

**UNIVERSITY OF WARWICK**

**Proposal Form for New or Revised Modules (MA1- version 5)**

<b>Approval information</b>	
<b>Approval Type</b>	<input checked="" type="checkbox"/> New module <input type="checkbox"/> Revised module <input type="checkbox"/> Discontinue module
<b>Date of Introduction/Change</b>	01/10/2012
<b>If new, does this module replace another? If so, enter module code and title:</b>	ES3C4 Productionising Designs
<b>If revised/discontinued, please outline the rationale for the changes:</b>	
<b>Confirmation that affected departments have been consulted:</b>	Engineering has been consulted throughout. Contact with Dr Dave Britnell and Terry Vygus.

<b>Module Summary</b>	
<b>1. Module Code (if known)</b>	ES3**
<b>2. Module Title</b>	Industrial Engineering
<b>3. Lead department:</b>	WMG
<b>4. Name of module leader</b>	Bill Taylor
<b>5. Level</b>	UG: <input type="checkbox"/> Level 4 (Certificate) <input type="checkbox"/> Level 5 (Intermediate) <input checked="" type="checkbox"/> Level 6 (Honours) PG: <input type="checkbox"/> Level 7 (Masters) <input type="checkbox"/> Level 8 (Doctoral)  See Guidance Notes for relationship to years of study
<b>6. Credit value(s) (CATS)</b>	15 CATS
<b>7. Principal Module Aims</b>	Industrial Engineering concerns itself with the design, improvement and installation of integrated systems of people, materials, equipment and energy. This will be core to Manufacturing students
<b>8. Contact Hours (summary)</b>	27 hrs Lectures, 3 hrs Case Study, Total: 30 hours
<b>9. Assessment methods (summary)</b>	70% examination (10.5 credits) 30% Industrial Case Study report (4.5 credits)

<b>Module Context</b>				
<b>10. Please list all departments involved in the teaching of this module. If taught by more than one department, please indicate percentage split.</b>				
WMG 100%				
<b>11. Availability of module</b>				
<b>Degree Code</b>	<b>Title</b>	<b>Study Year</b>	<b>C/OC/ A/B/C</b>	<b>Credits</b>
HH73	BEng Manufacturing & Mechanical Engineering	3	C	15
HH37	MEng Manufacturing & Mechanical Engineering	3	C	
HH37	MEng Manufacturing & Mechanical Engineering with Intercalated Year	3	C	
HH37	MEng Manufacturing & Mechanical Engineering a Year in Research	3	C	
H106	BEng Engineering	3	A	
H107	MEng Engineering	3	A	
H109	MEng Engineering with Intercalated Year	3	A	
H109	MEng Engineering a Year in Research	3	A	
HN12	BEng Engineering Business Management	3	B	
HH37	MEng Manufacturing & Mechanical Engineering with Intercalated Year	4	C	
HH37	MEng Manufacturing & Mechanical Engineering a Year in Research	4	C	
H109	MEng Engineering with Intercalated Year	4	A	
H109	MEng Engineering a Year in Research	4	A	
<b>12. Minimum number of registered students required for module to run</b>				
1 (Core module)				
<b>13. Pre- and Post-Requisite Modules</b>				
ES2A3 Design & Durability ES2A6 Starting and Running a Business				

<b>Module Content and Teaching</b>		
<b>14. Teaching and Learning Activities</b>		
<b>Lectures</b>	<b>27 hrs</b>	
<b>Seminars</b>	<b>3 hrs</b>	
<b>Tutorials</b>		
<b>Laboratory sessions</b>		
<b>Total contact hours</b>	<b>30 hrs</b>	
<b>Module duration (weeks)</b>	<b>10</b>	
<b>Other activity</b> <i>(please describe): e.g. distance-learning, intensive weekend teaching etc.</i>	<b>Private study 120 hrs</b>	
<b>15. Assessment Method (Standard)</b>		
<b>Type of assessment</b>	<b>Length</b>	<b>% weighting</b>
<b>Examinations</b>	2 Hours	<b>70</b>
<b>Assessed essays/coursework</b>	1 case study written report of 1500-2500 Words	<b>30</b>
<b>Other formal assessment</b>		
<b>15a. Final chronological assessment</b> <i>(please see guidance)</i>		

## 16. Methods for providing feedback on assessment.

Feedback on Case Study report is by mark sheet and overview.

## 17. Outline Syllabus

Industrial Engineering "...draws upon specialised knowledge and skill in mathematical, physical and social sciences, together with the principles and methods of engineering analysis and design to specify, predict and evaluate results to be obtained from such systems" (adapted from a definition US Institute of Industrial Engineers)

Indicative Contents is as follows:

2 lectures: Method Study - The Attack on Non Value Added Work

3 lectures: Facilities Planning - Organising People, Facilities, Space and Materials

5 lectures: Work Measurement - The Analysis of Work Performance

6 lectures: Ergonomics - Human Physical Performance, Cognitive Ergonomics, Health & Safety

1 lecture: Work Design - The Essentials

1 lecture: Productivity - Efficiency versus Effectiveness

1 lecture: Job Design - Good Characteristics

1 lecture: Approaches to Change - Tactics

1 lecture: Financial Justification - Winning over finance!

2 lectures: Sequence and Time Delay - Constraints & Issues

1 lecture: Linear Programming - Maximising profit when there is choice.

2 lectures: Importance of Balance & Sequence - Resource Smoothing

1 lecture: Lean & Industrial Engineering - Equal Impact

3 Seminars: Case Study - Reinforcing items from the previous 27 lectures and applying some to an industrial case study which will facilitate their Case Study Report (worth 4.5 credits).

## 18. Illustrative Bibliography

Operations Management (2<sup>nd</sup> Ed.) Hills T, Palgrave Macmillan (2004)

Operations and Supply Chain Management (13<sup>th</sup> Ed.) Jacobs FR, Chase RB, Aquilano NJ, McGraw-Hill Higher Education (2010)

Production and Operations Management: An Applied Analytical Approach (1<sup>st</sup> Ed.) Martinich JS, John Wiley & Sons (1996)

Methods, Standards, & Work Design (3<sup>rd</sup> Ed.) Niebel B, Freivalds A, McGraw-Hill Higher Education (2002)

Handbook of industrial engineering: technology and operations management (3<sup>rd</sup> Ed.) edited by Salvendy G, John Wiley & Sons (2001).

Handbook of industrial engineering equations, formulas, and calculations (1<sup>st</sup> Ed.) Badiru AB, Omitaomu OA, Taylor & Francis (2011).

## 19. 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:*

**Resources**

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

None

**Approval**

**21. Module leader's signature**

Bill Taylor

**22. Date of approval**

3<sup>rd</sup> August 2012

**23. Name of Approving Committee (include minute reference if applicable)**

WMG Undergraduate Executive Committee (meeting date 6<sup>th</sup> August 2012)

**24. Chair of Committee's signature**

Kevin Neailey

**25. Head of Department(s) Signature**

SKB pp Jane Coleman

<b>Examination Information</b>		
<b>A1. Name of examiner (if different from module leader)</b>	Bill Taylor	
<b>A2. Indicate all available methods of assessment in the table below</b>		
<b>% Examined</b>	<b>% Assessed by other methods</b>	<b>Length of examination paper</b>
70	30	2 hrs
<b>A3. Will this module be examined together with any other module (sectioned paper)? If so, please give details below.</b>		
No		
<b>A4. How many papers will the module be examined by?</b>	<input checked="" type="checkbox"/> 1 paper <input type="checkbox"/> 2 papers	
<b>A5. When would you wish the exam take place (e.g. Jan, April, Summer)?</b>	Summer	
<b>A6. Is reading time required?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>A7. Please specify any special exam timetable arrangements.</b>		
None		
<b>A8. Stationery requirements</b>		
<b>No. of Answer books?</b>	1	
<b>Graph paper?</b>	Yes	
<b>Calculator?</b>	Yes	
<b>Any other special stationery requirements (e.g. Data books, tables etc)?</b>	Engineering Data Book	
<b>A9. Type of examination paper</b>		
<b>Seen?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Open Book?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>Restricted?</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>If restricted, please provide a list of permitted texts:</b>		

<b>LEARNING OUTCOMES</b>		
<b>(By the end of the module the student should be able to....)</b>	<b>Which teaching and learning methods enable students to achieve this learning outcome? (reference activities in section 15)</b>	<b>Which summative assessment method(s) will measure the achievement of this learning outcome? (reference activities in section 16)</b>
Critique the main principles of Industrial Engineering and its application to the design, implementation and installation of integrated systems of people, materials, equipment and energy.	Lecturing material, course textbook and handouts	Examination
Understand and apply analysis and evaluation techniques for work performance in appropriate applications	Lecturing material, course textbook, case study seminars and handouts	Examination and case study report
Appreciate the fundamental principles of Ergonomics (human factors engineering) in the context of human physical performance, system design and health and safety within a real world application	Lecturing material, course textbook, case study seminars and handouts	Examination and case study report