NATS 2025 NATURAL SCIENCE RESEARCH METHODS

Legacy Code 300932

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Student Contribution Band

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Restrictions

Successful completion of 60 credit points at Level 1.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Identify an issue and formulate research aim and research hypothesis or question
2. Gather, critically evaluate and synthesise information from a range of sources
3. Design and conduct an experiment or study to test a hypothesis or answer a research question
4. Identify and address potential risks and ethics relevant to a research project
5. Collect data, conduct simple analysis, present results of the experiment or study, discuss the findings and draw conclusions
6. Report on a research project in the written format
7. Reflect on practices and experiences for personal and professional development

Subject Content

1. Conceptualising a research project:
- what do You see as A question (theoretical or applied): usually derived from observation in The work place, everyday life, nature, news articles, magazines & journals
- Background reading to confirm that is A Problem worthy of research: introduce students to different types of literature
- Skills to learn: library searches; assessing literature through skim reading of publishers, tittles, abstract, headings/sub-headings & captions
2. Locating, reviewing the literature to identify gaps:
- what is A lit Review, how is It conducted
- what are gaps and how to identify them (from what is known and unknown)
- skills to learn: organising own research database, making notes and mind-Mapping to identify themes of what is known, what is not known, and gaps
3. Identifying the aim of the research, formulate hypothesis or research question(s):
- structure of A Hypothesis/ question(s)
4. Research methods and research designs:
- data sources (i.e. Surveys, quantitative, quantitative etc.)
- data collection tools (i.e. sample size, units of replication etc.)
5. Ethical and regulatory frameworks involved in research on humans and animals:
- Skills to learn: undertaking and documenting risk assessment as appropriate to their proposed research activities; completing an ethical application
6. Managing a project:
- Skills to learn: use of Gantt chart; recording and protecting data
7. Types of data and basic methods to analyse data:
- what statistical test is appropriate for The data?
- what The data tell You in relation to The Hypothesis or questions ? tools to present results (tables, Graphs, stats)
- what are your conclusions based on The Hypothesis or questions?
- how do The conclusions relate to current research literature? are they consistent or expand on The literature? are they inconsistent and why?
- skills to learn: Integrating Numerical evidence to support arguments
8. Academic writing:
- structure of A research proposal and A research report
- Reflections for personal and professional development: A framework with guided questions for Reflections

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Online quiz's	60 multiple choice questions / Short answer questions	30	N	Individual	
Mini Literature and Data Review	800 words	25	N	Individual	
Applied Project - assessment of the ethical implications of animal numbers	2 forms	20	N	Individual	
Report	1,000 words	25	N	Individual	

Prescribed Texts

- Statistics Explained: An Introductory Guide for Life Scientists
- Asking Questions in Biology