Liverpool John Moores University

Title:	PROCESS ENGINEERING
Status:	Definitive
Code:	**5509ENGIOM** (107401)
Version Start Date:	01-08-2011
Owning School/Faculty:	Engineering
Teaching School/Faculty:	Isle of Man College

Team	Leader
Gary Colquhoun	Y

Academic Level:	FHEQ5	**Credit Value:**	12.00	**Total Delivered Hours:**	26.00
Total Learning Hours:	120	**Private Study:**	94		

Delivery Options
Course typically offered: Semester 2

Component	Contact Hours
Lecture	18.000
Practical	3.000
Tutorial	3.000

Grading Basis: 40 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Essay	AS1	Laboratory-based Assignment	15.0	
Essay	AS2	Laboratory-based Assignment	15.0	
Exam	AS3	Examintion	70.0	2.00

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.

References

Course Material	Book
Author	Kalpakjian, S
Publishing Year	2003
Title	Manufacturing Processes for Engineering Materials
Subtitle	
Edition	
Publisher	Addison Wesley
ISBN	

Course Material	Book

Author	Beddoes,J.and Bibby,M.J.
Publishing Year	1999
Title	Principles of Metal Manufacturing Processes
Subtitle	
Edition	
Publisher	Addison Wesley
ISBN	

Course Material	Book
Author	Shaw,M.C.
Publishing Year	1998
Title	Principles of Abrasive Processing
Subtitle	
Edition	
Publisher	Oxford University Press
ISBN	

Course Material	Book
Author	Malkin,S.
Publishing Year	2001
Title	Grinding Technology
Subtitle	
Edition	
Publisher	Ellis Horwood
ISBN	

Notes

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