MEM50622 Diploma of Engineering - Prototyping

Release 1

MEM50622 Diploma of Engineering - Prototyping

Modification History

Release 1. New qualification.

Qualification Description

This qualification provides the skills and knowledge to work as a technician either individually or as a member of a team supporting prototyping in large engineering or manufacturing projects. The qualification covers skills and knowledge in engineering materials, engineering systems, design and planning processes, and mechanical, mechatronic, and production engineering.

No licensing, legislative or certification requirements apply to this qualification at the time of publication.

Entry Requirements

Nil

Packaging Rules

Total number of units = 20

- Five core units
- Fifteen elective units, consisting of:
    - a minimum of one Group A unit
    - a minimum of seven Group B units
    - a minimum of four Group C units
    - other units to bring the total number of elective units to fifteen. These may come from Groups A, B, C, or D or (up to three units) from any endorsed Training Package or accredited course – these units must contribute to a valid, industry-supported vocational outcome.

CORE UNITS

Unit code	Unit title	Prerequisites
MEM16006	Organise and communicate information	*
MEM16008	Interact with computing technology	*
MEM30007	Select common engineering materials	
MEM30012	Apply mathematical techniques in a manufacturing engineering	

	or related environment	
MSMENV272	Participate in environmentally sustainable work practices	

ELECTIVE UNITS

Prerequisites for elective units must be completed. Prerequisites only count towards the number of electives required for a group if they are listed in that group. See individual units for details of prerequisites.

Group A – Prototyping specialist electives

Unit code	Unit title	Prerequisites
MEM234039	Provide technical support for prototyping in large engineering and fabrication projects	
MEM234040	Plan space allocation for large steel based fabrication and construction projects	*
MEM23123	Evaluate manufacturing processes	

Group B – Prototyping planning and coordination electives

Unit code	Unit title	Prerequisites
MEM09229	Read and interpret technical drawings	
MEM14001	Schedule material deliveries	*
MEM14002	Undertake basic process planning	*
MEM14003	Undertake basic production scheduling	*
MEM14089	Integrate mechanical fundamentals into an engineering task	*
MEM14090	Integrate mechatronic fundamentals into an engineering task	*
MEM16012	Interpret technical specifications and manuals	*
MEM22012	Coordinate resources for an engineering project or operation	*
MEM22013	Coordinate engineering projects	*
MEM22014	Coordinate engineering-related manufacturing operations	*
MEM22015	Source and estimate engineering materials requirements	*
MEM22017	Coordinate continuous improvement and technical development	*

MEM234020	Coordinate small lot manufacture using rapid manufacture processes	
MEM234027	Plan and manage materials supply for an engineering project or manufacturing operation	
MEM234028	Produce and manage technical documentation	
MEM234029	Produce and manage technical publications	
MEM234036	Apply configuration management procedures in engineering project management	*
MEM234038	Apply systems engineering procedures to engineering design project management	
MEM234041	Manage steel supply for major fabrication projects	
MEM29006	Use a SCADA system to assist Industry 4.0 operations in manufacturing and engineering	
MSMOPS401	Trial new process or product	
MSS404062	Facilitate the use of planning software systems in a work area or team	
MSS405025	Analyse and map a value stream	
MSS405045	Manage relationships with non-customer external organisations	
MSS405056	Use three or six sigma processes to determine and improve process capability	*
MSS405076	Facilitate the development of a new product	*
MSS405078	Lead and manage people within competitive systems and practices	
PMBTECH502E	Analyse production trials	*
PMBTECH506E	Analyse the design of products and tools for polymer injection moulding	*

Group C – Technical electives

Unit code	Unit title	Prerequisites

MEM09155	Prepare mechanical models for computer-aided engineering (CAE)	*
MEM09156	Prepare mechatronic models for computer-aided engineering (CAE)	*
MEM09203	Measure and sketch site information	
MEM14085	Apply mechanical engineering analysis techniques	*
MEM14086	Apply mechatronic engineering analysis techniques	*
MEM14087	Apply manufactured product design techniques	*
MEM14088	Apply maintenance engineering techniques to equipment and component repairs and modifications	*
MEM14091	Integrate manufacturing fundamentals into an engineering task	*
MEM14092	Integrate maintenance fundamentals into an engineering task	*
MEM15001	Perform basic statistical quality control	*
MEM15007	Conduct product and/or process capability studies	*
MEM15008	Perform advanced statistical quality control	*
MEM23003	Operate and program computers and/or controllers in engineering situations	*
MEM23004	Apply technical mathematics	
MEM23063	Select and organise mechanical engineering material tests	*
MEM23109	Apply engineering mechanic principles	*
MEM23111	Select electrical equipment and components for engineering applications	*
MEM23112	Investigate electrical and electronic controllers in engineering applications	*
MEM29001	Work in Industry 4.0	
MEM29006	Use a SCADA system to assist Industry 4.0 operations in manufacturing and engineering	
MEM29012	Access and use a digital twin for operational purposes	

MEM48030	Apply materials selection analysis techniques	*
MSS404056	Apply statistics to operational processes	
PMBTECH401E	Predict polymer properties and characteristics	
PMBTECH505E	Choose polymer materials for an application	*

Group D – General electives

Unit code	Unit title	Prerequisites
MEM09210	Create 3D solid models using computer-aided design (CAD) system	*
MEM09220	Apply surface modelling techniques to 3D drawings	*
MEM11011	Undertake manual handling	*
MEM12003	Perform precision mechanical measurement	*
MEM12023	Perform engineering measurements	*
MEM12024	Perform computations	*
MEM12025	Use graphical techniques and perform simple statistical computations	*
MEM13015	Work safely and effectively in manufacturing and engineering	
MEM14006	Plan work activities	*
MEM16010	Write reports	*
MEM16014	Report technical information	*
MEM30031	Operate computer-aided design (CAD) system to produce basic drawing elements	
MEM30033	Use computer-aided design (CAD) to create and display 3D models	*
MEM48031	Select ceramic and glass materials for engineering and manufacturing applications	
MEM48032	Select composite materials for engineering and manufacturing	

	applications	
MEM48033	Apply chemistry principles to materials used manufacturing and engineering processes	
MSS402084	Undertake root cause analysis	

Qualification Mapping Information

No equivalent qualification.

Links

Companion Volume implementation guides are found in VETNet -
https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2