

Liverpool John Moores University

Title: PROCESS ENGINEERING
Status: Definitive
Code: **5507ENGHAL** (106670)
Version Start Date: 01-08-2016

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

| Team | Leader |
|-----------------|--------|
| Russell English | Y |

Academic Level: FHEQ5
Credit Value: 12
Total Delivered Hours: 26
Total Learning Hours: 120
Private Study: 94

Delivery Options

Course typically offered: Semester 2

| Component | Contact Hours |
|-----------|---------------|
| Lecture | 18 |
| Practical | 3 |
| Tutorial | 3 |

Grading Basis: 40 %

Assessment Details

| Category | Short Description | Description | Weighting (%) | Exam Duration |
|----------|-------------------|-----------------------------|---------------|---------------|
| Essay | AS1 | Laboratory-based Assignment | 15 | |
| Essay | AS2 | Laboratory-based Assignment | 15 | |
| Exam | AS3 | Examintion | 70 | 2 |

Aims

To provide an understanding of how the behaviour of different materials influence the design of processing methods and to establish the relationship between component requirements and processing conditions.

Learning Outcomes

After completing the module the student should be able to:

- 1 discuss the range of processing methods for engineering materials
- 2 calculate processing parameters from processing data.
- 3 explain how material properties influence its processing.

Learning Outcomes of Assessments

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

| | | | |
|------|---|---|---|
| CW | 1 | 3 | |
| CW | 2 | 3 | |
| EXAM | 1 | 2 | 3 |

Outline Syllabus

Casting processes: Fluid flow and solidification. Mould design. Prevention of casting defects. Developments in casting processes.

Moulding processes: Polymer rheology. Polymer processing especially by injection moulding and extrusion based processes.

Powder metallurgy techniques applied to metals and ceramics.

Modern developments in metal cutting processes: grinding theory and practice. CNC machining processes

Deformation processes: evaluation of forming loads based on principal stresses and yield criteria. Formability, influence of strain hardening, strain rate sensitivity and anisotropy. Forming limit diagrams.

Learning Activities

By a series of lectures, tutorials and practical work.

Notes

The module allows the student to study manufacturing processes to a depth, which provides an understanding of the process and its controlling variables.