ECE496 – Design Project Information & Sign-up Session

Thursday, February 12, 2009

Contents:

- Presentation slides
- Supplementary Handout
ECE496 – Design Project Information & Sign-up Session

ECE496 Administrators
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Thursday, February 12, 2009

Outline
- Course Description
- Course Deliverables & Deadlines
- Support Resources
- Design Process
- Suggestions for the Summer
- Signing up for a project
- Question and Answer
- Sign-up session

Course Description
- A full-year umbrella course for all fourth-year design projects. Full course weight for 2 terms.
- Propose a project and carry it out to completion.
- Teams of 2 to 4 students
- Goals are to help students to:
  1. Integrate their technical knowledge.
  2. Communicate their ideas and work.
  3. Develop team work and project management skills.
  4. Gain practical experience in specific fields.

2009 Design Fair (Mar. 31-Apr 2, 2009)
- At the Design Centre (SFB520) & Power Lab GB040
The 2007 Design Fair

- Videos of past projects
  - Design Fair 2007 highlights
  - 2008 Aloha Award Winner: Mixing and Scratching MP3 Player

Group Discussion

- By yourself, think of a possible project and identify one significant aspect of it
- In a group of 3
  - Pick one of your projects
  - How would you sell it to a sponsor/client?
  - What would your final demonstration look like?

ECE496 Roadmap, Milestones & Deliverables

Support Resources

- 2009-2010 ECE496 website: http://int.ece.utoronto.ca/ece496.0910
- Your supervisor
- Your administrator
- The Supervisor’s Almanac
- The Design Centre (SFB520)
- Funding: OCE Connections and the department Design Project Fund
- Accessing ECE496 Website via UofT Portal:
  1. Log-in to UofT portal. You will need your utorid and password.
  2. On the main portal page, click on the ‘Community’ tab at the upper right, then look for the “Organization Search” box on the left side. Search for ‘ECE496’.
  3. The entry ‘ECE496-SUMMER’ should come up. Click on the “Enroll” button on the right side. Enter the access code ‘capstone0910’ (no quotes) and click the ‘submit’ button. The organization should then be available to you off the Portal in the future when you click the “My Page” tab at the upper right.
Your Supervisor and Administrator

- The 'expert client'
- Defining the problem
- Getting the technical details 'right'

- Marking consistency
- Engineering design & project planning
- Effective technical communication

Supervisor's Almanac

- Available on website under ‘Supervisors’ or URL
  http://int.ece.utoronto.ca/ece496.0910/UpdateYearly/Almanac.pdf
- Useful for keeping track of dates and design process

Supervisor’s Almanac

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Table of Contents

- You are an Important Part of the ECS496 Instruction...
- Student Coordinator
- ECS496 Instructions
- Course Objectives
- Course Policies
- Course Delivery
- Other Support Resources
- The ‘expert client’
- Defining the problem
- Getting the technical details 'right'
- Effective technical communication
- The ‘expert client’
- Defining the problem
- Getting the technical details 'right'

Design Centre

- Sandford Fleming, room B520
- Borrow equipment, computers, lockers, PCB CAD tools, soldering station and microscope, wireless transceivers, etc.

Funding Requests

Funding from industrial sponsors - most attractive
- a six-fold increase in cash contributions:
  - Example:
    - Cash and in-kind contributions from company (e.g. $100 cash + $100 in tech support = $200)
    - Matched by U of T/Design Centre (add $200)
    - Matched by OCE (add $200)
    - Effective support for project = $600 (plus student contributions)
Funding from industrial sponsors (cont)

- Support letters required from sponsor. Samples posted.
- Must have a cash component. In-kind contributions cannot exceed cash portion.
- Intended for purchases of materials, 'components' (e.g. wireless transceiver), contract services, even travel expenses, but not for big capital purchases (e.g. PC's, oscilloscopes)
- Details on website under 'Students' -> 'Budget & Funding'

Awards

- ALOHA Award ($10,000)
- Gordon E. Slemon Design Award ($1k)
- Centennial Thesis Awards (2)

Design Process (from ECE298)

- Provides a road map from Start-to-Finish

Design Process Cont'd

- Determine Main Project Goal
- Requirements Analysis
- Risk Assessment
- System Design
- Sys. Tests
Design Process

Module Design, Build & Test
- System Tests
- System Specification
- Requirements Specification

Detailed Design
- Design Specification
- Module Tests

Process Reports
- Module Synthesis
- Module Test / Verify
- Working Modules

System Integration & Test
- Working Modules
- System Integration
- System Test & Verify
- System for Delivery

Final Report

Design Fair Demonstration

Design Process

Managing your project:
Develop a work plan and track each team member's progress

System Integration

Suggestions for the summer
- Start thinking about your project now.
- Sign up for a project before the end of the semester.
  Why? Since you need to:
  - Find a supervisor & a project that interests you before they are taken. Note: supervisors only need to take 6 students.
  - Form a team of people whom you are comfortable to work with.
  - Start research and explore potential solutions.
  - Buy time for your school year.
- Advice from past students
Finding a Partner

- “Meet and Greet” after tonight’s lecture
- Discussion board on ECE496 Blackboard site
- List of available students on website under ‘Registration’ -> ‘Need a partner/project?’

Finding a Project

- Proposed by students, supervisors, or industry
- Types of projects seen in the past:
  - Projects that implement, extend or combine technologies.
  - Projects that are in the supervisor’s research area, some of which involve actual research.
  - Interdisciplinary projects (sometimes with students from other departments).
  - Competition projects.
  - Industrial-based projects.

Project Listings Page

- Available Projects are posted on the Projects Listing page on ECE496 website under ‘Registration’
- Projects provided by professors, and students (email your postings to ask496@eecg.utoronto.ca)
- Check back regularly

Sign Up Process

- Find a project, find a supervisor, form a team. The supervisor must approve the project and the project must still be open if you select one from the website!
- Kelly Chan handles project registration (email: ask496@eecg.utoronto.ca, office: Annex EA316)
- Send a copy of supervising Professor’s email to ask496@eecg. This closes the project on the website.
- Complete and sign the registration form together with your supervisor. Return the form to EA316.
  
  **Note:** This project may be reopened if this registration is delayed. Until all three steps are complete you are not guaranteed the project!!
Notes about the signup process

- If you are enrolled for PEY, even if you do not have a job, you may NOT register for a '496 project. You must withdraw formally from PEY before registering. [Likewise for anyone else who is not registering in 2009-2010]
- Once you register, you may not change.
  - Note: Most supervisors allow some changes in the project that is allowed.

Lastly: What will this do for me??

- Employers focus on this work during job interviews.
- Supervisor and administrators know about you for references.
- Grad work might follow from this work.
- It is a chance to be creative about something you select.
- It helps to prepare you for the workplace…

Questions and Answers

Sign-up: Finding Partners and Projects

- Fill out form or e-mail to ask496@eecg.utoronto.ca your contact information, areas of interest, potential projects, and supervisors
List of Potential Supervisors

<table>
<thead>
<tr>
<th>Category</th>
<th>Supervisors</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOMEDICAL/PHOTONICS/MEMS/ROBOTICS/CHEMICAL/NANO</td>
<td>Bardakjian/ Truong/ Wong/ Helmy/ Qian/ Sun/ Ruda/ Emami/</td>
</tr>
<tr>
<td>COMMUNICATIONS/ELECTROMAGNETICS</td>
<td>Hatzinakos/ Jacobsen/ Kschischang/ Lim/ Plataniotis/ Eleftheriades/ Hum/ Mojahedi/ Sarris</td>
</tr>
<tr>
<td>SOFTWARE</td>
<td>Abdelrahman/ Arzal/ Goel/ Li/ Lie/ Steffan/ Stumm</td>
</tr>
<tr>
<td>COMPUTERS/ELECTRONICS</td>
<td>Anderson/ Brown/ Chow/ Moschovos/ Rose/ Najm/ Veneris/ Zhu Genov/ Gulak/ Ng/ Sheikholeslami</td>
</tr>
<tr>
<td>POWER/ENERGY/CONTROL</td>
<td>Dawson/ Iravani/ Lehn/ Prodic Maggiore/ Francis</td>
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ECE496 Course Information 2009-2010

ECE496Y is a full-year umbrella course for all fourth-year design projects. It is a requirement for all fourth-year electrical and computer engineering students, allowing them to integrate the knowledge acquired over the first three years of study in the context of project proposed either by the student or by a supervisor. For the first time in your undergraduate program, you are required to propose a project and carry it out to completion. Teams with a minimum of two students and a maximum of four will be working on the common project but individual team members will be required to take on responsibilities for specific work for which each will be held accountable. That is each person will receive an individual mark for his/her work performed in the project.

Course Roadmap, Milestones, & Deliverables
In total, there are 5 deliverables that count toward the final grade:

- Group Project Proposal - A initial plan for your work
- Individual Progress Reports - reports describing interim work
- Group Oral Presentation - An oral presentation of the project
- Group Design Fair Poster Presentation - Poster presentation and demonstration
- Group Final Report - A final report on the project
Support Resources:

- Your Supervisor
- Your Administrator
- The Design Centre (SFB520)
- Funding: Project Fund
- 2009-2010 ECE496 website: [http://int.ece.utoronto.ca/ece496.0910](http://int.ece.utoronto.ca/ece496.0910)
- OCE Connections and the Design
- ‘ECE496 Summer’ Organization site on UofT Portal (see below)

References:

- Design Project Supervisor’s Almanac – use to keep track of dates and design process. Available at [http://int.ece.utoronto.ca/ece496.0910/UpdateYearly/Almanac.pdf](http://int.ece.utoronto.ca/ece496.0910/UpdateYearly/Almanac.pdf)
- P. Anderson, ECE298 system design course notes – available off Blackboard under the ‘ECE496- Summer’ Organization Group (see later).
  - Available at U of T bookstore
  - Copies available from sign out desk in Engineering Library for 2-hour loan. Call number TK7867 S235.

ECE496 on UofT Portal (Blackboard)

The actual course website will not be open until ROSI is ready in the fall, but in the meantime there is an "organization" in Blackboard with a discussion board which can be used to find partners, a link to the course information menu with the list of projects and a copy of the ECE298 systems design notes.

To get to the site:

1. Log-in to UofT portal. You will need your utorid and password.
2. On the main portal page, click on the 'Community' tab at the upper right, then look for the "Organization Search" box on the left side. Search for 'ECE496'.
3. The entry 'ECE496-SUMMER' should come up. Click on the "Enroll" button on the right side. Enter the access code 'capstone0910' (no quotes) and click the 'submit' button (Please do not distribute this access code.) The organization should then be available to you in the future when you click the "My Page" tab at the upper right.
Finding a Project

Your first responsibility in this course is to sign up for a project. You should do that as early as possible. There are different types of projects:

- Proposed by students, supervisors, or industry
- Types of projects seen in the past:
  - Projects that implement, extend or combine technologies.
  - Projects that are in the supervisor’s research area, some of which involve actual research.
  - Interdisciplinary projects (sometimes with students from other departments).
  - Competition projects.
  - Industrial-based projects.
- Available Projects are posted on the Projects Listing page on ECE496 website under ‘Registration’

Tip: Form your team before approaching your supervisor. Experience has shown that projects close earlier if the supervisor is approached by a group rather than by an individual. If you sign up as an individual rather than as a group, you will delay the start of your project as you have to wait for a partner. Returning PEY students need to be aware of this issue and make contact with other potential group members before contacting the professor. You should use the Student's Bulletin Board on Blackboard to join a group or get others to join yours.

Sign Up Procedure

- Find a project, find a supervisor, form a team. The supervisor must approve the project and the project must still be open if you select one from the website!
- Kelly Chan handles project registration (email: ask496@eecg.utoronto.ca, office: Annex EA316)
- Send a copy of supervising Professor’s email to ask496@eecg. This closes the project on the website.
- Complete and sign the registration form together with your supervisor. Return the form to EA316.

*Note: This project may be reopened if this registration is delayed.*

NOTES:

- If you are enrolled for PEY, even if you do not have a job, you may **NOT** register for a ‘496 project. You must withdraw formally from PEY before registering. [Likewise for anyone else who is not registering in 2009-2010]
- Once you register, you may not change.
  - *Note: Most supervisors allow some changes in the project that is allowed.*
**Budgets**

Each student is required to submit a budget and to cover the first $100 of project expenses. For example, a 3-person team would be required to cover $300. A projected budget in excess of $100/student should be discussed with the supervisor and approved by the course coordinator at the time the proposal is submitted.

Additional Funding support is available. Refer to the ECE496 website under ‘Students’ ->’Budget & Funding’

**Intellectual Property Rights**

As long as the students or supervisors do not sign any agreement with a participating or contributing company, then the students would retain ownership of the copyright and intellectual property (IP) arising from the project. If they used University facilities or resources to carry out their project, then it would be subject to the University's Inventions Policy. If a participating or contributing company wishes the student or supervisor to sign any agreement, i.e. confidentiality, employee waiver, etc. then it should first be vetted through the Technology Transfer Office at the University of Toronto. It is especially important that the students understand this if they are working on site at a company. Intellectualy Property contributed by the Company remains the company's. IP that is created by a student, would be governed by the University's Inventions Policy, which allows the student to take ownership in consideration for a 25% share of commercial revenue to the University.

**Resolving Conflicts**

In completing your project, you will be faced with numerous difficulties one of which could be resolving conflicts with a team member or your supervisor.

**Conflict with a team member**

At the beginning of September or preferably before the beginning of September, team members should decide on what each member will contribute to the project as a whole. In some cases one of the team members does not shoulder his or her responsibility or is domineering. These sorts of issues should be resolved amongst the team members quickly and not some time during the second term. The following procedure is recommended for dealing with this type of conflict:

1. Try to resolve the issue amongst yourselves first.
2. Failing this, approach your supervisor either as a group or individually and bring this to the attention to him or her.
3. Approach the administrator for your section if there appears to be no resolution to the conflict. The initiative should come from your supervisor and not from the group.

Conflict with a supervisor
As students, you are within your rights to demand office hours with your supervisor. We would recommend that you meet with your supervisor once a week or at least once every two weeks. It is in your interest to provide a short summary of what you have accomplished in the previous week(s) and where you hope to be in the weeks to come to your supervisor. This will help your supervisor guide you throughout the course. In almost all circumstances we find that the supervisors provide good guidance. Unfortunately there are cases where this does not happen in which case we would recommend that you follow the following course of action.

Indicators of a problem:
1. Supervisor does not show up for scheduled meetings.
2. Supervisor does not respond to the student’s emails or does not make himself or herself available.
3. Supervisor has not read the rules and instructs you to do things that contravene the rules.
4. In the case of an industrially sponsored project, the supervisor delegates responsibility to the industry partner and does not recognize that the objectives of the course are in conflict with the objectives of the company.
5. The team relies on deliverables from a company where the lead times are very long and the chances that the deliverables are delayed are high. Deliverables can mean parts or certain services that the company or individual would offer.

The following procedure is recommended for resolving conflicts that fall into one of the five categories mentioned above:
1. Approach the supervisor and remind him/her of the course rules.
2. Recognize when a company directive contravene the course rules and bring this immediately to the attention of your supervisor.
3. Recognize when stated deliverables by a company could jeopardize your goals towards completing your project and make the supervisor aware of the situation.
4. If the supervisor does not respond adequately to items 1-3 then bring the problem immediately to the attention of your course administrator.
# ECE496 Website – Site Map

## Introduction
- * Course Description
- * Project Categories
- * Course Administrators

## Students
- * Schedules and Deadlines
- * Grading
- * Course Deliverables
  - Deliverables Summary
  - Project Proposal
  - Design Review
  - Individual Progress Reports
  - Oral Presentations
  - Final Report
- * Design Fair
- * Report Submission
- * Budgets & Funding
- * Awards
- * Personal Conflicts
- * Intellectual Property
- * Health and Safety
- * ECE Design Centre
- * Other Resources

## Supervisors
- * Supervisor's Almanac
- * Online Report Library
- * Online Report Library
- * Responsibilities
  - Student
  - Supervisor
  - Administrators
    - Sect 1 Administrator
    - Sect 2 Administrator
    - Sect 3 Administrator
    - Sect 4 Administrator
    - Sect 5 Administrator
    - Sect 6 Administrator
    - Sect 7 Administrator
- * Communication Centre
  - Design Centre Technician
- * Budget & Funding Request
- * Business Services Coordinator
- * Webmaster

## Sponsors
- * Sponsors

## Registration
- * Project Listing
- * Sign-Up Procedure
- * Registration form
- * PEY withdrawal form
- * Need a partner?
- * What Section am I in?