

Module Title:	Computer Integrated Manufacture (CIM)	Level:	6	Credit Value:	10
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Module code: (if known)	ENG635	Cost Centre:	GAME	JACS2 code:	H410
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Semester(s) in which to be offered:	2	With effect from:	July 2015
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Office use only: To be completed by AQSU:	Date approved:	July 2015
	Date revised:	
	Version No:	1

Existing/New:	Existing	Title of module being replaced (if any):	
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Originating Academic area:	Engineering and Applied Physics	Module Leader:	N Vidmer
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Module duration (total hours)	100	Status: Free-standing 10-credit component comprising half of ENG630 (Manufacturing Systems Economics and CIM). core/option/elective (identify programme where appropriate):
Scheduled learning and teaching hours	36	
Independent study hours	64	
Placement hours	0	

Percentage taught by Subjects other than originating Subject (please name other Subjects):	0%
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Programme(s) in which to be offered: Engineering European Programme (Non Award Bearing)	Pre-requisites per programme (between levels):	None
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Module Aims:
To build upon previous studies of manufacturing technology and computer systems, including computer-numerically controlled (CNC) machines, to develop the concepts, philosophy, and role of computer integrated manufacturing used in the design of advanced manufacturing systems.

Expected Learning Outcomes

Knowledge and Understanding:
At the completion of this module, the student should be able to:

1. Define the principles and concepts of Computer Integrated Manufacturing and analyse data and information flows in a CIM system.
2. Integrate computers into the areas of production management and physical control of manufacturing in a CIM system; Develop an overview of computer integrated manufacturing in order to be able to apply the design philosophy of CIM; (KS 4)
3. Predict the human consequences of CIM, hence to factor in human considerations. (KS 7)

Key skills for employability

1. Written, oral and media communication skills,	7. Intercultural and sustainability skills
2. Leadership, team working and networking skills	8. Career management skills
3. Opportunity, creativity and problem solving skills	9. Learning to learn (managing personal and professional development, self management)
4. Information technology skills and digital literacy	10. Numeracy
5. Information management skills	
6. Research skills	

Assessment: Please indicate the type(s) of assessment (eg examination, oral, coursework, project) and the weighting of each (%).

Assessment is by means of an examination covering all outcomes. It is an unseen time-constrained exam. (This corresponds to one-half (part B) of the examination of ENG630.)

Assessment number (use as appropriate)	Learning Outcomes met	Type of assessment	Weighting	Duration (if exam)	Word count (if coursework)
Assessment One:		Examination	100%	2 hr	

Learning and Teaching Strategies:

Learning will be facilitated by means of lectures and tutorials, demonstrations, industrial visits, and use of appropriate computer software packages. Assignment work is designed to broaden the range of students' reading and may be partially based on information obtained from industrial manufacturing companies.

Syllabus outline:

CIM concepts: Evolution and development of Computer Integrated Manufacturing. CIM requirements, definitions, implementation strategies.

Planning and structure: Planning and introduction of interconnected manufacturing systems. Sub systems integration and implementation aspects in Computer Integrated Manufacture, e.g. CAD, CAM, FMS, Computer networks, Materials Handling, Shop floor automation, Production control, and Business Systems.

CIM software functions: Principles of CIM software design. CIM Database requirements; data flow and Management Information Systems.

Organisation and management related to Computer Integrated Manufacture. Human factors in CIM. Application of appropriate methods (eg IDEFo) to the analysis and design of Computer Integrated Manufacturing systems.

Case studies of applications of Computer Integrated Manufacturing, with particular reference to the integration of the various elements or building blocks of CIM.

Bibliography:

Essential reading:

Rehg, J.A. and Kraebber, H.W. (2004) *Computer Integrated Manufacturing*, 3rd Edn., Prentice Hall

Recommended reading:

U.Rembold, B.O.Nnaji, A.Storr; (1993) *Computer Integrated Manufacturing and Engineering*; Addison Wesley

Mitchell Jr., F.H. (1991) *CIM Systems, An introduction to Computer Integrated Manufacture*; Prentice Hall

Vail, P.S. (1988) *Computer Integrated Manufacturing*; PWS Kent Publishing Company

Chris McMahon, C. and Browne, J. (1993) *CADCAM from Principles to Practice*; Addison Wesley

Wu, B. (1991) *Manufacturing Systems Design and Analysis*; Kluwer Academic Publishers

Ranky, P.G. (1990) *Flexible Manufacturing Cells and Systems in CIM*; (CIMware Ltd.)