



Source Outline

Semester 2 2018

MANF3510

PROCESS TECHNOLOGY AND AUTOMATION

3. 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.

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.

Contact hours

Day	Ti
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and machining centres. It then covers in more detail, assisted by practical examples and assignments, the procedure of CNC manufacturing, selection of machine elements and their control, particularly using programmable logic controllers (PLC). An integral part of the course is the ability to integrate computer-aided design (CAD) with computer-aided manufacturing (CAM).

Course material and topics include design methods and aids for selecting and integrating technology and equipment items into high performance machines, as well as a thorough understanding of the individual building blocks including actuators, sensors, structural elements, power transmission, controllers, communication, operator interfaces and support systems.

Topics include:

- Function and control of CNC machine tools
- Sensors and actuators in automated systems
- Programming of CNC machine tools and PLCs
- Design and integration of machine elements
- Programmable logic controllers
- CAD/CAM principles and programming (SolidWorks and SolidCam)

This course includes a substantial amount of laboratory work in order to gain a deeper understanding of the discipline of machine design and operation.

The course will combine lectures with practical case studies that require the theory taught to be applied

5. ~~Course schedule~~

Week	Lecture Topic	Lab/Quiz	Lecturer
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6. Assessment

Assessment overview

Task	Assessment
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Assignments

Full requirements for Assignment Part 1 and Part 2 will be placed on Moodle. Assistance for the assignment will be provided during allocated tutorial sessions. The assignments are to be undertaken as a group. The assignments will cover two important areas of manufacturing, namely programming of the most common control platform in industry - the programmable logic controller (PLC) - and the design and realisation of your design using CNC technology.

Both parts of the assignment involve a compulsory practical demonstration. For the PLC

subjected to a series of tests and group members will be asked verbal questions. For the CNC assignment, you will have the opportunity to mill your design (if it is able to be milled) on the CNC milling machine,

- c. Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date, or
- d. Pass/Fail assessment tasks.

Marking

The following criteria will be used to grade assignments:

- Analysis and evaluation of requirements by integrating knowledge and methods learned in lectures and demonstrations
- Sentences in clear and plain English this includes correct grammar, spelling and punctuation
- Correct referencing in accordance

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

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July, 2018

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	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