

from each impacted academic unit.

The two subplans within the Electrical Engineering BSE degree are increasing by one unit to accommodate this change and the creation of an alternate Capstone Design Sequence, EGR 476C and EGR 486C. This offsets a change made recently when a required class, CS 122 was reduced from 3 to 2 credits.

10. Is there a related plan or sub plan change proposal being submitted? Yes  No

If no, explain.

11. Does this course include combined lecture and lab components?                  Yes  No

If yes, include the units specific to each component in the course description above.

1 unit of lecture and 1 unit of laboratory

**Answer 12-15 for UCC/ECCC only:**

12. Is this course an approved Liberal Studies or Diversity course?                    Yes  No         If yes, select all that apply.   Liberal Studies    Diversity    Both

13. Do you want to remove the Liberal Studies or Diversity designation?            Yes  No

If yes, select all that apply.   Liberal Studies    Diversity     Both

14. Is this course listed in the [**Course Equivalency Guide**](https://aztransmac2.asu.edu/cgi-bin/WebObjects/Admin_CEG.woa/wa/ByInst?inst=NAU)?                               Yes  No

15. Is this course a [**Shared Unique Numbering**](https://aztransmac1.asu.edu/cgi-bin/WebObjects/ATASS.woa/wa/SUNList?S=X) (SUN) course?                            Yes  No

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| --- | --- |
| **FLAGSTAFF MOUNTAIN CAMPUS** |  |
| **Scott Galland** | **2/3/2014** |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals**: |  |
|  |  |
| Department Chair/Unit Head (if appropriate) | Date |
|  |  |
| Chair of college curriculum committee | Date |
|  |  |
| Dean of college | Date |
|  |  |
| **For Committee use only:** |  |
|  |  |
| UCC/UGC Approval | Date |

Approved as submitted: Yes  No

Approved as modified: Yes  No

|  |  |
| --- | --- |
| **EXTENDED CAMPUSES** |  |
|  |  |
| Reviewed by Curriculum Process Associate | Date |
|  |  |
| **Approvals:** |  |
|  | |
| Academic Unit Head | Date |
|  | |
| Division Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Division Administrator in Extended Campuses (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Faculty Chair of Extended Campuses Curriculum Committee (Yuma, Yavapai, or Personalized Learning) | Date |
|  | |
| Chief Academic Officer; Extended Campuses (or Designee) | Date |
|  |  |

Approved as submitted: Yes  No

Approved as modified: Yes  No

**From:** Ramona Doerry   
**Sent:** Thursday, March 27, 2014 8:36 AM  
**To:** Stuart S Galland  
**Cc:** Rosalinda Haddon; Bruce Edward Fox; Corrine J Gordon  
**Subject:** RE: EE 476C unit change

Good morning Scott,

Thank you for forwarding the pending unit change for EE 476 C.  This change doesn’t require the LSC approval, curricular changes belong with UCC rather than LSC.

Best Regards,

Ramona

**---------------------------------**

**Ramona Doerry**

Administrative Associate

University College

(928)523-8559

PO-Box 4150

[ramona.doerry@nau.edu](mailto:ramona.doerry@nau.edu)

**CURRENT 1 UNIT SYLLABUS**



***College of Engineering, Forestry & Natural Sciences***

***Department of Electrical Engineering & Computer Science***

**EE 476C Syllabus for Fall 2012**

**General Information**

Course Title: Project Design Procedures

Semester and Sequence Number: Fall 2012, #2695

Credits: 1 credit hour laboratory

Class Meeting Time and Location:  2:20-4:50 on Tuesday in room 321  
Instructor:   David R. Scott, office in room 258 of Engineering

Email: [David.Scott@nau.edu](mailto:David.Scott@nau.edu)

Office Hours: Posted outside my office  
  
**Catalog Description**:  Proposal phase for the capstone, industry-sponsored, team design project.  Proposal includes design and build documentation.  Topics include teaming, sponsor negotiations, proposal writing, documentation, and computer design and management tools.  3 hrs. lab.  Letter grade only.  Course fee required.  CAP  
  
**Course Description:**   The EE Capstone Design Experience is a one-year capstone learning experience that must be taken over two contiguous semesters. EE 486C is the spring semester section where teams execute the proposal that was approved by their client by doing the detailed design, build, integration, testing and delivery of their project. EE 486C culminates in the Undergraduate Research and Design Symposium (UGRADS) on April 26, 2013. Student teams complete two major client reports, build a website, make two graded presentations and another at UGRADS, and develop a poster for the UGRADS poster session.  
  
**Prerequisite:** (EGR 386W or EE 386W) with a grade of C or better

**Pre- or Corequisite**:  EE 325, (EE 364 or EE 380), and (EE 310 or EE 348) with grades of C or better.

**Textbook**:  *Design for Electrical and Computer Engineers –- - - - Theory, Concepts and Practice* by Ralph M. Ford and Chris S. Coulston   
  
**Optional Resource**s:

* *The 7 Habits of Highly Effective People*, Stephen R. Covey. ISBN 0-671-70863-5
* [Managing Cultural Differences, Eighth Edition: Global Leadership Strategies for Cross-Cultural Business Success](http://www.amazon.com/gp/product/1856179230/ref=wms_ohs_product) , Moran Ph.D., Robert T., Harris, Philip R., Moran MA, Sarah V.

**Course learning outcomes in relation to ABET program learning outcomes**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Course Learning Outcomes | Program Learning Outcomes | | | | | | | | | | | |
| 1 | Apply the design process to a complex design problem | 1 |  |  |  | 5 |  |  |  | 9 |  | 11 | 12 |
| 2 | Work effectively in a team with a diverse group of people. |  | 2 |  |  |  |  |  |  |  |  |  | 13 |
| 3 | Communicate effectively orally |  |  | 3 |  |  |  |  |  |  |  |  |  |
| 4 | Communicate effectively in writing |  |  |  | 4 |  |  |  |  |  |  |  |  |
| 5 | Apply technical knowledge to a realistic design project |  |  |  |  |  | 6 | 7 | 8 |  | 10 |  |  |

**Course learning activities in relation to course learning outcomes**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Learning Activities | Course Outcomes | | | | |
| 1 | Define the project problem | 1 |  | 3 | 4 |  |
| 2 | Research other solutions, technologies, parts and tools that are needed in the design process | 1 |  |  | 4 | 5 |
| 3 | Create requirements, constraints and specifications | 1 |  | 3 | 4 | 5 |
| 4 | Form teams, create bylaws, share information and ideas, and partition workload |  | 2 | 3 | 4 |  |
| 5 | Communicate with clients, vendors and faculty and industry experts |  |  | 3 | 4 |  |
| 6 | Present the project definition, requirements and design concepts in a semiformal design review |  | 2 | 3 | 4 |  |
| 7 | Write individual project contributions for the team and instructor. | 1 | 2 |  | 4 |  |
| 8 | Write extensive team reports. | 1 | 2 |  | 4 | 5 |
| 9 | Write an essay on global competency |  | 2 |  | 4 |  |
| 10 | Write an essay on the design process and relate details of the steps your team went through | 1 |  |  | 4 |  |
| 11 | Utilize design, simulation and programming tools in the design process. | 1 |  |  |  | 5 |
| 12 | Utilize knowledge of mathematics, circuits, physics, etc. in the design process | 1 |  |  |  | 5 |

**Grading:**

The final grade for each individual will be influenced by both individual and team assigned work and reports. It will also be influenced by sponsor evaluations, faculty evaluations, and individual team member peer evaluations. Peer/sponsor/adviser evaluations can have a significant impact on an individual’s final grade. All such evaluations are considered confidential.

Your grade will be based upon a point scoring system outlined below. Grade cutoffs will be no higher than 90% for an A, 80% for a B, 70% for a C and 60% for a D. Deductions will be 10% for up to a week late, 20% for more than a week and no credit for more than two weeks, unless otherwise indicated below.

* Skills Matrix (50 points)
* Team and Project Memo (50 points)
* Essay on global competency (draft 75, peer review 25, final 50)
* Biweekly individual project status reports (50 points each, 4-6 reports)
* Midterm Client Status Document (300 draft, 200 final) – normal late penalties except 30% deducted for more than two weeks.
* Peer/Sponsor/Adviser Evaluation #1 (200)
* Website Splash Page (100 points)
* Proposal Presentation (200 points)
* Final Report (300 draft, 200 final) – normal late penalties except 30% deducted for more than two weeks.
* Peer/Sponsor/Adviser Evaluation #2 (200 points)
* Reflective Essay Final (due 2:30pm on 12-13-12, 200 points) – 10% if late up to two days and no credit if later than two days.

**Class Participation:**

If you cannot attend class, you must notify the instructor before class (by phone (523-3162) or by email (David.Scott@nau.edu)) to be exempted from that day’s activities without penalty. Poor attendance in class and/or in team meetings will affect your grade via the peer and instructor evaluations.

**Class Etiquette:**

Be on time for the start of class and appointments outside of class. Apologize if you were late. Do not leave class early, except in an emergency or with prior permission from the instructor. If you know you have to leave early, sit by the door and try not to disturb the class when you leave. Be an active participant in class by following along, taking notes, thinking, asking and responding to questions and contributing to collaborative activities. If you have a cell phone or beeper, please turn it to silent mode. You should not make calls during class.  You should not speak or text message in the classroom when other groups are present. In an emergency or if you and your team agree to take a short break, you may make short phone calls outside the classroom so that you do not distract others who are working.

**Honesty:**

Choose high ethical standards because you are an engineering professional in training. Inform me (anonymously is fine) of any dishonest behavior so I can take appropriate steps to ensure fairness to the class.

**Emergency Evacuation:**

In the event of an emergency, leave your books and put on your coat and quickly leave the building by the nearest exit. Meet for further instructions in front of the Engineering building near the nose sculpture. If you may have difficulty evacuating the building, let your instructor know so that you can receive assistance. Follow the instructions of floor monitors wearing orange vests or of fire department personnel.

**University Policies:**

The Safe Environment, Students with Disabilities, Institutional Review Board, Academic Integrity, Academic Contact Hour, Classroom Management and Professional Ethics and Code of Conduct policies are available at <http://www4.nau.edu/avpaa/policy1.html>

**PROPOSED 2 UNIT SYLLABUS**



***College of Engineering, Forestry & Natural Sciences   
Department of Electrical Engineering & Computer Science***

**EE 476C Syllabus for Fall 2015**

**General Information**

Course Title: Project Design Procedures

Semester and Sequence Number:

Credits: 1 unit lecture and 1 unit two hour laboratory

Class Meeting Time and Location: 2:20-4:50 on Thursday in room 321

Instructor: David R. Scott, office in room 258 of Engineering

[Email:](mailto:David.Scott@nau.edu%20) David.Scott@nau.edu

Office Hours: Posted outside my office

**Catalog Description**:

Proposal phase for the capstone, industry-sponsored, team design project. Proposal includes design and build documentation. Topics include teaming, sponsor negotiations, proposal writing, documentation, global competency, lifelong learning, and computer design and management tools. 1 hr lecture, 3 hrs. lab. Letter grade only. Course fee required. CAP

**Course Description:**

The EE Capstone Design Experience is a one-year capstone learning experience that must be taken over two contiguous semesters. EE 486C is the spring semester section where teams execute the proposal that was approved by their client by doing the detailed design, build, integration, testing and delivery of their project. EE 486C culminates in the Undergraduate Research and Design Symposium (UGRADS) on April 24, 2015. In EE 476C, student teams complete two major client reports, begin building a website, give one graded presentations along with other smaller assignments as detailed in the grading section of this syllabus

**Prerequisite:** (EGR 386W or EE 386W) with a grade of C or better

**Pre- or Corequisites**: EE 325 and (EE 364 or EE 380) and (EE 310 or EE 348) with grades

of C or better if a prerequisite.

**Textbook**:

*Design for Electrical and Computer Engineers* –*- - - - Theory, Concepts and Practice* by Ralph M. Ford and Chris S. Coulston

**Optional Resource**s:

 *The 7 Habits of Highly Effective People*, Stephen R. Covey. ISBN 0-671-70863-5

* Managing Cultural Differences, Eighth Edition: Global Leadership Strategies for Cross-Cultural Business Success , Moran Ph.D., Robert T., Harris, Philip R., Moran MA, Sarah V.

**Course learning outcomes in relation to ABET program learning outcomes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Course Learning Outcomes | Program Learning Outcomes | | | | | | | | | | | | |
| 1 | Apply the design process to a complex design problem |  |  |  | 4 |  |  |  |  |  |  |  |  |  |
| 2 | Work effectively in a team with a diverse group of people. |  |  |  |  | 5 |  |  |  |  |  |  |  |  |
| 3 | Communicate effectively orally |  |  |  |  |  |  |  | 8 |  |  |  |  |  |
| 4 | Communicate effectively in writing |  |  |  |  |  |  |  |  | 9 |  |  |  |  |
| 5 | Apply technical knowledge to a realistic design project\* | 1 | 2 | 3 |  |  | 6 | 7 |  |  | 10 |  |  | 13 |
| 6. | Demonstrate knowledge of cultural differences |  |  |  |  |  |  |  |  |  |  | 11 |  |  |
| 7. | Demonstrate motivation for lifelong learning and an  ability to learn independently |  |  |  |  |  |  |  |  |  |  |  | 12 |  |

\*not every project may involve all of these outcomes

**Course learning activities in relation to course learning outcomes**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Learning Activities | Course Outcomes | | | | | | |
| 1 | Define the project problem | 1 |  | 3 | 4 |  |  | 7 |
| 2 | Research other solutions, technologies, parts and tools that are needed in the design process | 1 |  |  | 4 | 5 |  | 7 |
| 3 | Create requirements, constraints and specifications | 1 |  | 3 | 4 | 5 |  | 7 |
| 4 | Form teams, create bylaws, share information and ideas, and partition workload |  | 2 | 3 | 4 |  | 6 |  |
| 5 | Communicate with clients, vendors and faculty and industry experts |  |  | 3 | 4 |  | 6 |  |
| 6 | Present the project definition, requirements and design concepts in a semiformal design review |  | 2 | 3 | 4 |  |  |  |
| 7 | Write individual project contributions for the team and instructor. | 1 | 2 |  | 4 |  |  |  |
| 8 | Write extensive team reports | 1 | 2 |  | 4 | 5 |  |  |
| 9 | Write an essay on global competency |  | 2 |  | 4 |  | 6 |  |
| 10 | Write a final exam essay on the design process and the realistic constraints involved in a project design | 1 |  |  | 4 |  |  |  |
| 11 | Utilize design, simulation and programming tools in the design process | 1 |  |  |  | 5 |  |  |
| 12 | Utilize knowledge of mathematics, circuits, physics, etc. in the design process | 1 |  |  |  | 5 |  |  |

**Grading:**

The final grade for each individual will be influenced by both individual and team-assigned work and reports. It will also be influenced by sponsor evaluations, faculty evaluations, and individual team member peer evaluations. Peer/sponsor/advisor evaluations can have a significant impact on an individual’s final grade. All such evaluations are considered confidential.

Your grade will be based upon a point scoring system outlined below. Grade cutoffs will be no higher than 90% for an A, 80% for a B, 70% for a C and 60% for a D. Deductions will be 10% for up to a week late, 20% for more than a week and no credit for more than two weeks, unless otherwise indicated below.

* Skills Matrix (50 points)
* Team bylaws and Project Memo (50 points)
* Essay on global competency (draft 25, peer review 25, final 100)
* Individual project status reports (50 points each, 4-6 reports)
* Lifelong learning research assignment (100) and peer evaluation (50)
* Midterm Client Status Document (200 draft, 150 final) – normal late penalties except 30% deducted for more than two weeks
* Client Proposal Document (250 draft, 200 final)
* Peer/Sponsor/Advisor Evaluation #1 (200)
* Website Splash Page (100 points)
* Proposal Presentation (200 points)
* Final Proposal (250 draft, 200 final) **–** normal late penalties except no credit beyond last day of finals.
* Website Content Check (100 points)
* Peer/Sponsor/Advisor Evaluation #2 (200 points)
* Final Exam Essay on the Design Process and Realistic Constraints (200) **–** 10% late penalty if turned in through the day of graduation (no credit for both the reflective essay and/or peer evaluation if turned in after graduation).

**Class Schedule:**

Due dates for assignments will be set during the semester

**Weekly Schedule:**

Week One: Evaluation of knowledge and skills, begin forming teams

Week Two: Global cultural competency

Week Three: Projects presented, students and teams select projects

Week Four: Projects assigned, design process presented, teams create bylaws and project reports assigned

Week Five: Lifelong learning and research on project

Week Six: Draft Client Status Report due

Week Seven & Eight: Begin next phase in design process, turn in final Client Status Report, 1st Peer evaluation

Week Nine and Ten: Begin website, continue project

Week Eleven: Draft proposal due

Week Twelve: Proposal Presentations

Week Thirteen and Fourteen: Final proposal due and Website Content Check

Week Fifteen: End of Term Week

Final Week: Complete Design Process Essay and 2nd Peer Evaluation

**Class Participation:**

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