

## ENGI08047 Industry 4.0 (Part-time)

<b>Full Title</b>	Industry 4.0 (Part-time)		
<b>Status</b>	Uploaded to Banner	<b>Start Term</b>	2020
<b>NFQ Level</b>	08	<b>ECTS Credits</b>	05
<b>Module Code</b>	ENGI08047	<b>Duration</b>	18 weeks - (18 Weeks)
<b>Grading Mode</b>	Numeric	<b>Department</b>	Mechanical & Industrial Eng
<b>Module Author</b>	Carine Gachon		

### Module Description

Recent technological advances in smart sensors, wireless networks, cloud computing and artificial intelligence are bringing new levels of monitoring and control to manufacturing .This module is concerned with the current and future trends of automation and data exchange.

### Learning Outcomes

**On completion of this module the learner will/should be able to:**

1. Recognise the changes in skills and work practice required for an organisation to prepare for Industry 4.0.
2. Discuss the implication of moving towards Industry 4.0 for a particular type of industry.
3. Collaborate with manufacturing and automation engineers in the transition towards Industry 4.0.
4. Identify and specify smart-technologies applicable to a particular company.

### Indicative Syllabus

The Future of Work and the skills needed  
 The drivers, enablers and compelling forces for Industry 4.0's advancement  
 Smart factories and how they compare to existing ones  
 Internet of Thing (IoT) and Industrial Internet of Things (IIoT)  
 Predictive Analysis, Big Data leading to data-driven decisions and automation  
 Cyber Physical Systems and other major systems in Industry 4.0  
 Understand the role and importance of data and cloud computing  
 How to use the Cloud to support human-machine collaborative efforts  
 The use of collaborative robots  
 Examples of smart automations, products and services  
 The challenges in cybersecurity and how to reduce the risk.  
 How can organizations prepare themselves for Industry 4.0

### Teaching and Learning Strategy

This module is delivered online. Students are given documents to read or videos to watch, following which they have to do their own research to add to their knowledge on the topic. Depending on the topic, they either, learn further from their peers by taking part in collaborative learning where they post on a forum, or answer online quizzes. Their learning is synthesised through case studies where they investigate how technologies can be applied.

### Assessment Strategy

The assessment strategy is designed for learning. Students engage in collaborative learning and online quizzes to reinforce their learning. Case studies allow them to combine the different topics and explore the different applications. When online assessments are used they will be embedded in the class material to allow the lecturer to check that they are both concomitant. Moodle allows the lecturer to analyse when and how long students spend on each topic which should highlight any wrongdoing.

**Repeat Assessment Strategies**

Students can resubmit the quizzes and case studies.

<b>Indicative Coursework and Continuous Assessment:</b>		<b>100 %</b>		
<b>Form</b>	<b>Title</b>	<b>Percent</b>	<b>Week (Indicative)</b>	<b>Learning Outcomes</b>
Performance Evaluation	Collaborative learning	30 %	OnGoing	1,2,4
Assignment	Case studies	40 %	TBA	1,2,3,4
Multiple Choice	Online Quizzes	30 %	OnGoing	1,2,3,4

<b>Blended Delivery Mode Average Weekly Workload:</b>			<b>2.22 Hours</b>		
<b>Type</b>	<b>Description</b>	<b>Location</b>	<b>Hours</b>	<b>Frequency</b>	<b>Weekly Avg</b>
Other	Industry visit	Not Specified	4	Once Per Module	0.22
Online Learning	Online Delivery	Not Specified	2	Weekly	2.00

**Required Reading Book List**

Gilchrist, A., (2016). *Industry 4.0*. Apress.  
ISBN 9781484220474 ISBN-13 1484220471

Alp, E., (2017). *Industry 4.0: Managing The Digital Transformation*. Springer.  
ISBN 9783319578705 ISBN-13 3319578707

Tessaleno, J., (2017). *Industry 4.0*. Springer.  
ISBN 9783319496047 ISBN-13 3319496042

Lane, D., (2017). *Cybersecurity for Industry 4.0*. Springer.  
ISBN 9783319506609 ISBN-13 3319506609

**Online Resources**

This is the main source of information but, taking into account the rapidly changing field, these links are updated for each delivery.

**Other Resources**

None

**Programme Membership**

GA\_EINDG\_H08 202000 Bachelor of Engineering (Honours) in Industrial Engineering