

# ES2D8-15 Technical Operations Management

**25/26**

**Department**

School of Engineering

**Level**

Undergraduate Level 2

**Module leader**

Piotr Mazurkiewicz

**Credit value**

15

**Module duration**

10 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

ES2D8-15 Technical Operations Management

[Module web page](#)

### Module aims

This module will provide the students with the ability to demonstrate how engineering businesses can meet the challenges created by the dynamic industrial and commercial environment in which they operate. Students will furthermore be able to employ appropriate quantitative and qualitative techniques to deal with designing and managing operations, managing and assuring quality with awareness of risks involved. Students will also be able to apply and use the tools and techniques studied in context of product environmental life cycle management with emphasis on principles of sustainable development.

### Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be

covered. Actual sessions held may differ.

#### Operations Management:

Design of the operation – design of the product & service, supply network, layout & flow and jobs & work organisation.

Transition to operation – operation readiness and monitoring

Information management systems

Organisational structure with relevant leadership and management styles

Planning & control of the operation - capacity management; change management

Enterprise Resource Planning (ERP), Agile against Lean systems (with introduction of major lean systems elements and tools

Importance of continuous improvement and transition towards learning organisations.

#### Quality Management:

Management for Quality: philosophy, participation and people issues, structures and organisation.

Design for Quality: customer requirements definition and validation, reliability/verification issues.

Process Management: understanding variability, quality tools and techniques (fishbone, Pareto, SPC, TPM), continuous improvement and waste reduction. Quality Systems: ISO 9001, ISO 14000, Business Excellence Model.

#### Life Cycle Management & Sustainability

Product environmental lifecycle management (PLM): increasing complexity and regulations trends

Present product lifecycles against sustainable development frameworks

Life cycle impact assessment : cradle to grave vs cradle to gate

ISO 14040: framework for environmental management

## Learning outcomes

By the end of the module, students should be able to:

- Discuss the importance and interdependence of major elements of design of operation management system including, but not limited to planning, organisational structures with assessment of appropriate leadership and management styles and control in order to improve operations and identify a relevant selection of tools and techniques for a variety of engineering businesses; (C6 (D), C13, C18, M6(D), M13, M18)
- Examine the need to accept commercial risk and be aware of techniques to evaluate and manage risk; (C9, M9)
- Appraise lifecycle assessment and management principles in dynamic business environments and its relevance to sustainable development concepts with both qualitative and quantitative approaches emphasising associated risks and relevant assessment frameworks; (C5(D), C8, C7(D), M5(D), M8, M7(D))
- Discuss the importance of quality in engineering products and services and be aware of the tools and techniques to prevent, identify, measure and control quality problems and drive continuous improvement;(C14, M14)
- Address awareness of relevant ethical and regulatory requirements including personnel, health & safety, traceability and international standards.(C8, M8)

## Indicative reading list

- Heizer, J & Render, B (2014) "Operations Management", 11th ed; Pearson Education UK
- Knowles, G; (2005) "Quality Management" (Bookboon), ISBN: 978-87-7681-875-3
- Knowles, G; (2005) "Six Sigma" (Bookboon), ISBN: 978-87-7681-852-4
- Krajewski, L.J; Ritzman, L.P. & Malhotra, M.K. (2013) "Operations Management", 10th ed. Pearson Education UK
- Slack, N; Brandon-Jones, A & Johnston, R. (2016) "Operations Management", 8th ed; Pearson Education, UK
- Basu, S. (2017) Plant Hazard Analysis and Safety Instrumentation Systems [online] Academic Press is an imprint of Elsevier. available from <https://0-www-sciencedirect-com.pugwash.lib.warwick.ac.uk/science/book/9780128037638> [6 April 2018]
- Hill, A. and Hill, T. (2012) Operations Management [online] New York, New York: Palgrave Macmillan. available from <  
[http://encore.lib.warwick.ac.uk/iii/encore/record/C\\_Rb3155801\\_Sterry\\_hill\\_P0,1\\_\\_Orightresult\\_\\_U\\_\\_X4?lang=eng&suite=cobalt](http://encore.lib.warwick.ac.uk/iii/encore/record/C_Rb3155801_Sterry_hill_P0,1__Orightresult__U__X4?lang=eng&suite=cobalt)> [6 April 2018]
- Malakooti, B. (2013) Operations and Production Systems with Multiple Objectives [online] 1st edn. Wiley. available from <https://ebookcentral.proquest.com/lib/warw/detail.action?docID=1574350> [6 April 2018]
- Mitchell, J.S. (2015) Operational Excellence: Journey to Creating Sustainable Value [online] Hoboken, New Jersey: Wiley,. available from <  
[http://encore.lib.warwick.ac.uk/iii/encore/record/C\\_Rb2841819\\_Soperational\\_excellence\\_\\_P0,2\\_\\_Orightresult\\_\\_U\\_\\_X6?lang=eng&suite=cobalt](http://encore.lib.warwick.ac.uk/iii/encore/record/C_Rb2841819_Soperational_excellence__P0,2__Orightresult__U__X6?lang=eng&suite=cobalt)> [4 April 2018]
- Rüttimann, Bruno G. (2018) Lean compendium : introduction to modern manufacturing theory , Cham : Springer (online resource). available from:  
[http://encore.lib.warwick.ac.uk/iii/encore/record/C\\_Rb3178185](http://encore.lib.warwick.ac.uk/iii/encore/record/C_Rb3178185)

## Subject specific skills

Knowledge and understanding of the need for a high level of professional and ethical conduct in engineering and the use of technical literature, other information sources including appropriate codes of practice and industry standards

Knowledge and understanding of risk issues, including health & safety, environmental and commercial risk, risk assessment and risk management techniques and an ability to evaluate commercial risk

## Transferable skills

Exercise initiative and personal responsibility, including time management, which may be as a team member or leader

Awareness of the nature of business and enterprise in the creation of economic and social value  
Ability to formulate and operate within appropriate codes of conduct, when faced with an ethical issue

Appreciation of the global dimensions of engineering, commerce and communication

Be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

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# Study

## Study time

Type	Required
Lectures	4 sessions of 1 hour (3%)
Tutorials	4 sessions of 2 hours (5%)
Practical classes	(0%)
Online learning (scheduled sessions)	3 sessions of 1 hour (2%)
Online learning (independent)	5 sessions of 3 hours (10%)
Private study	120 hours (80%)
Total	150 hours

## Private study description

Guided independent learning based on provided materials to support the flipped and blended approach

Learning required to complete the assessments.

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

### Assessment group A2

	Weighting	Study time	Eligible for self-certification
Blog	40%		Yes (extension)
Moodle based blog; individual assignment 1500 words max			
written assignment	60%		No
small group assignment: 2500 words			

## Feedback on assessment

Formative feedback given during tutorial classes and on Blog.

Summative feedback on written submission and cohort level feedback summary.

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## Availability

### Courses

This module is Core for:

- Year 2 of UESA-HN15 BEng Engineering Business Management
- Year 2 of UESA-HH75 BEng Manufacturing and Mechanical Engineering
- Year 2 of UESA-HH76 MEng Manufacturing and Mechanical Engineering

This module is Optional for:

- Year 2 of UESA-H335 BEng Automotive Engineering
- Year 2 of UESA-H161 BEng Biomedical Systems Engineering
- Year 2 of UESA-H216 BEng Civil Engineering
- Year 2 of UESA-H113 BEng Engineering
- Year 2 of UESA-H315 BEng Mechanical Engineering
- Year 2 of UESA-HH35 BEng Systems Engineering
- Year 2 of UESA-H336 MEng Automotive Engineering
- Year 2 of UESA-H163 MEng Biomedical Systems Engineering
- Year 2 of UESA-H217 MEng Civil Engineering
- Year 2 of UESA-H114 MEng Engineering
- Year 2 of UESA-H316 MEng Mechanical Engineering
- UESA-HH31 MEng Systems Engineering
  - Year 2 of HH31 Systems Engineering
  - Year 2 of HH35 Systems Engineering