UNIVERSITY OF WARWICK

Proposal Form for New or Revised Modules (MA1 - version 7 - April 2014)

Approval information	
Approval Type	Revised module
Date of Introduction/Change	October 2017
If new, does this module replace another? If so, enter module code and title:	N/A
If revised/discontinued, please outline the rationale for the changes:	This is an established module, running since 2003. No changes other than updating, existing MA1 no longer on system.
Confirmation that affected departments have been consulted:	WMG and School of Engineering have been consulted.

Module Summary	
1. Module Code (if known)	ES4B9
2. Module Title	Innovative Process Development
3a. Lead department:	WMG
3b. Teaching Split (if known):	100% WMG
4. Name of module leader	Prof Kevin Neailey
5. Level	PG: X☐ Level 7 (Masters) See Guidance Notes for relationship to years of study
6. Credit value(s) (CATS)	15
7. Principal Module Aims	The main role of many manufacturing engineers is to select and or develop manufacturing processes in order to get the best out of them and to provide a competitive edge. This module aims to show how this has been done in the past and is being done at this time. Participants will learn the skills and techniques involved and will gain experience of the thought processes used.

Module Summary	
8. Principal Learning Outcomes	By the end of the module the student should be able to... • Determine possible advantages and disadvantages of existing and new processes from limited and often biased information. • Consider the importance of business and social issues as well as the technical issues when developing processes. • Identify those limitations of existing processes that might be capable of improvement and suggest how they might be overcome. • Propose other (and possibly novel) market/application opportunities of existing processes and products. • Work effectively as part of a group.
9. Timetabled Teaching Activities (summary)	Lectures : 15 x 1 hours Seminars: 15 x 1 hours Revision examples: 2 x 1 hours Total 32 hours
10. Departmental Web-link	http://www2.warwick.ac.uk/fac/sci/eng/eso/modules/year4/
11. Other essential notes	Advice and feedback hours are available for answering questions on the lecture material, theory and exam papers.
12. Assessment methods (summary)	Individual assignment 2000 words: 15% Group Report, including peer assessment 2500-3000 words: 7.5% Group Presentation, including peer assessment: 7.5% 3 hour examination: 70% Note: students need to pass the examination and pass the coursework overall.

For use by Strategic Planning and Analytics Office only - Do not fill in this section

Level	JACS3 Code	Teaching Split
		If not provided in 3b above

External Credit Level		Scheme	

Module Context

13. Please list all departments involved in the teaching of this module. If taught by more than one department, please indicate percentage split.

100% WMG.

14. Availability of module

Degree Code	Title	Study Year	C/OC/ A/B/C	Credits
H107	**MEng Engineering and variants**	**4**	**A**	**15 CATS**
H109	**MEng Engineering with Intercalated Year**	**5**	**A**	**15 CATS**
H110	**MEng Engineering with a Year in Research**	**5**	**A**	**15 CATS**
H311	**MEng Mechanical Engineering and variants**	**4**	**B/Option C**	**15 CATS**
H312	**MEng Mechanical Engineering with Intercalated Year**	**5**	**B**	**15 CATS**
H313	**MEng Mechanical Engineering with a Year in Research**	**5**	**B**	**15 CATS**
HH37	**MEng Manufacturing & Mechanical Engineering and variants**	**4**	**Core**	**15 CATS**
HH38	**MEng Manufacturing & Mechanical with Intercalated Year**	**4**	**Core**	**15 CATS**
HH39	**MEng Manufacturing & Mechanical with a Year in Research**	**4**	**Core**	**15 CATS**

15. Minimum number of registered students required for module to run

1 (core)

16. Pre- and Post-Requisite Modules

None

Module Content and Teaching

17. Teaching and Learning Activities *(totals for module – please see guidance)*

Module duration (weeks)	10
Lectures	15 x 1 hour
Seminars	15 x 1 hour
Tutorials	-
Project Supervision	-
Demonstration	-
Practical Class/Workshops	-

Module Content and Teaching		
Supervised time in studio/workshop	-	
Fieldwork	-	
External visits	-	
Work based learning	-	
Placement	**-**	
Year abroad	**-**	
Other activity:	2 hours revision examples class Guided independent learning 118 hours	
18. Assessment Method (Standard)		
Type of assessment	**Length**	**% weighting**
Written Examinations	3 Hours	**70%**
Practical Examinations		
Assessed essays/coursework	Individual assignment 2000 words Group Report, including peer assessment 2500-3000 words Group Presentation, including peer assessment	**15%** **7.5%** **7.5%**
18a. Final chronological assessment *(please see guidance*)	Examination (70%).	

19. Methods for providing feedback on assessment.
Written comments on submitted assignment and written group feedback Cohort level feedback on examinations Support through advice and feedback hours.
20. Outline Syllabus
Using examples from the main classes of manufacturing process, the module will look at the basic process and then at current advanced variants. Examples might include; Conventional powder processing leading to MIM, HIP and Conform. Sand Casting leading to Squeeze Casting and Investment Casting. Surface Improvement processes such as spray deposition, CVD, and PVD. Forging leading to Superplastic Deformation. Rapid Prototyping, Rapid Tooling and Rapid Manufacture Examples of newly developed processes will be analysed according to their business and technical issues and potential.

Business and Social factors to be taken into account when selecting or developing a new process.

21. Illustrative Bibliography

Any general text on Manufacturing Processes and Technology will be a good starting point. These will be supplemented by;
Current journals that cover Manufacturing Processes and their development. For example;
International Journal of Advanced Manufacturing Technology, Springer, ISSN 0268 – 3768
Journal of Manufacturing processes, Elsevier
Links to a small number of selected articles concerning specific processes covered in the lectures will be posted on the website.

22. Learning outcomes

Successful completion of the module leads to the learning outcomes. The learning outcomes identify the knowledge, skills and attributes developed by the module.

Learning Outcomes should be presented in the format "By the end of the module students should be able to..." using the table at the end of the module approval form:

See table at the end of this form.

Resources

23. List any additional requirements and indicate the outcome of any discussions about these.

Approval

24. Module leader's signature	Professor Kevin Neailey
25. Date of approval	Teaching Policy Committee Chair's action 31 March 2017
26. Name of Approving Committee (include minute reference if applicable)	School of Engineering and WMG Teaching Policy Committee
27. Chair of Committee's signature	Professor Gill Cooke
28. Head of Department(s) signature	Professor Nigel Stocks

Examination Information		
A1. Name of examiner (if different from module leader)		
A2. Indicate all available methods of assessment in the table below		
% Examined	**% Assessed by other methods**	**Length of examination paper**
70	Individual assignment 2000 words: 15% Group Report, including peer assessment 2500-3000 words: 7.5% Group Presentation, including peer assessment: 7.5%	**3 hours**
A3. Will this module be examined together with any other module (sectioned paper)? If so, please give details below.		
A4. How many papers will the module be examined by?	☒ 1 paper ☐ 2 papers	
A5. When would you wish the exam take place (e.g. Jan, April, Summer)?	**Summer**	
A6. Is reading time required?	Yes	
A7. Please specify any special exam timetable arrangements.		
A8. Stationery requirements		
No. of Answer books?	**1**	
Graph paper?	**0**	
Calculator?	**Yes**	
Any other special stationery requirements (e.g. Data books, tables etc)?	**Engineering Data Book**	
A9. Type of examination paper		
Seen?	☐ Yes ☒ No	

Examination Information		
Open Book?	☐ Yes	☒ No
Restricted?	☐ Yes	☒ No
If restricted, please provide a list of permitted texts:		

LEARNING OUTCOMES		
(By the end of the module the student should be able to....)	**Which teaching and learning methods enable students to achieve this learning outcome? (reference activities in section 15)**	**Which summative assessment method(s) will measure the achievement of this learning outcome? (reference activities in section 16)**
Determine possible advantages and disadvantages of existing and new processes from limited and often biased information.	Lectures, seminars,	Unseen Examination Individual Assignment Group Report
Consider the importance of business and social issues as well as the technical issues when developing processes.	Lectures, seminars	Unseen Examination Individual Assignment Group Report Group Presentation
Identify those limitations of existing processes that might be capable of improvement and suggest how they might be overcome.	Lectures, seminars,	Unseen Examination Individual Assignment Group Report
Propose other (and possibly novel) market/application opportunities of existing processes and products.	Lectures, seminars,	Unseen Examination Individual Assignment Group Report Group Presentation
Work effectively as part of a group	Seminars	Group Report Group Presentation