



# EDUC109

## Science: Today and Tomorrow

S3 External 2017

*Department of Educational Studies*

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## General Information

Unit convenor and teaching staff

Lecturer

Katherine Stewart

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Contact via email

W5B 114

Mondays and Wednesdays 10-12; make a time to see me and I'll be in my office ready to assist

Credit points

3

Prerequisites

Corequisites

Co-badged status

Unit description

This unit provides students with opportunities to challenge their views about the nature of Science, to engage with Science in its many facets and to communicate ideas about Science. Students are exposed to Science enthusiasts and are encouraged to actively participate in hands-on practical work both inside and beyond the Science laboratory. Learning and assessment strategies are designed to maximise student involvement and to build capacity in more collaborative approaches to increasing science understandings. The unit supports students to make the transition from passive to active learners and to take a more self-directed role in communicating Science to a range of learners.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

On successful completion of this unit, you will be able to:

At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.

At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.

At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.

At the end of this unit, students should be able to gather, process and present scientific information to solve problems.

At the end of this unit, students should be able to analyse and prepare science reports.

At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

## General Assessment Information

There are four assessment items required for this unit.

- Assignment 1: Perceptions of Science and Scientists (15%)
- Assignment 2: Communicating Science (35%)
- Examination: End of the unit (40%)
- Engagement: Participation & Attendance (10%)

## Assessment Tasks

Name	Weighting	Hurdle	Due
<u>Science and Scientists: Percep</u>	15%	No	tba
<u>Communicating Science</u>	35%	No	tba
<u>End of unit exam</u>	40%	No	tba
<u>Engagement</u>	10%	No	on-going

### Science and Scientists: Percep

Due: **tba**

Weighting: **15%**

See Unit Guide for details of this task

On successful completion you will be able to:

- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

## Communicating Science

Due: **tba**

Weighting: **35%**

See Unit Guide for details of this task

On successful completion you will be able to:

- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.
- At the end of this unit, students should be able to analyse and prepare science reports.
- At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

## End of unit exam

Due: **tba**

Weighting: **40%**

See Unit Guide for details of this task

On successful completion you will be able to:

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.
- At the end of this unit, students should be able to analyse and prepare science reports.
- At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

## Engagement

Due: **on-going**

Weighting: **10%**

**Fail**

**Pass**

## **Credit**

### **Distinction**

#### **High Distinction**

Quality of participation in unit

Disruptive in activities and discussion including on-line environments. Unexplained absence; lateness to class; inattentive behaviour.

Sometimes contributes to group activities and discussion including on-line environments; sometimes responds thoughtfully to other students' comments.

Often contributes in a significant way to group activities and discussion including on-line environments; often responds thoughtfully to other students' comments.

Regularly contributes in a significant way to group activities and discussion including on-line environments; regularly responds thoughtfully to other students' comments.

Consistently contributes in a very significant way to group activities and discussion including on-line environments; consistently responds very thoughtfully to other students' comments.

On successful completion you will be able to:

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.
- At the end of this unit, students should be able to analyse and prepare science reports.
- At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

## **Delivery and Resources**

- Lecture power points on-line
- Three compulsory on-campus days to conduct field work, practical work and laboratory sessions
- At least four webcasts throughout the unit.

## **Unit Schedule**

This unit explores basic science concepts from across the four sciences: biology, earth sciences,

chemistry and physics. Please refer to the unit iLearn for further details of weekly topics

## Learning and Teaching Activities

### Lecture presentation. Learning science content

In EDUC109, science content from each of the four sciences is located in 24 power point presentations. Students are expected to download these presentations and utilise this resource as a basis for building their personal understanding of the big science ideas that are the subject of the presentation.

### On-campus days. Practical activities

During these three compulsory days students will engage with a range of practical activities. These include field work, using microscopes, conducting soil analyses, chemistry laboratory work, electronics and basic mechanics etc

### Webcasts (via ZOOM)

These live on-line sessions enable students and the Unit Convenor to communicate and clarify content understandings.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy [http://mq.edu.au/policy/docs/assessment/policy\\_2016.html](http://mq.edu.au/policy/docs/assessment/policy_2016.html)

Grade Appeal Policy <http://mq.edu.au/policy/docs/gradeappeal/policy.html>

Complaint Management Procedure for Students and Members of the Public [http://www.mq.edu.au/policy/docs/complaint\\_management/procedure.html](http://www.mq.edu.au/policy/docs/complaint_management/procedure.html)

Disruption to Studies Policy (in effect until Dec 4th, 2017): [http://www.mq.edu.au/policy/docs/disruption\\_studies/policy.html](http://www.mq.edu.au/policy/docs/disruption_studies/policy.html)

Special Consideration Policy (in effect from Dec 4th, 2017): <https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/special-consideration>

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: [https://students.mq.edu.au/support/student\\_conduct/](https://students.mq.edu.au/support/student_conduct/)

## Results

Results shown in *iLearn*, or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your

student email address and will be made available in [eStudent](#). For more information visit [ask.mq.edu.au](#).

## Student Support

Macquarie University provides a range of support services for students. For details, visit <http://students.mq.edu.au/support/>

### Learning Skills

Learning Skills ([mq.edu.au/learningskills](http://mq.edu.au/learningskills)) provides academic writing resources and study strategies to improve your marks and take control of your study.

- [Workshops](#)
- [StudyWise](#)
- [Academic Integrity Module for Students](#)
- [Ask a Learning Adviser](#)

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

For all student enquiries, visit Student Connect at [ask.mq.edu.au](http://ask.mq.edu.au)

## IT Help

For help with University computer systems and technology, visit [http://www.mq.edu.au/about\\_us/offices\\_and\\_units/information\\_technology/help/](http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/).

When using the University's IT, you must adhere to the [Acceptable Use of IT Resources Policy](#). The policy applies to all who connect to the MQ network including students.

## Graduate Capabilities

### Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

### Learning outcome

- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.

## Assessment tasks

- Communicating Science
- Engagement

## Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

### Learning outcomes

- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.

### Assessment task

- Engagement

## Commitment to Continuous Learning

Our graduates will have enquiring minds and a literate curiosity which will lead them to pursue knowledge for its own sake. They will continue to pursue learning in their careers and as they participate in the world. They will be capable of reflecting on their experiences and relationships with others and the environment, learning from them, and growing - personally, professionally and socially.

This graduate capability is supported by:

### Learning outcomes

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.

### Assessment task

- Engagement



## Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

### Learning outcomes

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to analyse and prepare science reports.
- At the end of this unit, students should be able to demonstrate understanding of content covered in lectures and tutorials.

### Assessment tasks

- Science and Scientists: Percep
- End of unit exam
- Engagement

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

### Learning outcomes

- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.

- At the end of this unit, students should be able to analyse and prepare science reports.

## Assessment tasks

- Science and Scientists: Percep
- End of unit exam
- Engagement

## Problem Solving and Research Capability

Our graduates should be capable of researching; of analysing, and interpreting and assessing data and information in various forms; of drawing connections across fields of knowledge; and they should be able to relate their knowledge to complex situations at work or in the world, in order to diagnose and solve problems. We want them to have the confidence to take the initiative in doing so, within an awareness of their own limitations.

This graduate capability is supported by:

## Learning outcomes

- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific information to solve problems.
- At the end of this unit, students should be able to analyse and prepare science reports.

## Assessment tasks

- Communicating Science
- Engagement

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

## Learning outcomes

- At the end of this unit, students should be able to reflect on personal science knowledge and understanding and how this was acquired.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.
- At the end of this unit, students should be able to gather, process and present scientific

information to solve problems.

- At the end of this unit, students should be able to analyse and prepare science reports.

## **Assessment tasks**

- Science and Scientists: Percep
- Communicating Science
- End of unit exam
- Engagement

## **Engaged and Ethical Local and Global citizens**

As local citizens our graduates will be aware of indigenous perspectives and of the nation's historical context. They will be engaged with the challenges of contemporary society and with knowledge and ideas. We want our graduates to have respect for diversity, to be open-minded, sensitive to others and inclusive, and to be open to other cultures and perspectives: they should have a level of cultural literacy. Our graduates should be aware of disadvantage and social justice, and be willing to participate to help create a wiser and better society.

This graduate capability is supported by:

### **Learning outcomes**

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to perform required laboratory tasks and conduct practical work.

### **Assessment tasks**

- Communicating Science
- Engagement

## **Socially and Environmentally Active and Responsible**

We want our graduates to be aware of and have respect for self and others; to be able to work with others as a leader and a team player; to have a sense of connectedness with others and country; and to have a sense of mutual obligation. Our graduates should be informed and active participants in moving society towards sustainability.

This graduate capability is supported by:

### **Learning outcomes**

- At the end of this unit, students should be able to demonstrate understanding of basic science concepts across the four sciences.
- At the end of this unit, students should be able to analyse and prepare science reports.

## Assessment tasks

- Communicating Science
- Engagement