



Title:	Welding Technology APPROVED		
Long Title:	Welding Technology		
Module Code:	MECH6019	Duration:	1 Semester
Credits:	5		
NFQ Level:	Fundamental		
Field of Study:	Mechanical Engineering		
Valid From:	Semester 1 - 2016/17 (September 2016)		
Module Delivered in	8 programme(s)		
Module Coordinator:	GER KELLY		
Module Author:	GER KELLY		
Module Description:	The aim of this module is to provide the student with the practical skills for basic welding, using various processes such as Manual Metal Arc, TAGS and MAGS, and with the theoretical knowledge in the related areas.		
Learning Outcomes			
<i>On successful completion of this module the learner will be able to:</i>			
LO1	Apply the required safety precautions and regulations when setting up and using welding processes.		
LO2	Explain welding process capabilities, with regard to the welding of various metals.		
LO3	Outline quality control and inspection procedures for welded joints.		
LO4	Describe the effects of welding with regard to residual stresses and mechanical properties.		
LO5	Produce welds on carbon steel and stainless steel, using the MMA, MAGS and TAGS welding processes.		
Pre-requisite learning			
Module Recommendations			
<i>This is prior learning (or a practical skill) that is strongly recommended before enrolment in this module. You may enrol in this module if you have not acquired the recommended learning but you will have considerable difficulty in passing (i.e. achieving the learning outcomes of) the module. While the prior learning is expressed as named CIT module(s) it also allows for learning (in another module or modules) which is equivalent to the learning specified in the named module(s).</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. You may not earn additional credit for the same learning and therefore you may not enrol in this module if you have successfully completed any modules in the incompatible list.</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. You may not enrol on this module if you have not acquired the learning specified in this section.</i>			
No requirements listed			
Co-requisites			
No Co Requisites listed			

Module Content & Assessment

Indicative Content

Safety

Safety precautions and regulations necessary when storing and handling welding equipment.

Description of welding processes/definitions of fusion/non-fusion joints

The functions and principles of the various processes, use of fluxes, atmospheric protection, types of power sources, selection of consumables, and comparisons with other forms of joining.

Effects of welding on metals

Distortion and residual stresses set up by welding and the control of same. Grain structure changes and the consequences on mechanical properties.

Quality control

Testing and inspection of welds by destructive and non-destructive means such as radiography, ultrasonics, penetrants. Joint preparation to achieve fitness for purpose and symbolic representation.

Practical programme

The student will be instructed in the practical welding of carbon steel, alloy steel and stainless steel using a number of processes such as MMA, MAGS and TAGS etc.

Assessment Breakdown

%

Course Work

100.00%

Course Work

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Welding tests using the TAGS and MAGS welding processes	1,2,3,4,5	30.0	Week 6
Practical/Skills Evaluation	Welding tests using the MMA process	1,2,3,5	30.0	Week 12
Short Answer Questions	Written paper to cover the related studies	1,2,3,4,5	40.0	Sem End

No End of Module Formal Examination

Reassessment Requirement

Repeat the module

The assessment of this module is inextricably linked to the delivery. The student must reattend the module in its entirety in order to be reassessed.

The institute reserves the right to alter the nature and timings of assessment



Module Workload

Workload: Full Time				
<i>Workload Type</i>	<i>Workload Description</i>	<i>Hours</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lab	Welding practice	3.0	Every Week	3.00
Lecture	Related studies	1.0	Every Week	1.00
Independent & Directed Learning (Non-contact)	Study	3.0	Every Week	3.00
Total Hours				7.00
Total Weekly Learner Workload				7.00
Total Weekly Contact Hours				4.00

This module has no Part Time workload.

Module Resources

Recommended Book Resources

- **Larry Jeffus, 2011, *Welding and Metal Fabrication*, First Ed., Cengage Learning [ISBN: 978-1418013745]**
- **Fabrication and Welding Engineering 2008, *Fabrication and Welding Engineering*, Routledge [ISBN: 978-0750666916]**

Supplementary Book Resources

- **Davies 1994, *Welding Science and Technology*, Vols. 1&2, 10th. Ed., Cambridge University Press**

This module does not have any article/paper resources

This module does not have any other resources

Module Delivered in

Programme Code	Programme	Semester	Delivery
CR_EMANF_7	<u>Bachelor of Engineering in Manufacturing Engineering</u>	1	Mandatory
CR_EMECH_7	<u>Bachelor of Engineering in Mechanical Engineering</u>	2	Mandatory
CR_ECTWB_7	<u>Bachelor of Science in Craft Technology (Wood) with Business</u>	2	Elective
CR_ECTMS_7	<u>Bachelor of Science in Craft Technology - Mechanical Services</u>	3	Mandatory
CR_EEQMF_6	<u>Certificate in Equipment Maintenance Fundamentals</u>	2	Elective
CR_EMSTE_6	<u>Certificate in Mechanical Services Technology</u>	1	Mandatory
CR_EMECH_6	<u>Higher Certificate in Engineering in Mechanical Engineering</u>	2	Mandatory
CR_EMECN_7	<u>Parttime - Bachelor of Engineering in Mechanical Engineering</u>	1	Group Elective 1