Liverpool John Moores University

Title:	Computer Aided Manufacture
Status:	Definitive
Code:	**5096ENG** (117169)
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:**	24	**Total Delivered Hours:**	48
Total Learning Hours:	240	**Private Study:**	192		

Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Lecture	12
Practical	24
Tutorial	12

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Presentation	Present		50	
Artefacts	Artefact		50	

Aims

This module is designed to introduce students to Computer Aided Manufacture (CAM). It allows students to develop their CAD skills and integrate them with modern manufacturing methods.

Learning Outcomes

After completing the module the student should be able to:

1. Evaluate designs in terms the principles of design for manufacture
2. Determine safe and appropriate manufacturing parameters for different tooling and workpiece materials
3. Create part programmes from CAD models using CAM software and develop simulations to validate tool paths and ensure no tool collisions occur.
4. Use computer numerically controlled (CNC) machines to produce cylindrical and prismatic parts to specification using safe working practices.
5. Use appropriate measuring equipment to check the machined parts meet drawing specification

Learning Outcomes of Assessments

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

Design   1   2   3

CNC   4   5

Outline Syllabus

Design for economic manufacture, assembly and inspection. Using tolerances and dimensions; surface finish; manufacturing method and part geometry; standardized parts; modular components. Traditional and not-traditional manufacturing methods and capability, i.e. machining, laser cutting etc.

3D CAD modelling; rapid prototyping; CAD/CAM data transfer; manual programming; computer assisted part programming; computer aided machining and inspection. CAM systems; 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, continous operations, automatic tooling sequences, standard components.

Machine tools: Machining centers; turning centres, axes of CNC machines, cutting tools, work holding devices, coolant systems, swarf removal systems, machining calculations: speeds and feeds.

Metrology: Metrology equipment, measuring length and diameters, measuring geometric features, accuracy, laser scanning.

Health and Safety: Health and Safety at Work etc Act 1974 (HASAWA), PUWER, COSHH, PPE, guarding

Learning Activities

A practical, hands-on approach to learning is adopted. Case studies of examples of

the theory in practice will be provided. Tutorial sessions will be used to focus upon the theoretical aspects of the module.

Notes

The module provides an integrative set of activities that cross traditional subject boundaries.