Liverpool John Moores University

Title:	COMPUTER AIDED MANUFACTURE
Status:	Definitive
Code:	**7023MAR** (115919)
Version Start Date:	01-08-2012
Owning School/Faculty:	Engineering
Teaching School/Faculty:	Engineering

Team	Leader
Stephen Ebbrell	Y

Academic Level:	FHEQ7	**Credit Value:**	10.00	**Total Delivered Hours:**	50.00
Total Learning Hours:	100	**Private Study:**	50		

Delivery Options
Course typically offered: Semester 1

Component	Contact Hours
Lecture	24.000
Practical	12.000
Tutorial	12.000

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	Examination	70.0	2.00
Report	AS2	CAM Exercise	30.0	

Aims

To provide an understanding of Computer Aided Manufacturing (CAM) within the framework of Computer Integrated Manufacturing (CIM) and extend this knowledge to include design and analysis of machine control for a range of applications.

Learning Outcomes

After completing the module the student should be able to:

1 Critically assess manufacturing systems and their role in contributing to cost effective manufacturing
2 Interface machine control with CAM systems in a CIM environment.
3 Design and analyse CNC systems and sensor-assisted machining.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Examination	1	3
CAM Exercise	2	

Outline Syllabus

The design/manufacture interface and total approach to product development Flexible manufacturing systems, design for manufacture, design for assembly, process planning techniques, concurrent engineering, total quality, quality function, failure mode and effect analysis, Taguchi methods.

Linking machine control with CAM systems in a CIM environment
The Computer Integrated Manufacturing (CIM) environment, Machine control for different applications, programming techniques, part programming languages, main preparatory functions, programming with CAD/CAM systems, machining from 3D models, tool path generation from solid models, analytical geometry, CAM and rapid prototyping, robotics technology: types, motions, accuracy, repeatability, programming and applications.

Design and analysis of CNC systems and sensor-assisted machining
Machine tool structures, machine tool drives, feedback and position control, in-process gauging, in-process detection of tool breakage, chatter theory, chatter detection and suppression, adaptive control.

Learning Activities

Combination of lectures, tutorials, and laboratory work

References

Course Material	Book
Author	Amirouche F.M
Publishing Year	2004
Title	Principles of Computer Aided Design and Manufacture
Subtitle	

Edition	
Publisher	Prentice Hall
ISBN	0130646318

Course Material	Book
Author	Altinas Y
Publishing Year	2000
Title	Manufacturing Automation
Subtitle	
Edition	
Publisher	Cambridge University Press
ISBN	0-521-65973-6

Course Material	Book
Author	McMahon C & Browne J
Publishing Year	1998
Title	CADCAM: Principles, Practice and Manufacturing Management
Subtitle	
Edition	2nd Edition
Publisher	
ISBN	0-201-17819-2

Course Material	Book
Author	Kalpakjian S
Publishing Year	2006
Title	Manufacturing Engineering and Technology
Subtitle	
Edition	
Publisher	Addison-Wesley
ISBN	0131489658

Notes

The module is designed to extend the students' knowledge of Computer Aided Manufacturing within a Computer Integrated Manufacturing environment. This will provide a rounded approach to the subject taking in aspects of the design/manufacture interface and strategies for ensuring effective production planning and product quality. This will set a more global view from which specific areas of high automation and technology will be studied.