

## Liverpool John Moores University

Title: SOLID MODELLING  
Status: Definitive  
Code: **4009TECH** (105275)  
Version Start Date: 01-08-2016

Owning School/Faculty: Maritime and Mechanical Engineering  
Teaching School/Faculty: Maritime and Mechanical Engineering

Team	Leader
Andy Pettit	Y

**Academic Level:** FHEQ4      **Credit Value:** 12      **Total Delivered Hours:** 48  
**Total Learning Hours:** 120      **Private Study:** 72

### Delivery Options

Course typically offered: Standard Year Long

Component	Contact Hours
Practical	48

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	3D Part models and engineering drawings	25	
Essay	AS2	3D Assembly models and engineering drawings	25	
Essay	AS3	Guided design exercise	50	

### Aims

*This module introduces the concept of three dimensional computer modelling and provides the skills necessary to produce computational three dimensional part and assembly models. It also covers the production of component and assembly drawings.*

## Learning Outcomes

After completing the module the student should be able to:

- 1 Produce three dimensional part models.
- 2 Produce three dimensional assembly models.
- 3 Produce engineering part drawings from a given model.
- 4 Produce engineering assembly drawings from a given set of part models.

## Learning Outcomes of Assessments

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

CW	1	3		
CW	2	4		
CW	1	2	3	4

## Outline Syllabus

*Preparation:*

*Design intent, location of origin and selection of planes.*

*Terminology:*

*Basic geometry, axis, planes, origin, face, edge, vertex geometric relationships, horizontal, vertical, intersection, parallel, collinear, perpendicular, coincident, document properties and system options.*

*User interface:*

*Opening and saving files, toolbars, menus' feature manager, property manager, configuration manager toolbox, standard component libraries, help and tutorials.*

*Navigation:*

*View control, view display, display modes, standard views.*

*Sketching:*

*Sketching environment, sketching tools, dimensioning sketches, editing sketches, applying relations in sketches, understand concept of fully defined sketch.*

*Solid Extrusions:*

*Creating solid and thin base features, adding bosses and cutting features.*

*Features:*

*Creating chamfers, fillets, shelling, ribs, draft angles, use of hole wizard.*

*Common operations:*

*Converting entities, mirroring, linear and circular patterns, revolved extrusions/cuts, sweeps, lofts, 3D sketching; adding and editing relations, creating additional planes.*

### *Assemblies:*

*Creating bottom up assemblies; inserting and manipulating components, degrees of freedom, adding mate relations, create sub assemblies, editing assembly mates, editing assembly models, mirrored and patterned components.*

### *Drawing:*

*Creating part drawings and assembly drawings from 3D models, drawing templates and modification, sheet format and editing, dimensioning and specialized views. Annotations, symbols and conventions.*

## **Learning Activities**

This module will be delivered through a series of structured modelling sessions within the Computer Aided Product Design room.

## **Notes**

The objective of this module is to enhance the students ability to produce 3D solid models. It should not provide a design experience.