Australian Government

PSPSCI702A Initiate and lead sophisticated scientific/technological research

Revision Number: 3

PSPSCI702A Initiate and lead sophisticated scientific/technological research

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 sophisticated scientific/technological research at a level meriting international recognition requiring exceptional initiative and judgment in initiating, resourcing and leading projects. It includes initiating the research, designing the research methodology, leading and managing the research, and publishing and promoting the research results.

In practice, initiating and leading sophisticated scientific/technological research overlaps with other generalist or specialist work activities such as influencing ethical practice, influencing strategic policy, undertaking strategic risk management, leading change management.

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. Initiate research	1.1 Cutting edge professional expertise, liaison and collaboration with international networks and extensive industry experience are used to identify areas for targeting research.
	1.2 **Research** is initiated that will make a significant contribution to the body of scientific knowledge in the area, to the industry and to the organisation's strategic objectives.
	1.3 Intellectual property issues relating to the research are exploited in accordance with organisational requirements.
	1.4 Research is initiated that is innovative, logically formulated and draws on national and international research in progress, in addition to both published and **unpublished research**.
2. Design research methodology	2.1 Innovations are incorporated in research design and hypothesis testing.
	2.2 Research colleagues are identified, and functions and activities are negotiated and planned in accordance with the research methodology.
	2.3 A communication strategy is developed to manage input and cooperation between team members in accordance with the research methodology.
	2.4 Risk management strategies and **resource needs** are determined and specified in accordance with organisational and/or funding body requirements.
	2.5 Funding applications are prepared and submitted in accordance with organisational and/or funding body requirements.
	2.6 Documentation/recordkeeping is completed in accordance with organisational and/or funding body requirements.
3. Lead and manage research	3.1 Funding is attracted for significant research projects and managed in accordance with organisational and funding body requirements.
	3.2 Scientific leadership is provided to research colleagues, decisions are influenced and research direction is monitored and changed in accordance with emerging requirements.
	3.3 Collaboration across locations and organisations is managed to focus the research and meet objectives, timeframes and budgetary requirements.
	3.4 Resources are managed in accordance with research budget, organisational and funding body requirements.
	3.5 Research is **documented** and outcomes are delivered to the funding body and the organisation in accordance with research plan, timeframes and budget.
	3.6 Research reports are prepared that are clear, concise, targeted to

ELEMENT	PERFORMANCE CRITERIA
	a *range of audiences* and are delivered on time in accordance with organisational and funding body requirements.
4. Publish and promote research results	4.1 Research papers are published and results are ***promoted*** widely internally and externally to the organisation in accordance with organisational policy and procedures.
	4.2 Research is presented at seminars and scientific conferences, both nationally and internationally in accordance with organisational requirements.
	4.3 Intellectual property is protected in accordance with organisational and funding body requirements.
	4.4 International reputation is built through publication and presentation of research papers and networking both nationally and 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 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 an international industry/scientific audience
- applying occupational health and safety and environmental requirements to scientific/technological research environments

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
- international and national networks
- external funding sources
- reporting requirements for scientific research, requiring precision of expression and using a range of communication styles to suit different audiences and purposes
- 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: - PSPETHC701A Lead and influence ethical practice in the public sector - PSPMNGT701B Provide strategic direction - PSPMNGT703A Lead and influence change - PSPMNGT704A Undertake enterprise risk management - PSPPOL701A Influence strategic policy
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) - leadership in sophisticated scientific/technological research initiated and lead in a range of (2 or more) contexts (or occasions, over time) - published research papers and articles for scientific and lay audiences that receive international recognition - research presentations for international 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 sophisticated 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 leading scientific/technological research, including coping with difficulties, irregularities and breakdowns in routine
- leadership in sophisticated scientific/technological research initiated and lead in a range of (2 or more) contexts (or occasions, over time)
- evidence of published research papers and articles for scientific and lay audiences that receive international recognition
- evidence of research presentations for international 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
- 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.

Research may include:	• responsibility for a program or body of work as opposed to one-off experiments or studies
Unpublished research may include:	• research completed locally, nationally and internationally in the previous 12 months, not yet published
Resource needs may include:	• human • physical • monetary • design specifications • technical manuals • componentry • radioactive samples
Documented may include:	• complete record to be held internally within the organisation • preparation of research results for publication
Range of audiences may include:	• scientific community • lay audience/s • industry • community • government • organisation • funding body • board/s of directors
Promotion of results may include:	• building an international reputation through publications and presentations • international recognition for publication of research results in externally refereed publications • publishing material in internationally recognised journals • publishing papers/articles for scientific audiences • publishing reports/articles for lay audiences • presentations at international seminars and scientific conferences • internal reporting verbally and in writing • drafting ministerials

- contributing to strategic policy

Unit Sector(s)

Not applicable.

Competency field

Government Science & Technology.