MANF9543

COMPUTER AIDED DESIGN & MANUFACTURE

Contents

1. Staff Contact Details

Contact details and consultation times for course convenor

Name: Dr Ronald Chan
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Consultation for this course is available immediately after each lecture. For additional consultation, please make an appointment with the staff by email.

Contact details and consultation times for additional lecturers/demonstrators/lab staff

Name: Dr Erik van Voorthuysen
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Consultation for this course is available immediately after each lecture. For additional consultation, please make an appointment with the staff by email.

Contact details of additional demonstrators will be given in class.

2. Course details

Credit Points:

This is a 6 unit-of-credit (UoC) course, and involves 4 hours per week (h/w) of face-to-face contact.

The UNSW website states "The normal workload expectations of a student are approximately 25 hours per semester for each UoC, including class contact hours, other learning activities, preparation and time spent on all assessable work. Thus, for a full-time enrolled student, the normal workload, averaged across the 16 weeks of teaching, study and examination periods, is about 37.5 hours per week."

This means that you should aim to spend about 9 h/w on this course. The additional time should be spent in making sure that you understand the lecture material, completing the set assignments, further reading, and revising for any examinations.

There is no parallel teaching in this course.

Contact Hours

	Day	Time	Location
Lectures	Tuesday	12noon - 2pm	Ainsworth 202
Demonstrations	Tuesday	2pm – 4pm	Ainsworth 203

Summary of the Course

This course focuses on the principles and applications of CAD/CAM in product and manufacturing design and is highly relevant to future trends in automation and manufacturing processes. It teaches the underlying theory of CAD/CAM, but most importantly teaches students the skills needed to actually design using CAD/CAM. The School operates a number of design platforms, most notably SolidWorks and SolidCAM software. The course teaches the essential steps that one takes to develop a product from concept to manufacture starting with CAD, and progressing to simulation, using CAM and CAE software support.

Aims of the Course

This course will enable students to explore and gain further understanding of how CAD/CAM can be used in Manufacturing Industry. This course will also provide students with opportunity to explore innovation in design using both SolidWorks and SolidCAM software.

Student learning outcomes

This course is designed to address the below learning outcomes and the corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers as shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

After successfully completing this course, you should be able to:

Learning Outcome		EA Stage 1 Competencies
1.	Apply the design concepts for any design task in CAD/CAM environment.	PE1.1, PE1.5, PE2.3
2.	Apply the best use of Computer Aided Manufacture techniques in a modern factory.	PE1.2, PE2.2, PE2.3
3.	Create a concept of CAD/CAM application for the Rapid Prototyping Technology.	PE1.2, PE2.2, PE2.3
4.	By the conclusion of this course the student will be able to develop knowledge and skills in designing using both SolidWorks and SolidCAM software.	PE2.2, PE2.3, PE3.3

3. Teaching strategies

Teaching strategies used in this course will be based on:
1. Face-to-face lectures in which CAD/CAM materials will be divided into 3 parts: CAD, CAM and CAD/CAM and beyond. In addition, there will be two lectures reserved for application of CAD/CAM/CAE by a guest speaker.
2. Assignment 1 and Quiz 1 are assigned to prompt students in applying engineering design and CAD. Assignment 2 is a group assignment with an individual submission and Quiz exposes you to the real world situation by applying CAD and CAM to produce an actual product. Demonstrations will be provided during the course of completing this project. The group demonstrations are arranged on a one-to-one basis with the demonstrators to develop the innovation aspects of the design process.

4. Course schedule

Date	Topic	Location	Lecture Content	Demonstration/Lab

19/4/16	CAM system and operation I	Ainsworth 202	CAM system and operation overview	Introduction to SolidCAM
26/4/16	CAM system and operation II	Ainsworth 202	Milling I and fits and tolerances	Project support and group discussion
3/5/16	CAM system and operation III	Ainsworth 202	Milling II	Project support and group discussion
10/5/16	CAM system and operation IV	Ainsworth 202	Other processes, redesign and optimise processing time and costs	Project support and group discussion
17/5/16	CAD/CAM/CAE in practice	Ainsworth 202	Applications for CAD, CAM and CAE	Project support and group discussion
24/5/16	Assignment 2 presentation	Ainsworth 202	Assignment 2 presentation	Assignment 2 presentation
31/5/16	CAD/CAM future trend	Ainsworth 202	The future trend for CAD/CAM technologies and applications	Quiz 2

5. Assessment

Assessment Overview

Assessment	Length	Weight	Learning outcomes assessed	Assessment criteria	Due date

Assignment 2	1000 words and CAD/CAM files	30%	1, 3 and 4	Solidworks / SolidCAM skills and written skills	5pm, Friday 27/5/2016 (Week 12), via Moodle	Three weeks after submission
Assignment 2 presentation	10 minutes	5%	4	Oral presentation skills	During week 12 lecture	Graded on-the-spot

In order to achieve a PASS (PS) in this course, you need to achieve a composite mark of at least 50. Note that a 'double-pass' is not required for this course.

Instruction for the group project may be found on the course Moodle page, it will be available to students in Week 1.

Assignments

Presentation

All submissions should have a standard School cover sheet which is available from this course's Moodle page.

All submissions are expected to be neat and clearly set out. Your results are the pinnacle of all your hard work. Presenting them clearly gives the marker the best chance of understanding your method; even if the numerical results are incorrect.

Submission

Late submissions will be penalised 5 marks per calendar day (including weekends). An extension may only be granted in exceptional circumstances. Where an assessment task is worth less than 20% of the total course mark and you have a compelling reason for being unable to submit your work on time, you must seek approval for an extension from the course convenor before the due date . Special consideration for assessment tasks of 20% or greater must be processed through student.unsw.edu.au/special-consideration.

It is always worth submitting late assessment tasks when possible. Completion of the work, even late, may be taken into account in cases of special consideration.

Examinations

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It is your responsibility to ensure that your calculator is of an approved make and model, and to obtain an "Approved" sticker for it from the School Office or the Engineering Student Centre prior to the examination. Calculators not bearing an "Approved" sticker will not be allowed into the examination room.

Special Consideration and Supplementary Assessment

For details of applying for special consideration and conditions for the award of supplementary assessment, see the School intranet, and the information on UNSW's Special Consideration page.

6. Expected Resources for students

The resources for students enroll in this course will include:
Reference Books:
1. Computer-Aided Design and Manufacture – Prepared by Khoi Hoang for UNSW - MacGraw-Hill Custom Publishing, 2011 – ISBN-101-12-106812-X
2. Systems Approach to Computer-Integrated Design and Manufacturing by Nanua Singh, John Wiley & Sons, Inc., 1996.
3. Computer-Integrated Design and Manufacturing by David D. Bedworth et alliances, MacGraw-Hill International, 1991.

Additional lecture notes and materials will be given via Moodle.

If you wish to explore any of the lecture topics in more depth, then other resources are available and assistance may be obtained from the UNSW Library website:
http://info.library.unsw.edu.au/web/services/services.html

7. Course evaluation and development

Feedback on the course is gathered periodically using various means, including the Course and Teaching Evaluation and Improvement (CATEI) process, informal discussion in the final class for the course, and the School's Student/Staff meetings. Your feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

In this course, recent improvements resulting from student feedback include more demonstrator support to the student major group project. The increase number of demonstrators in this semester also means that grading can be done more efficiently, and students will be expected to receive their feedbacks sooner after submission.

8. Academic honesty and plagiarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism: student.unsw.edu.au/plagiarism The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help

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