INSE 6411 Product Design Theory and Methodology

1. General Information

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- Office: EV7.628, extension 3307, andrea@ciise.concordia.ca
- Office hours: Tuesdays from 16:30 to 17:30 in EV7.647 or by appointment
- Course web: http://users.enss.concordia.ca/~andrea/inse6411.html

2. Course Description

The course concentrates on the fundamental concepts, theory, methodology and procedures related to the design of mechanical/manufacturing systems and to the design process. At the same time it presents a step-by-step development of a design method that will lead the students from the realization that there is a design problem to a solution ready for manufacture and assembly.

3. Course Content

- Introduction to design problems and the design process
- Design project definition and planning
- Product development process
- Opportunity identification
- Introduction to design theory and methodologies
- Customer needs and product specifications
- Design concept generation
- Design problems, resolution of design conflicts
- Design concept evaluation
- Design concept selection
- Design concept testing
- Product design and generation, parts identification
- Design for X (cost, manufacture, assembly, etc.)
- Prototyping and product launching, intellectual property rights
- Product design and development economics
4. Course Schedule

Lectures: Tuesdays from 17:45 to 20:15
Room: H-521

5. Course Materials

- Textbooks:
  - *The Mechanical Design Process* (3rd ed.) by David G. Ullman
  - Additional reading material

- Other references:

6. Grading

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Quiz I.</td>
<td>20%</td>
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<tr>
<td>Quiz II.</td>
<td>20%</td>
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<tr>
<td>Final design project</td>
<td>30%</td>
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<tr>
<td>Assignments</td>
<td>25%</td>
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<tr>
<td>Active participation</td>
<td>5%</td>
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- In the event of extraordinary circumstances the content and/or evaluation scheme in this course is subject to change.
Quiz I. (20%)
- Midterm exam is optional: if you write the midterm then it can count towards your final mark if it will improve your mark. If you do not write it or do not do well in it, then it will not be included in your final mark.
- Midterm exam will cover all the material given before the exam
- It will be closed book exam. No formula sheet will be provided.

Quiz II. (20%)
- Final exam is obligatory, you have to write the exam in order to pass the course
- If you do not write or do well in the midterm exam then the result of the midterm will not be considered in your final score, but the final exam will in this case account for 40% of your total mark
- Final exam will be comprehensive and will cover all the material given during the course.
- It will be closed book exam. No formula sheet will be provided.

Assignments (25%)
- There will be three assignments of the following types: textbook topic type, case study type and research article type. They will typically involve a presentation in front of the class and they will usually require a report submission.
- For each assignment, there are specific instructions, submission deadlines and evaluation criteria provided in separate documents. The assignments submitted late will be accepted, but the late submission will be reflected in the evaluations.

Active participation (5%)
- There will be several presentation sessions where the students will be presenting their assignments. You are required to be present during these sessions and to actively participate in the related discussions. Each presentation will be followed by a Q&A period where other students will be required to give some complementary questions to the presenter.
- Your participation in the opportunity statement session will also be evaluated.

Final design project (30%)
- You will participate in a team project with an objective to design and develop a new innovative product. The project may involve:
  - Project proposal
  - Final project presentation
  - Final project report
- Specific instructions, submission deadlines and evaluation criteria related to the final design project will be provided in separate documents. Late submissions will be accepted, but it will be reflected in the evaluation.
7. Academic Code of Conduct

**Academic Integrity**
Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to the obtention of academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**

As examples only, you are not permitted to:
- Copy from anywhere without indicating where it came from
- Copy from anywhere without rephrasing or quoting
- Let another student copy your work and then submit it as his/her own
- Hand in the same assignment in more than one class
- Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
- Copy from someone’s else exam
- Communicate with another student during an exam
- Add or remove pages from an examination booklet or take the booklet out of an exam room
- Acquire exam or assignment answers or questions
- Write an exam for someone else or have someone write an exam for you
- Submit false documents such as medical notes or student records
- Falsify data or research results

You are subject to the Academic Code of Conduct. Take the time to learn more at [http://provost.concordia.ca/academicintegrity/](http://provost.concordia.ca/academicintegrity/)

8. Student’s Responsibilities

Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. Students are expected to read the assigned material and to actively participate in class discussions.

Students are expected to be respectful of other people’s opinions and to express their own views in a calm and reasonable way. Disruptive behaviour will not be tolerated.

Students are expected to be familiar with the Code of Rights and Responsibilities: [http://rights.concordia.ca](http://rights.concordia.ca)

If you cannot attend class for any reason, unforeseen or not, you are to come and talk or write to me as soon as possible.