

UNIVERSITY OF WARWICK

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

Approval information	
Approval Type	New module
Date of Introduction/Change	October 2018
If new, does this module replace another? If so, enter module code and title:	Yes, it will replace ES3D7 Industrial Engineering. Note that ES2D0 and ES3D7 will run in parallel during the 18/19 academic year.
If revised/discontinued, please outline the rationale for the changes:	
Confirmation that affected departments have been consulted:	Changes have been made in consultations between the School of Engineering and WMG

Module Summary	
1. Module Code (if known)	ES2D0
2. Module Title	Industrial Engineering
3a. Lead department:	WMG
3b. Teaching Split (if known):	100% WMG
4. Name of module leader	Bill Taylor
5. Level	UG: <input type="checkbox"/> Level 4 (Certificate) <input checked="" type="checkbox"/> Level 5 (Intermediate) <input 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
6. Credit value(s) (CATS)	15
7. Principal Module Aims	This module aims to equip students with the skills to design, develop and install integrated systems of people, materials, equipment and energy.
8. Principal Learning Outcomes	At the end of the module students will be able to:

Module Summary	
	<ul style="list-style-type: none"> • Understand the applicability of Industrial Engineering in Operations Management. • Assess user process Ergonomics and the associated Health and Safety Regulations at work including the guiding principles of application and assessment. • Provide a perspective on Approaches to Change, and how best to Negotiate Change. • Evaluate the consequences of Sequence and Time consumption (PERT, Resource Smoothing and Line Balancing) • Scope factory layout design to facilitate efficient, effective and productive use of people, space and facilities. • Appreciate the relevance and use of Method Study and Work Measurement. • Consider the ethical, social and legal requirements within the context of Industrial Engineering applications
9. Timetabled Teaching Activities (summary)	27 x 1hr lectures 1 x 3 hr case study 2 x1 hr revision class Total: 32 hrs
10. Departmental Web-link	http://www2.warwick.ac.uk/fac/sci/eng/eso/modules/year3
11. Other essential notes	Advice and feedback hours are available for answering questions on the lecture material and past examination questions. ES2D0 and ES3D7 will need to be taught together during the 18/19 academic year.
12. Assessment methods (summary)	70% examination 30% Industrial Case Study Report – 15 pages

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

Level	JACS3 Code	Teaching Split
		<i>If not provided in 3b above</i>

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.				
WMG 100%				
14. Availability of module				
Degree Code	Title	Study Year	C/OC/A/B/C	Credits
H113	BEng Engineering	2	A/B	15
H114	MEng Engineering	2	A/B	15
H335	BEng Automotive Engineering	2	C	15
H336	MEng Automotive Engineering	2	C	15
HH35	BEng Systems Engineering	2	Option C	15
HH31	MEng Systems Engineering	2	Option C	15
HN11	BSc Engineering and Business Studies	2	A/B	15
HN15	BEng Engineering Business Management	2	C	15
15. Minimum number of registered students required for module to run				
1 (Core module)				
16. Pre- and Post-Requisite Modules				

Module Content and Teaching	
17. Teaching and Learning Activities (<i>totals for module – please see guidance</i>)	
Module duration (weeks)	10
Lectures	27 x 1 hrs
Seminars	1 x 3 hrs case study
Tutorials	
Project Supervision	
Demonstration	
Practical Class/Workshops	
Supervised time in studio/workshop	
Fieldwork	
External visits	
Work based learning	
Placement	
Year abroad	

Module Content and Teaching		
Other activity <i>(please describe): e.g. distance-learning, intensive weekend teaching etc.</i>	2 x 1hr revision class 118 hrs Guided independent learning	
18. Assessment Method (Standard)		
Type of assessment	Length	% weighting
Written Examinations	3 Hours	70
Practical Examinations		
Assessed essays/coursework	15 pages industrial case study report	30
18a. Final chronological assessment <i>(please see guidance)</i>	Examination	
19. Methods for providing feedback on assessment.		
Feedback on case study is by mark sheet and cohort overview Cohort level feedback on examination		
20. Outline Syllabus		
<p>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)</p> <p>Indicative Contents is as follows:</p> <p>Method Study - The Attack on Non Value Added Work</p> <p>Facilities Planning - Organising People, Facilities, Space and Materials</p> <p>Work Measurement - The Analysis of Work Performance</p> <p>Ergonomics - Human Physical Performance, Cognitive Ergonomics, Health & Safety</p> <p>Work Design - The Essentials</p> <p>Productivity - Efficiency versus Effectiveness</p> <p>Approaches to Change / Negotiation of Change- Tactics</p> <p>Sequence and Time Delay - Constraints & Issues</p> <p>Linear Programming - Maximising profit when there is choice.</p> <p>Queuing Theory and Simulation – Attempting to understand a System behaviour, performance and costs</p> <p>Importance of Balance & Sequence - Resource Smoothing</p>		

Module Content and Teaching

Lean & Industrial Engineering - Equal Impact

21. Illustrative Bibliography

Slack, Brandon-Jones, Johnston, Operations Management; Pearson 2013 7th edition, ISBN-10 0273776207 ISBN-13 9780273776208
 Hopp, Wallace and Spearman, ML; Factory Physics: Foundations of manufacturing management; McGraw-Hill 2011 ISBN 10 - 0256247951, ISBN 13 9780256247954
 Hill, Terry; Operations Management; MacMillan Business 2012 3RD edition ISBN-10 0230362907 ISBN-13 978023062901
 Levin, RI and Rubin, DS; Statistics for Management[Prentice Hall 2013 7th edition ISBN-10 1292039930 ISBN-13 9781292039930
 Chopra, S and Meindl, P; Supply Chain Management; Strategy, Planning and Operation; Pearson 2016 ISBN-10 1292093560 ISBN-13 9781292093567

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:

Resources

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

None

Approval	
24. Module leader's signature	Bill Taylor
25. Date of approval	Teaching Policy Committee 4 April 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	30 Industrial Case Study Report (15 pages)	3 hrs
A3. Will this module be examined together with any other module (sectioned paper)? If so, please give details below.		
In 2018/2019 academic year it should be examined with ES3D7		
A4. How many papers will the module be examined by?	<input checked="" type="checkbox"/> 1 paper <input type="checkbox"/> 2 papers	
A5. When would you wish the exam take place (e.g. Jan, April, Summer)?	Summer	
A6. Is reading time required?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
A7. Please specify any special exam timetable arrangements.		
ES2D0 and ES3D7 should be scheduled together in 2018/2019		
A8. Stationery requirements		
No. of Answer books?	1	

Examination Information	
Graph paper?	Yes
Calculator?	Yes
Any other special stationery requirements (e.g. Data books, tables etc)?	Engineering Data Book
A9. Type of examination paper	
Seen?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Open Book?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Restricted?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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)
Assess user process Ergonomics and the associated Health and Safety Regulations at work including the guiding principles of application and assessment.	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Provide a perspective on Approaches to Change, and how best to Negotiate Change.	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Evaluate the consequences of Sequence and Time consumption (PERT, Resource Smoothing and Line Balancing	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Scope factory layout design to facilitate efficient, effective and productive use of people, space and facilities	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Appreciate the relevance and use of Method Study and Work Measurement.	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Consider the ethical, social and legal requirements within the context of Industrial Engineering applications	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report
Evaluate the consequences of Sequence and Time consumption (PERT, Resource Smoothing and Line Balancing)	Lecturing material, course textbook, case study participation seminars and handouts	Examination and industrial case study report