Courseœoutline

Semester 2 2016

MMAN2130

DESIGN AND MANUFACTURE

Contents

1. Staff contact details

Contact details and consultation times for course convenor

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2. Course details

Credit Points

This is a 6 unit-of-credit (UoC) course, and involves 7.5 hours per week (h/w) of 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.”

For a standard 24 UoC in the semester, this means 600 hours, spread over an effective 15 weeks of the semester (thirteen weeks plus stuvac plus one effective exam week), or 40 hours per week, for an average student aiming for a credit grade Various factors, such as your own ability, your target grade, etc., will influence the time needed in your case. Some students spend much more than 40 h/w, but you should aim for not less than 40 h/w on coursework for 24 UoC.

This means that, for this course, you should aim to spend not less than an additional 2.5 hours per week of your own time for the weeks where there are 7.5 hours of contact. This

should be spent in making sure that you understand the material presented, completing the set tasks, further reading about the requirements for the project.

There is no parallel teaching in this course.

Contact hours

	Day	Time	Location
Lectures	Tuesday	10:00-12:00	Ainsworth Building G02
CAD Lab	Tuesday	12:00-13:30	Ainsworth Building 203
TAFE	Wednesday	16:30-21:30	Check TAFE information on Moodle
	Thursday	16:30-21:30	

Summary of the c ourse

This subject introduces you to basic aspects of design and manufacturing, process selection, manufacturing processes, material properties/selection and the use of computers in the design process..

Aims of the c ourse

This is one of the introductory technology-based courses in the school. This course develops an appreciation of the concepts involved with product development and manufacture. The other subjects in the degree program further develop the theoretical and analysis methods for design and development.

This is a project-based course. The project selected allows you as a student to work individually and in a team environment to achieve the final objective, which is a workable product. In carrying out this work the student is exposed to design principles and drawing practices which includes Computer aided Design and Drafting, manufacturing processes and practical selection and limitations of manufacturing components and products. A continuing emphasis is placed on group work and report writing essential to engineering.

Student learning outcomes

This course is designed to address the learning outcomes below 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 Competenci es
1.	Understand the importance and relevance of graphical communication in engineering.	PE1.4

2.

Date

4/10/16	Material Selection - Detail	Ainsworth Building G02	Design for Manufacture, Material Selection and High Volume Manufacturing	No Labs	Week 10 Lecture Notes
11/10/16	Advanced Manufacturing Techniques	Ainsworth Building G02	Design for Manufacturability, Material Selection and High Volume Manufacturing	No Labs	Week 11 Lecture Notes and Final Report Assessment Guide
18/10/16	Product Life Cycle Design and Sustainability	Ainsworth Building G02	Sustainability, Life Cycle Engineering and DFX	No Labs	Week 12 Lecture Notes
25/10/16	No Lecture	TBD	Prototype Testing	No Labs	NA

5. Assessment

You are assessed by way of a product development project which involves designing and manufacturing a product based on given functional specifications. This project will test your ability to demonstrate applied knowledge, which you will be expected to perform as an engineering student.

The weighting of the individual assessment components will be as follows with full details on each assessment provided under Moodle/Assignments.

Assessment	Due date and submission requirement	Weight %	Learning Outcomes Assessed	Details	Marks returned
Concept Sketch + Engineering Drawing	Week 6, in the classroom	15	1,2,3,4	Individual submission	Two weeks after submission
Manufacturability Review	Week 7, in the classroom	10	1,2,3,4,5,6	Individual submission	Two weeks after submission
CAD Test	Week 9 During CAD Lab.	10	1,2,3,4	Individual assessment	Two weeks after submission

You will need to provide your own calculator, of a make and model approved by UNSW, for the examinations. The list of approved calculators is shown at student.unsw.edu.au/exam-approved-calculators-and-computers

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

(1) Manufacturing Engineering and Technology, S. Kalpakjian and S R Schmid. Prentice Hall
(2) Engineering Drawing, A. W. Boundy, McGraw Hill (7th Edition).
(3) Material Selection in Mechanical Design, Ashby, M., Elsevier.
(4) Dimensioning and Tolerancing for Function and Economic Manufacture, L. E. Farmer, Blueprint Publications.
(5) Manufacturing Processes B.H. Amstead, P.F. Ostwald and M.L. Begeman.
(6) Materials and Processes in Manufacturing, E.P. Degamo, J.P. Black and R.A. Kohser.
(7) Product Design and Process Engineering, B.W. Niebel and A.B. Draper.
(8) Manufacturing Processes, H.W. Yankee.
(9) Moodle based learning modules.

Additional material can be found at the UNSW Library via http://info.library.unsw.edu.au/web/services/services.html

Additional materials provided in Moodle

Course will be administered by using Moodle. Therefore course administration and lecture materials will be uploaded to Moodle. Students are advised to use Moodle for class communication

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.

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9. Administrative matters

All students are expected to read and be familiar with School guidelines and polices, available on the intranet. In particular, students should be familiar with the following:

- Attendance, Participation and Class Etiquette
- UNSW Email Address
- Computing Facilities
- Assessment Matters (including guidelines for assignments, exams and special consideration)
- Academic Honesty and Plagiarism
- Student Equity and Disabilities Unit
- Health and Safety
- Student Support Services

Prof. S. Kara
10-7-2016

Appendix A: Engineers Australia (EA) Stage 1 Competencies for Professional Engineer

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
PE2: Engineering Application Ability	PE2.1 Application of established engineering methods to complex problem solving
	PE2.2 Fluent application of engineering techniques, tools and resources
	PE2.3 Application of systematic engineering synthesis and design processes
	PE2.4 Application of systematic approaches to the conduct and management of engineering projects
PE3: Professional and Personal Attributes	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (professional and lay domains)
	PE3.3 Creative, innovative and pro-active demeanour
	PE3.4 Professional use and management of information
	PE3.5 Orderly management of self, and professional conduct
	PE3.6 Effective team membership and team leadership