

Liverpool John Moores University

Title: COMPUTER AIDED MACHINING
Status: Definitive
Code: **5008TECH** (105303)
Version Start Date: 01-08-2016

Owning School/Faculty: Electronics and Electrical Engineering
Teaching School/Faculty: Electronics and Electrical Engineering

Team	Leader
Jamie Finlay	Y

Academic Level: FHEQ5 **Credit Value:** 12 **Total Delivered Hours:** 30
Total Learning Hours: 120 **Private Study:** 90

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	10
Practical	20

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	CAM Report Assignment	20	
Essay	AS2	Prismatic Component exercise	40	
Essay	AS3	Cylindrical Component exercise	40	

Aims

The aim of this module is to provide students with a practical understanding of computer aided part programming and machining.

Learning Outcomes

After completing the module the student should be able to:

- 1 Identify the elements of a CAM system
- 2 Produce and prove manual part programmes
- 3 Produce and prove computer aided part programmes

Learning Outcomes of Assessments

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

CW	1	3
CW	2	
CW	2	3

Outline Syllabus

CAM systems:

Hardware elements: computer eg mainframe, personal, computer specifications, power and memory, printer plotter, mouse digitizer, screens, disc drives.

Machine tools:

Machining and turning centres, axes of CNC machines, cutting tools, work holding devices, coolant systems, swarf removal systems.

Software elements:

operating system, CAM software, CAM database management systems, programme editing, diagnostic testing techniques.

Data:

Geometric data, material specifications CAD data, manufacturing data, tool data, cutter path, component profile, CAM file.

Manual Part Programming:

System initialisation, tooling data, position control and sequencing. Block, word and letter addresses; system management, positional data and coded data transfer. Macro routines, subroutines, zero shift, scaling and minor imaging.

Computer Aided Programming:

Generation of graphics; component profile definition, geometry manipulation, tooling and machinery sequences; cutter path simulation post processing, CAD profile and attribute data; material files; tool data; cutter location files. Macro routines, continuous operations, automatic tooling sequences, standard components.

Learning Activities

A practical approach to learning will be adopted for this module. It will be supported by a series of lectures and tutorials covering examples of application of the theory.

Notes

The practical approach of this module will give students the experience of using a CAM system to produce a range of component types. The manual part programming element will give students an insight into the CAM programming conventions.