MECH410/520 Computer Aided Design (CAD)

Spring 2014

Course Information

Instructors: Dr. Armando Tura
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Dr. Zuomin Dong
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Course Homepage: http://www.me.uvic.ca/~mech410/
TA: Yifeng Liu
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Lecture Schedule: Mondays, and Thurdays 8:30 am -9:50 pm
Lecture Place: ECS 124
Office Hours: Mondays: 10:00-11:00 p.m. ELW B126 (or by appointment)
Lab. Schedule: Computational Design Lab. ELW B228 (Open 7x24, first lab: Jan 10)
Lab. Consultant: Fridays 1:00 - 4:00 p.m. (Mr. Minh Ly, Lab: ELW B228 and Office: ELW A214)
TA: Fridays 1:00 - 4:00 p.m. (Yifeng Liu, during Lab: ELW B228)

References:
- Lee, K. *Principles of CAD/CAM/CAE Systems*, Addison Wesley, 1999.
- MECH410/520 Web Page at http://www.me.uvic.ca/~mech410/
- Lombard, M. *Solidworks Surfacing and Complex Shape Modeling Bible*, Wiley, 2008.

Course Content:

Basic elements of CAD and relevance to current industrial practice. Representation of curves and curved surfaces. Training in free-form surfacing, assembly and mechanical drawings. Application of finite element model. Numerical optimization and its application to parameter design. Computer aided manufacturing. Postpocessing models and G-code.

CAD Laboratory		**MECH410** (Group)	**MECH520** (Individual)
Laboratory 1 NX	Design Modeling - User Interface; 2D Sketching; 3D Modeling and Engineering Drawing Generation	8 %	8 %
Laboratory 2 NX	Mechanical Assembly – Modeling of Assembly and Mechanism; and Motion Animation	8 %	8 %
Laboratory 3 NX	Static Structural Analysis	8 %	8 %
Laboratory 4 NX	Sensitivity Analysis and Design Optimization	8 %	8 %
Laboratory 5 NX	Automated CNC Tool Path Generation & Machining	8 %	8 %
Project		60%	60 %
Project concept	General description of the project topic	1.5 %	1.5 %
Project Proposal P1	Detailed description of the project content	3.5 %	3.5 %
CAD report	3D models/assembly/Drawings	20%	25%
Project Proposal P2	Detailed description of the project content	5 %	5 %
CAE/CAM Report	Design analysis and G-Code	20%	25%
Project Presentation	CAD/CAE/CAM project presentation	10%	-

Course Policies

1. **EVERY COMPONENT OF THE COURSE IS MANDATORY (COURSE FAILURE IF ANY PART IS NOT SUBMITTED)**
2. Required information for course submissions and deadlines is made available on line and in class, it is student responsibility to familiarize with them. Late submissions are not accepted.
3. Lectures on review of FEA, optimization & sensitivity, representation of curves & surfaces/ invited speakers lectures/ project presentations (marked lectures in the timetable) are mandatory and attendance will be monitored. Marks will be deducted (10% of the final mark) if one lecture is missed, failure of the course for two or more.
4. Exeptions will not be made unless:
   a) Health conditions *if a relevant doctor note is released.*
   b) Estenuating family conditions will be considered.
   c) Varsity sports if time conflict has been risen at least one week before the deadline or class.
   d) Attenuant penalty 3. might apply if absence has been communicated before the begin of class (i.e. by email). This will be evaluated per case basis and it will generally involve a make up assignment worth 10% of the course.