



Australian Government

MEM48024 Plan and complete metallurgical projects

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM513A Plan and complete metallurgical projects.

Application

This unit of competency defines the skills and knowledge required to systematically plan, design and problem solve within a metallurgical context.

Planning, problem-solving and design should be implemented systematically within the context of market or customer requirements and the prevailing industrial environment in accordance with planning and design parameters including performance, financial, legal, resource and scheduling.

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

Pre-requisite Unit

MEM06003 Carry out heat treatment

MEM11011 Undertake manual handling

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

MEM16008 Interact with computing technology

MEM23063 Select and organise mechanical engineering material tests

MEM14089 Integrate mechanical fundamentals into an engineering task

MEM30007 Select common engineering materials

MEM30012 Apply mathematical techniques in a manufacturing engineering or related environment

MEM48004 Interpret basic binary phase diagrams

MEM48010 Determine and supervise heat treatment of metal

MEM48011 Apply basic chemical principles to metallurgy

MEM48012 Calculate and predict chemical outcomes in metallurgical situations

MEM48016 Select metal joining process

MEM48020 Recommend ferrous and nonferrous metals or alloys for an application

MEM48021 Apply metallurgical principles and techniques in welding and other thermal processes

Competency Field

Metallurgy

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Interpret the client's requirements for a metallurgical application 1.4 Develop the project requirements and parameters with client 1.5 Research the context and parameters of the metallurgical project including the planning, design and problem-solving process 1.6 Prepare a report on the commercial and metallurgical context and parameters of the metallurgical project
2. Prepare concept proposal for metallurgical solution	2.1 Generate different approaches to achieve project objectives 2.2 Check feasibility of metallurgical solutions against project parameters 2.3 Assess metallurgical solutions for conformity to WHS and environmental requirements 2.4 Seek opinions of colleagues and technical experts from other disciplines 2.5 Prepare plan and concept proposal that includes results of feasibility study consideration including calculations and modelling 2.6 Review concept proposal with client to improve outcomes and overcome possible problems
3. Implement the planning, design or problem-solving process for metallurgical project	3.1 Select and manage resources and processes to develop the plan or design 3.2 Document management processes 3.3 Incorporate appropriate components and systems in the planning and design process 3.4 Use appropriate calculations and assumptions in implementing the planning and design process 3.5 Use appropriate computing hardware and software and programming techniques in the planning and design process 3.6 Apply appropriate metallurgical and other scientific, engineering and commercial principles and knowledge to implement planning and design process 3.7 Review concept proposal for metallurgical solution against planning

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	and design process in order to prepare firm metallurgical solution for client
4. Review metallurgical solution with client and prepare implementation plan	4.1 Review solution to ensure conformity with current specification, contract and organisational procedures, WHS and regulatory standards 4.2 Present and explain metallurgical solution and implementation plan to client including presentation of supporting documentation 4.3 Achieve and document client acceptance of the design and implementation plan
5. Implement metallurgical project	5.1 Complete all implementation documentation associated with project implementation in accordance with organisational and statutory requirements 5.2 Participate in implementation process and provide metallurgical oversight
6. Review metallurgical project outcomes	6.1 Review project outcomes in terms of the intended and actual outcomes 6.2 Prepare the report in accordance with organisational requirements

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Application of planning and design in metallurgy includes one or more of the following:

- conceptual development
- management
- design
- manufacture

	• implementation • commissioning and maintenance of products • processes • systems or services using metals and alloys in products • components in machines and systems for domestic, commercial, industrial, entertainment, civil, medical or military applications.
Parameters include one or more of the following:	• competitiveness • performance • financial, legal, resource and scheduling implications of a metallurgical application.
Reports include:	• a description of the metallurgical processes involved in the project • commercial, production and fabrication implications of different metallurgical options • occupational health, safety and environmental implications of metallurgical processes related to the project • preparation by a metallurgist working alone or in conjunction with engineers, technicians and other relevant personnel.
WHS and environment requirements include:	• ensuring that all organisational and statutory requirements are met • workforce is not exposed to hazardous worksite conditions, materials and processes • broader community is not exposed to environmental effects of the activity.
Implementation documentation that requires metallurgical input includes one or more of the following:	• Gantt charts • cost and other resource requirements • standard operating procedures (SOPs) and other instructions for organisation personnel • special safety and maintenance instructions • production schedules.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSATCM513A Plan and complete metallurgical projects.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>