

ENGR 2001 AUTOMATED MANUFACTURING

Credit Points 10

Legacy Code 300735

Coordinator Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

Description Automated manufacturing is about increasing the capacity of productivity through a range of integrated technologies, such as digital transformation platforms so that manufacturing operations can run simultaneously. These processes are used in industrial settings. Students will be introduced to the fundamentals of manufacturing operations, automation, and control technologies, including numerical control and industrial robotics. This subject aims to deepen the understanding of the material selection process and enables students to identify appropriate manufacturing processes in a product manufacturing design. Various manufacturing processes such as material removal, bulk deformation, sheet-metal forming, and non-traditional processes will be examined. Through problem-solving activities, students will enhance their manufacturing engineering skills in the computer-aided design (CAD) and computer-aided manufacturing (CAM) areas and acquire the skills to machine their CAD models on a computer numerical control (CNC) machine.

School Eng, Design & Built Env

Discipline Manufacturing Engineering

Student Contribution Band HECS Band 2 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 2 subject

Pre-requisite(s) Students must have passed the two subjects

MATH 1016 Mathematics for Engineers 1 and ENGR 1018

Fundamentals of Mechanics OR must have passed the two subjects

MATH 1034 Mathematics for Engineers 1 (Advanced) and ENGR 1018

Fundamentals of Mechanics before they can enroll in this subject

Equivalent Subjects ENGR 3002 - Automated Manufacturing

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Apply knowledge of manufacturing processes and automation control technologies to solve problems and design components.
2. Use CAD software to create and modify components designs and CAM software to generate code files for manufacturing those components.
3. Use suitable problem-solving techniques for problems and contexts in manufacturing design.
4. Discuss the advantages of computer integrated manufacturing, flexible manufacturing processes and their applications in the manufacturing industries.
5. Apply mathematical techniques in a manufacturing engineering problem.
6. Conduct work safely and responsibly in the manufacturing lab.

Subject Content

1. Material properties and product attributes
2. Engineering materials
3. Solidification processes
4. Particulate processing of metals and ceramics
5. Metal forming and sheet metalworking
6. Material removal processes
7. Property enhancing and surface processing operations
8. Joining and assembly processes
9. Manufacturing systems
10. Manufacturing support systems
11. Manual and CNC machining processes and tools
12. CAD/CAM technologies, applications and programming
13. Cost estimation in manufacturing
14. Flexible and fixed automation
15. Applications of robotics in automated manufacturing
16. Computer-integrated manufacturing & processing planning

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Quiz	30 minutes (each)	30	N	Individual	Y
Practical	Approximat 4 pages for each practical task and 30 minutes online quiz	30	N	Individual	Y
Applied Project	20 Pages report and 15 minutes Presentation	40	Y	Individual	Y

Prescribed Texts

- Groover, MP 2020, Fundamentals of modern manufacturing: materials, processes and systems, 7th edn, John Wiley & Sons, Inc., Hoboken, New Jersey.

Teaching Periods

Sydney City Campus - Term 2 (2025)

Sydney City

On-site

Subject Contact Peter Lendum (<https://directory.westernsydney.edu.au/search/name/Peter Lendum/>)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR2001_25-SC2_SC_1#subjects)

Spring (2025)

Penrith (Kingswood)

Hybrid

Subject Contact Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR2001_25-SPR_KW_3#subjects)

Parramatta City - Macquarie St

Hybrid

Subject Contact Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR2001_25-SPR_PC_3#subjects)