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Semes er 1 2016

Never Stand Still

Mechanical and Manufacturing Engineering

MANF3100

PRODUCT AND MANUFACTURING

1. Staff Contact Details

Contact details and consultation times for course convenor

Mr Corey Martin
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Consultation concerning this course is available immediately after the classes. Face-to-face consultation outside this time is available by appointment only.

Contact details and consultation times for additional lecturers

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

Learning Outcome		EA Stage 1 Competencies
1.	Understand and apply systematic design principles including: x Quality Function Deployment (QFD) x VDI-2206 and 2221 Design Standards x Axiomatic and robust design principles x Value analysis and value engineering methods.	PE1.1, 1.2, 1.3, 1.5, 1.6 PE2.1, 2.2, 2.3, 2.4
2.	Analyze and characterize manufacturing t	

4. Course schedule

Date	Topics	Assessment Task
01-Mar-16	The Economic Case for Manufacturing Process Selection Design Theory, QFD, Developing Functional Requirements, V-Model design theory, Axiomatic Design, Concurrent Design	
08-Mar-16	Process and Material Selection Methods Process Information Maps, Identifying Critical Process Parameters	
15-Mar-16	Design for Assembly (DFA), Design for Manufacturing (DFM), Design for Reliability, Design for Sustainability	Assignment – Part I due
22-Mar-16	Introduction to CAD/CAM with SolidWorks and SolidCam	
29-Mar-16	MID-SEMESTER BREAK (No Classes)	
05-Apr-16	Economics of Industrial Machinery and Process Equipment, Component and Assembly Costing Methods Value Analysis, Value Engineering, Robust Design, Process Capability	
12-Apr-16	Casting and Forming, Machining Processes	Quiz #1
19-Apr-16	Plastics and Composites, Rapid Prototyping, EDM, laser, waterjet, PCB & Electronic Manufacturing	
26-Apr-16	Introduction to measurement and error Limits and fits: Stack type functional requirements, fit type functional requirements	Assignment – Part II due
03-May-16	Types and design of jigs and fixtures, dof, locating principles, clamping and holding mechanisms and actuators Joining and Assembly Processes	
10-May-16	Surface Engineering, Measurement of surface finish, concentricity	Quiz #2
17-May-16	Linear measurement methods and standards Angular measurement, squareness, tapers	
24-May-16	Product Commercialisation	
31-May-16		Assignment – Part III due

5. Assessmen

Assessment Overview

You are assessed by way of assignments, quizzes, and presentations.

There is no end-of-semester examination. Quizzes involve both calculations and descriptive material.

The parts of the course contribute towards the overall grade as follows:

ASSESSMENT	WEIGHTING	LEARNING OUTCOMES ASSESSED	MARKS RETURNED
Quizzes (x2)			

6. E pec ed Reso rces for s den s

Textbooks:

None prescribed.

Reference books:

1. Manufacturing Process Selection Handbook: From Design to Manufacture, Swift K.G., Booker J.D., 2013, Burlington, Elsevier Science, ISBN 9780080993607 – available from our library electronically
2. Applied Metrology for Manufacturing Engineering, Grous A, 2011, ISTE, John Wiley & Sons, Inc, ISBN 9781848211889
3. Low-cost Jigs, Fixtures & Gages, for limited production, Boyes W.E. ed., Society of Manufacturing Engineers, 1986, Dearborn, Michigan
4. Fundamentals of Modern Manufacturing, Groover M.P., 2nd ed., 2002 John Wiley

7. Co rse e al a ion and de elopmen

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 restructuring the demonstrations, reducing the number of quizzes.

8. Academic hones 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

If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis) even suspension from the university. The Student Misconduct Procedures are available here:
www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Further information on School policy and procedures in the event of plagiarism is available on the intranet.

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:

Appendix A: Engineers Australia (EA) Professional Engineer Competency Standards

	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