

NATS 2042 SCIENCE RESEARCH METHODS

Credit Points 10

Legacy Code 301445

Coordinator Clarissa House (<https://directory.westernsydney.edu.au/search/name/Clarissa House/>)

Description This subject aims to introduce you to the theories and practices underpinning scientific method. Through the course of the subject, you will develop analytical skills to quantify and interpret agricultural, zoological, and environmental data. You will use real-world issues, formulate an aim and research hypothesis and explore research methods and designs to conduct an experiment to test the hypothesis. You will also be introduced to the types of biological variables, sources of measurement error, and the relationship between sample size and the conclusions that can be drawn from data; This subject enables you to develop skills in data analysis, interpretation and how to report on the findings of the research. The subject is structured so that lectures will provide theoretical expertise and workshops will reinforce your learning with practical experience preparing you for a career in science.

School Science

Discipline Natural and Physical Sciences, Not Elsewhere Classified.

Student Contribution Band HECS Band 2 10cp

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

Level Undergraduate Level 2 subject

Equivalent Subjects LGYA 5920 - Research Communities and their Environments NATS 2028 - Research Methods LGYA 6151 - Animal Research NATS 2025 - Natural Science Research Methods

Restrictions

Successful completion of 60 credit points

Learning Outcomes

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

1. Identify key concepts, principles, and tools for conducting scientific research.
2. Formulate and test a research hypothesis or address a research question in the context of applied science, including agri-food, environmental and zoological enquiries.
3. Collate meaningful data and conduct appropriate analysis by using accepted scientific conventions.
4. Report the research analyses by articulating the link between a research hypothesis and experimental design.
5. Clearly communicate research findings to various professional and non-professional stake holders.

Subject Content

- Introduction to the research process
- Research aim, hypothesis, and prediction
- Research methods and research designs
- Data collection to test predictions

- Data types (i.e. continuous, categorical, ordinal etc.)

- Data collection tools (i.e. sample size, units of replication etc.)

- Data analysis

- What statistical test is appropriate for the data?

- Reporting data consistent with scientific and industry guidelines

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
Quiz	3 x 30 minutes	30	N	Individual
Proposal	600 words	15	N	Individual
Applied Project	1,000 words	30	N	Individual
Report	500 words each	25	N	Individual

Prescribed Texts

- Asking Questions in Biology
- Experimental Design for the Life Science

Teaching Periods

Autumn (2022)

Hawkesbury

Composite

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=NATS2042_22-AUT_HW_C#subjects)

Day

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=NATS2042_22-AUT_HW_D#subjects)

Autumn (2023)

Hawkesbury

On-site

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View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=NATS2042_23-AUT_HW_1#subjects)