THE UNIVERSITY OF NEW SOUTH WALES

FACULTY OF ENGINEERING

SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING

MANF9544 CONCURRENT PRODUCT & PROCESS DEVELOPMENT

COURSE OUTLINE **SEMESTER 1 2013**

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MANF9541 CONCURRENT PRODUCT & PROCESS DEVELOPMENT

COURSE OUTLINE

1. STAFF CONTACT DETAILS

Contact details for course convener

A/Professor Sami Kara (Lecturer In-charge)
Room: 307
Ph: 9385 5757
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Consultation concerning this course is available on Monday 1400 –1700 whenever I am not otherwise engaged.

Contact details for additional lecturers

Dr. S. Ibbotson
Room: 309
Ph: 9385 6961
Email: s.manmek@unsw.edu.au

2. COURSE INFORMATION

Units of credit

This is a 6 unit-of-credit (UoC) course, and involves 6 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."

For a standard 24 UoC in the session, this means 600 hours, spread over an effective 15 weeks of the session (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.

There will be no parallel teaching in this course.

Summary of the course

This course introduces the core activities of concurrent development of products, processes, systems, and quality. Therefore this course is a core part of the MEngSc program in Manufacturing Management and relates its contents to other courses in the program such as Manufacturing Strategies, Managing Manufacturing Operations and Production Technologies.

Aims of the course

The need for companies to develop the every product that the customer wants and to do this in the shortest possible time has become one of the main success factors on the market. Concurrent

Product and Process Development is one of the new strategies that address this problem of fast product development and customer satisfaction. It needs new techniques and design tools to be adopted, and it requires a change of the traditional departmental separation of tasks in a company.

Therefore, this course aims to provide an understanding of the integrative nature of concurrent product and process development in a team work environment, and how it affects all subsequent activities in production.

Expected student learning outcomes (including those related to graduate attributes)

By the end of this course, students are expected to have

- have gained knowledge in the inter-disciplinary field of concurrent product development,
- have gained the capacity for critical thinking and problem solving, have experienced collaborative and multi-disciplinary work,
- learned to appreciate the difficulties of change, and acquired skills of effective communication.

These outcomes are addressed in the course by emphasising the inter-disciplinary and integrative nature of the product development process and the problems of change management. Collaboration and team work is the focus of a major assignment on QFD, where communication skills are essential. The technique of Design for Assembly is used in another assignment as an example to demonstrate the principles of concurrent design and to enhance problem solving skills.

3. RATIONALE FOR INCLUSION OF CONTENT AND TEACHING APPROACH

Effective learning is supported when you are actively engaged in the learning process and by a climate of enquiry, and these are both achieved in the lectures and tutorials by way of practical case studies.

You become more engaged in the learning process if you can see the relevance of your studies to professional, disciplinary and/or personal contexts, and the relevance is shown in all parts of the lectures and assignments by way of examples drawn from industry.
Dialogue is encouraged between you, others in the class and the lecturers. Diversity of experiences is acknowledged, as some students in each class have prior industry experience. Your experiences are drawn on to illustrate various aspects, and this helps to increase motivation and engagement.

It is expected that assignments will be marked and handed back in the week following submission. You will have feedback and discussion, while the assignment is fresh in your mind, to improve the learning experience.

4. TEACHING STRATEGIES

The subject will be presented in the form of lectures and tutorials. Each weekly class will consist of a 1-1.5 hrs lecture followed by a tutorial example or case study related to the material covered in the lecture

5. ASSESSMENTS

You are assessed by way of both examinations and projects (Assignments 1, 2, 3) which involve both descriptive material and hands-on cases. These projects test your ability to demonstrate applied knowledge, which you will be expected to perform as a postgraduate.

The mid-session tests are "closed book" examinations to assess the student's knowledge of the discipline. All assignments are based on team work (depending on class size, groups of two students might be used).

The various parts of the course contribute towards the overall grade as follows (see the course schedule for the timing of assignments):

Mid-Session Test 1	20%
Mid-Session Test 2	20%
Assignment 1	20%
Assignment 2	20%
Assignment 3	20%

Late submission

Late submissions attract a penalty of ten percent per *day*, unless prior dispensation has been given; i.e. see the lecturer before the due date to avoid penalty. It is always worth submitting as, in the event of difficulty making the final grade, any late penalties may be removed.

Calculators

You will need to provide your own calculators, of a make and model approved by UNSW, for the examination. The list of approved Calculators is shown at https://my.unsw.edu.au/student/academiclife/assessment/examinations/Calculator.html. It is your responsibility to ensure that your calculator is of an approved make and model, and to obtain an "Approved" ticker 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 for applying for special consideration and conditions for the award of supplementary assessment, see "*Administrative Matters for All Courses*", available from the School Office as part of the "*The Guide*" or on the School website.

6. ACADEMIC HONESTY AND PLAGIARISM

What is Plagiarism?
Plagiarism is the presentation of the thoughts or work of another as one's own.* Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;

- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne.

Further information on School policy and procedures in the event of plagiarism is presented in a School handout, *Administrative Matters for All Courses*, available from the School website.

7. COURSE SCHEDULE

Date	Week	Topics
6/3	1	Unit 1: Introductions and Definitions
13/3	2	Unit 2: The Product Development and Time-to-Market Concept
20/3	3	Unit 3: Operating Concurrent Engineering Teams
27/3	4	Unit 4: Quality Function Deployment – Part 1 **Handing in Assignment 1**
3/4	-	**Mid Session Break**

10/4	5	Unit 5: Quality Function Deployment – Part 2
17/4	6	Unit 6: Design for Manufacture (DFM) ***Mid-Session Test 1***
24/4	7	Unit 8: Design for Environment (Lecturer to be announced) ***Submission of Assignment 1***
1/5	8	Unit 7: Design for Assembly (DFA) **Handing in Assignment 2**
8/5	9	Unit 9: System Design
15/5	10	Unit:10 Rapid Prototyping **Submission of Assignment 2** **Handing in Assignment 3**
22/5	11	Unit 11: Organisation and Management of CE Teams
29/5	12	Unit 12: CE Practices and Case Studies (Industry Speaker – TBA) **Submission of Assignment 3**
5/6	13	**Mid-Session Test 2**

8. RESOURCES FOR STUDENTS

Textbooks

A subject manual is available for purchase from the copy room (ME G06). This manual includes all the necessary lecture materials and the readings at the end of each unit. Since the manual is updated recently, the previous version of the manual is not recommended. Copies of the current version are also available at the library for student barrowing.

Suggested Additional Readings

1. Thomas A. Salomone: "What every Engineer should know about CONCURRENT ENGINEERING", Marcel Dekker, 1995.
2. James L. Nevins, Daniel E. Whitney: "Concurrent Design of Products and Processes", A Strategy for the Next Generation in Manufacturing, McGraw-Hill Publishing Company, 1989. (good textbook but out of print)
3. Andrew Kusiak: "Concurrent Engineering", Automation, Tools, and Techniques, John Wiley & Sons Inc., 1993.
4. John Corbett, Mike Dooner, J. Meleka, C. Pym: "Design for Manufacture", Strategies, Principles, and Techniques, Addison-Wesley Publishing Company, 1991.
5. Paul G. Ranky: "Concurrent/Simultaneous Engineering", Methods, Tools and Case Studies. CIMware Limited, Guildford, England, 1994.
6. Geoffrey Boothroyd, Peter Dewhurst, Winston Knight: "Product Design for Manufacture and Assembly", Marcel Dekker, 1994.
7. Goeffrey Boothroyd, Peter Dewhurst: "Product Design for Assembly", Handbook, Boothroyd Dewhurst Inc, 1991.
8. Kim Clark, Stephen Wheelwright: "Managing New Product and Process Development" and "Revolutionizing Product Development", Free Press, New York, 1993.
9. Sammy G. Shina: "Successful Implementation of Concurrent Engineering Products and Processes." Van Nostrand Reinhold, New York, 1994.
10. Ben Wang: "Integrated Product, Process and Enterprise Design." Chapman & Hall, 1997.

Additional materials provided in UNSW Blackboard Learn

This course has a website on UNSW Blackboard Learn which includes:

- copies of the course outline
- copies of assignments (as they are issued, in case you missed the hand-out in class)
- a discussion forum.

The discussion forum is intended for you to use with other enrolled students. The course convenor will occasionally look at the forum, monitor the language used and take note of any frequently-asked questions, but will not respond to questions on the forum. If you want help from the convenor then direct contact is preferred.

Recommended Internet sites

None

9. 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 tutorial 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 a reduction in the number of assignments and the introduction of material on the influence of shallow water and squat on ship performance in lieu of further prediction methods. Other recent improvements include a re-arrangement of lecture material on gas turbines, and a re-wording of the assignment on gas turbines.

10. ADMINISTRATIVE MATTERS

Information about each of the following matters is presented in a School handout, *Administrative Matters for All Courses*, available from the School website.

It is essential that you obtain a copy, read it carefully and become familiar with the information, as it applies to this course and to each of the other courses in which you are enrolled.

Expectations of students (including attendance at lectures and tutorials/laboratory classes/seminars; and computer use, for example, in the use of email and online discussion forums)

Procedures for submission of assignments and the School's policy concerning late submission

Information on relevant Occupational Health and Safety policies and expectations:

www.ohs.unsw.edu.au

Examination procedures and advice concerning illness or misadventure

Equity and disability

Students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Student Equity and Disabilities Unit (SEADU) by phone on 9385 4734, email seadu@unsw.edu.au or via the website

www.studentequity.unsw.edu.au

The office is located on the Ground Floor of the Goodsell building (F20).

Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

A/Prof. S. Kara
December 2012