



Australian Government

PSPSCI603A Initiate and conduct scientific/technological research

Revision Number: 3

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Modification History

Release	TP Version	Comments
3	PSP12V1	Unit descriptor edited.
2	PSP04V4.2.	Layout adjusted. No changes to content.
1	PSP04V4.1	Primary release.

Unit Descriptor

This unit covers the conduct of scientific/technological research at a level meriting national recognition where superior initiative and judgment are used within strategically important areas. It includes formulating the research question, devising the research methodology, conducting and managing the research, and publishing and presenting the research results. In practice, initiating and conducting scientific/technological research overlaps with other generalist or specialist work activities such as acting ethically, applying government systems, maintaining strategic networks, managing resources, managing risk, managing workplace safety.

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

Application of the Unit

Not applicable.

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Elements are the essential outcomes of the unit of competency. Together, performance criteria specify the requirements for competent performance. Text in ***bold italics*** is explained in the Range Statement following.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Formulate research question	1.1 Ongoing professional development and networking with industry, external funding bodies and professional networks are used to identify issues for investigation. 1.2 Industry experience and industry analysis are used to formulate innovative research question/s in accordance with organisational policy and procedures. 1.3 Research question is formulated that is logical, defensible and dissects key elements of the issue to be investigated. 1.4 Question to be researched is shown to be of strategic importance to the industry and to the organisation's objectives and timeframes. 1.5 Issues relating to intellectual property are identified and exploited in accordance with organisational requirements. 1.6 Research and professional networks are contributed to and used to access current information relevant to the research question, and both current and published information is assessed and relevant information is extracted.
2. Devise research methodology	2.1 Innovations in research methods, objectives and/or the formulation of a hypothesis are evolved that will enhance the conduct of the research and meet organisational and funding requirements. 2.2 Hypothesis is determined that is testable, relevant and of benefit, and research methods are developed appropriate to the hypothesis. 2.3 Risk management strategies and resource needs are identified and specified in accordance with organisational and/or funding body requirements. 2.4 Funding applications are prepared and submitted as required in accordance with organisational and/or funding body requirements. 2.5 Documentation/recordkeeping is completed in accordance with organisational and/or funding body requirements.
3. Conduct and manage research	3.1 External funding is attracted and managed in accordance with organisational policy and procedures. 3.2 Leadership is provided and research team is influenced/managed to meet research objectives. 3.3 Performance and outputs are monitored and change/s in direction are instigated in accordance with the research methodology and organisational requirements. 3.4 Collaboration across locations and organisations is facilitated to meet research objectives and timeframes.

ELEMENT**PERFORMANCE CRITERIA**

- 3.5 Research results are analysed, ***documented*** and report/s are prepared in accordance with the research methodology, organisational and funding body requirements.
- 3.6 Communication style is adapted to write for both scientific and lay audiences and to translate results to applied situations.
- 4. Publish and present research results**
- 4.1 Research papers are published and ***results are disseminated*** widely both internally and externally to the organisation in accordance with organisational policy and procedures.
- 4.2 Research is presented at seminars and scientific conferences, nationally or internationally in accordance with organisational requirements.
- 4.3 Intellectual property is protected in accordance with organisational and funding body requirements.
- 4.4 National reputation is built through publication and presentation of research papers and networking nationally or internationally.

Required Skills and Knowledge

This section describes the essential skills and knowledge and their level, required for this unit.

Skill requirements

Look for evidence that confirms skills in:

- carrying out research
- using problem solving techniques
- managing people and teams
- influencing and negotiating
- using a range of communication styles to suit different audiences and purposes
- using technology for data input, analysis and preparation of reports
- interpreting and preparing reports containing scientific research information using a range of communication styles to suit different audiences and purposes
- responding to diversity, including gender and disability
- presenting research results tailored to different audiences such as a national regional industry/scientific audience
- applying occupational health and safety and environmental requirements to working in a scientific/technological research environment

Knowledge requirements

Look for evidence that confirms knowledge and understanding of:

- research methodologies
- scientific process
- statistics (working knowledge)
- the use of sophisticated statistical models
- specialist area of expertise
- the industry
- national networks
- external funding sources
- reporting requirements for scientific research, requiring precision of expression
- legislation, public sector standards and organisational code of practice as they relate to work in a scientific research/technological environment
- public sector legislation including environmental and occupational health and safety requirements relating to scientific/technological research

Evidence Guide

The Evidence Guide specifies the evidence required to demonstrate achievement in the unit of competency as a whole. It must be read in conjunction with the Unit descriptor, Performance Criteria, the Range Statement and the Assessment Guidelines for the Public Sector Training Package.

Units to be assessed together

- *Pre-requisite* units that must be achieved prior to this unit: *Nil*
- *Co-requisite* units that must be assessed with this unit: *Nil*
- *Co-assessed units* that may be assessed with this unit to increase the efficiency and realism of the assessment process include, but are not limited to:
 - PSPETHC601B Maintain and enhance confidence in public service
 - PSPGOV601B Apply government systems
 - PSPGOV602B Establish and maintain strategic networks
 - PSPMNGT602B Manage resources
 - PSPMNGT604B Manage change
 - PSPMNGT608B Manage risk
 - PSPOHS602A Manage workplace safety

Overview of evidence requirements

In addition to integrated demonstration of the elements and their related performance criteria, look for evidence that confirms:

- the knowledge requirements of this unit
- the skill requirements of this unit
- application of the Employability Skills as they relate to this unit (see Employability Summaries in Qualifications Framework)
- scientific/technological research initiated and conducted in a range of (3 or more) contexts (or occasions, over time)
- published research papers and articles for scientific and lay audiences that receive national recognition
- research presentations for national scientific and industry audiences

Resources required to carry out assessment

These resources include:

- legislation, procedures, guidelines and protocols
- research guidelines and methodologies relating to scientific/technological research
- industry information
- risk management strategies relating to scientific/technological research
- case studies and workplace scenarios to capture a range of

different research situations

Where and how to assess evidence

Valid assessment of this unit requires:

- a workplace environment or one that closely resembles normal work practice and replicates the range of conditions likely to be encountered when initiating and conducting scientific/technological research, including coping with difficulties, irregularities and breakdowns in routine
- research initiated and conducted in a range of (3 or more) contexts (or occasions, over time)
- evidence of published research papers and articles for scientific and lay audiences that receive national recognition
- evidence of research presentations for national scientific and industry audiences

Assessment methods should reflect workplace demands, such as literacy, and the needs of particular groups, such as:

- people with disabilities
- people from culturally and linguistically diverse backgrounds
- Aboriginal and Torres Strait Islander people
- women
- young people
- older people
- people in rural and remote locations

Assessment methods suitable for valid and reliable assessment of this competency may include, but are not limited to, a combination of 2 or more of:

- case studies
- demonstration
- observation
- portfolios
- projects
- questioning
- authenticated evidence from the workplace and/or training courses

For consistency of assessment

Evidence must be gathered over time in a range of contexts to ensure the person can achieve the unit outcome and apply the competency in different situations or environments

Range Statement

The Range Statement provides information about the context in which the unit of competency is carried out. The variables cater for differences between States and Territories and the Commonwealth, and between organisations and workplaces. They allow for different work requirements, work practices and knowledge. The Range Statement also provides a focus for assessment. It relates to the unit as a whole. Text in ***bold italics*** in the Performance Criteria is explained here.

Current information may include:

- other research in progress locally, nationally and internationally
- recently published information
- unpublished information

Resource needs may include:

- human
- physical
- monetary
- design specifications
- technical manuals
- componentry
- radioactive samples

Documenting may include:

- complete record to be held internally within the organisation
- preparation of research results for publication

Dissemination of results may include:

- building a national reputation through publications and presentations
- national recognition for publication of research results in externally refereed publications
- publishing material in industry journals
- publishing reports for scientific audiences
- publishing reports/articles for lay audiences
- presentations at seminars and scientific conferences
- internal reporting verbally and in writing
- drafting ministerials
- contributing to policy

Unit Sector(s)

Not applicable.

Competency field

Government Science & Technology.