

Module Title:	Quality in Manufacturing
Language of Instruction:	English
Credits:	5
NFQ Level:	8
Module Delivered In	1 programme(s)
Teaching & Learning Strategies:	The module will be delivered using lectures and tutorials with a mixture of presentations, example exercises, question and answer sessions, group discussions and online resources. Laboratory classes will be delivered to students working in groups to obtain experimental data with subsequent individual reporting/assessment.
Module Aim:	To provide the students with a comprehensive understanding of importance of quality control in manufacturing, and the skills and techniques required to perform analyzes on manufacturing processes using an industry standard software.
Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Plan and implement a quality protocol
LO2	Develop and maintain document management systems including First Article Certification (EN9102)
LO3	Use SPC methods for quality improvement
LO4	Conduct failure mode analysis/control plans
LO5	Implement OEE systems
Pre-requisite learning	
Module Recommendations	
<i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>	
No recommendations listed	
Incompatible Modules	
<i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>	
No incompatible modules listed	
Co-requisite Modules	
No Co-requisite modules listed	
Requirements	
<i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>	
DSGN H3601 Advanced Manufacturing or Equivalent	

Module Content & Assessment
Indicative Content
Plan and implement a quality protocol

Defining Quality Objectives, Understanding Roles and Responsibilities, Implement the Quality Assurance Plan, Examine the Results, Making Adjustments, Keep Your Team in the Loop

First article certification (EN9102)

What is First Article Inspection?, When to Conduct a First Article Inspection, Performing a First Article Inspection, The Importance of First Article Inspection

Use SPC methods for quality improvement

Lean Enterprise, Six Sigma, Statistical Process Control, Fundamentals of Statistics, Control Charts for Variables, Additional SPC Techniques for Variables, Fundamentals of Probability, Control Charts for Attributes, Acceptance Sampling, Reliability, Experimental Design, Taguchi's Quality Engineering

Failure mode analysis/control plans

Overview of the FMEA strategy, planning and implementation, Design failure mode and effects analysis, Process failure mode and effects analysis

Document management

Control of Records Identification Storage Protection Retrieval Retention Disposition Keep records legible, readily identifiable, and retrievable.

Assessment Breakdown	%
Continuous Assessment	50.00%
Project	25.00%
Practical	25.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Performance Evaluation	Students will implement and evaluate processes using SPC methods and OEE to effect change	2,4,5	35.00	n/a
Written Report	Implementation of first article certification	2	15.00	n/a

Project

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Project	Students will plan and implement a quality control program	1,2,3,4	25.00	n/a

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Students will learn how to obtain data from manufacturing processes through direct measurement techniques	1,3,5	25.00	n/a

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab/Lecture	12 Weeks per Stage	2.00
Laboratory	12 Weeks per Stage	2.00
Estimated Learner Hours	15 Weeks per Stage	5.13
Total Hours		125.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EMMEC_B	Bachelor of Engineering (Honours) in Mechanical Engineering	8	Mandatory