Dalhousie University
Department of Electrical & Computer Engineering
ECED 3901 – Design Methods II
Course Outline
May 4, 2015

NOTE: This course outline is based almost entirely on work by Dr. Sara Stout-Grandy, the previous instructor for this course.

1. Course Content

This course will cover the more advanced aspects of electrical engineering design, inter-disciplinary design and failure analysis. Students will gain experience in the design of complex systems. A major component of the course is a design contest in which students, in groups of two, must design and implement a system to meet a stated contest challenge. The course will consist of both classroom and lab work. The lab component is devoted to the design and implementation of a solution to the contest challenge. The class room component will review the design process and cover the topics relevant to the design contest.

2. Lecture Topics & Approximate Dates

May-04	1	Kick Off
May-07	NO CLASS	
May-11	2	Design Process
May-14	3	Project Management
May-18	NO CLASS	
May-21	4	Motor Controller #1
May-25	5	Motor Controller #2
May-28	6	Software Design #1
Jun-01	7	Software Design #2
Jun-04	8	Sensors #1
Jun-08	9	Sensors #2
Jun-11	10	Navigation #1
Jun-15	11	Navigation #2
Jun-18	12	Signal Conditioning #1
Jun-22	13	Signal Conditioning #2
Jun-25	14	A/D Converters
Jun-29	15	PCB Design, Layout, Ordering
Jul-02	16	Filters
Jul-06	17	Integration/Testing #1
Jul-09	18	Integration/Testing #2
Jul-13	19	Wired Networking
Jul-16	20	Wireless Networking

3. Course Load

The course load per week is estimated at 3 hours of lecture, 3 hours in the laboratory, 3 hours for assignments and out-of-class design & development work.

4. Course Kit

Instead of purchasing a textbook, this course requires that each student purchase a "kit" of parts for the construction of the prototype system that is the focus of the design challenge. The kit costs are included in the course fees.

There is a manual on the course website that discusses some of the topics covered in this class. The manual was written by Dr. Gregson, a professor who taught this course for many years. Where appropriate, I will reference the manual in my teaching.

Much of the material used is also based on work by Dr. Sara Stout-Grandy, who previously taught this course.

5. Course Website

The main course website is part of the OWL (BbLearn) system, which you should see identified as "*ECED 3901 – Electrical Engineering Design II – 2015 Summer*" in your dashboard. The technologists also have access as builders to this website and will, from time to time, upload some information for you.

The website will have the course calendar, announcements, all your assignments, labs, application notes, some datasheets, Powerpoint lecture notes, spice models, software links, and many more things that you will no doubt find useful.

Note some material will be mirrored onto a second (public) course website at http://colinoflynn.com/teaching/eced3901-design-methods-ii/ . This public site will also include links to various additional material such as the github repository for this course, and YouTube videos of certain lectures. Be aware the BBLearn is the only official website, and will be used for course announcements, assignments, etc.

YOU ARE REQUIRED TO REGULARLY CHECK THE BBLEARN SITE SO ENSURE YOU HAVE ACCESS NOW

6. Evaluation

There is no exam for this course. Grades are based on a variety of reports, exercises, labs, the robot competition, and a presentation on your experience. The following gives a breakdown of the marking scheme:

Grade	Points
Progress Report	15
Final Report	25
Lab Mark	25
Assignment Mark	15
Competition Mark	15
De-Briefing Presentation	5

7. Laboratory Time

There will be one 3hr laboratory period each week. During lab time, students will perform the required lab work or design & implement a system to meet the contest challenge, as appropriate.

Labs will be performed in groups of two. Each group will submit one laboratory report for each of the five laboratory sessions. You may be required to have TAs sign off on your laboratory work so it is **critical you come to the assigned lab time to avoid losing marks**.

8. Assignments

There will be four assignments, which are to be completed and submitted by each student. Assignments are tightly integrated with lecture material and are relevant to the design contest. To complete the assignments, students will be required to seek information from external sources such as the internet, specification sheets, application notes, text books, etc.

9. Progress Reports

One progress report and one final report are required to capture the design process. Each group will submit the two reports. All reports must follow the required report format (see the Robot competition Notes) and show a high level of engineering professionalism. Details of the report contents & format will be outlined in advance of the submissions.

10. De-Briefing Presentation

On July 27, all groups will be expected to deliver a de-briefing of their project and experience. The de-briefing will be a short presentation in front of the class and will be worth 5 points towards the final grade. The presentation should be no longer than 5 minutes and should very briefly cover what was learned from the experience (what worked well, what didn't, what was the biggest source of

learning, what changes would be made if this project were to be undertaken again, what transferable skills were acquired, what aspects of the competition could be improved for future years, what were the biggest frustrations, etc...). The De-Briefing will be graded on the professionalism and preparation of the presentation.

11. Critical Dates

May 4, 2015: First Class
May 11, 2015: First assignment distributed
June 22, 2015: Progress Report Due
July 24, 2015: Robot Competition **All Day** (NB: Date subject to confirmation still)
July 27, 2015: Final Presentations including Final Report due

12. Deadlines

All submissions must be made to the ECED3901 Mail Slot at the Electrical and Computer Engineering Department Office at the agreed upon time on the deadline date. Electronic submissions through BBLearn may be accepted for certain assignments or labs. This will be discussed later.

Late submissions will not be allowed, subject to extenuating circumstances.

13. Contacting the Instructor

There are many methods of getting help and/or clarification from the instructor, including:

- Asking questions in class or during the labs.
- Meeting with the instructor during office hours: Room C105, 10:30am-11:30am on Thursdays
- Sending an email to the instructor (coflynn@dal.ca – DO NOT use any other email address)

14. Plagiarism

All work in this course is to be your individual or group work as appropriate and as assigned. You are expected to make yourself familiar with the Dalhousie University Policy on Plagiarism which is located at: http://plagiarism.dal.ca. Copying other's work will not be tolerated (including plagiarism off the web). If you make extensive use of another's work, give proper attribution for it in a reference or bibliography.