



# EDUC109

## Science: Today and Tomorrow

S2 Day 2017

*Department of Educational Studies*

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#### **Disclaimer**

Macquarie University has taken all reasonable measures to ensure the information in this publication is accurate and up-to-date. However, the information may change or become out-dated as a result of change in University policies, procedures or rules. The University reserves the right to make changes to any information in this publication without notice. Users of this publication are advised to check the website version of this publication [or the relevant faculty or department] before acting on any information in this publication.

## General Information

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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:

1. demonstrate understanding of basic science concepts across the four sciences
2. reflect on your own science knowledge and understanding and how this was acquired
3. perform required laboratory tasks and conduct practical work
4. gather, process and present scientific information to solve problems
5. analyse and prepare science reports
6. demonstrate your understanding of content covered in lectures and tutorials

## General Assessment Information

### ***Submission of assignments***

Assignments should be submitted through iLearn (Turnitin).

All assignments **MUST** be word-processed.

### **Referencing**

The Department of Educational Studies subscribes to the American Psychological Association (APA) referencing guidelines. You are expected to adopt this referencing approach in your assignments. Use APA for referencing. E.g. the author and year of publication are cited in the body of the text with the complete reference listed in your Reference section. Do not use footnotes for citing references. Students who are unsure of correct referencing procedures should consult the Macquarie University Library Guides. These guides are an essential resource for learning about formatting and referencing. <http://libguides.mq.edu.au/c.php?g=674302&p=4748833>

### **Assignment extensions and late penalties**

Applications for extensions must be made via AskMQ at <https://ask.mq.edu.au> as a "Disruption to Studies" request before the submission date. Students who experience a disruption to their studies through ill-health or misadventure are able to apply for this request. *Extensions can only be granted if they meet the Disruption to Studies policy and are submitted via ask.mq.edu.au.* This will ensure consistency in the consideration of such requests is maintained.

**In general, there should be no need for extensions except through illness or misadventure that would be categorised as unavoidable disruption according to the University definition of same, and currently available at:**

[http://students.mq.edu.au/student\\_admin/exams/disruption\\_to\\_studies/](http://students.mq.edu.au/student_admin/exams/disruption_to_studies/)

**Late submissions without extension will receive a penalty of 5% reduction of the total possible mark for each day late (including weekends and public holidays).** You are reminded that submitting even just 1 day late could be the difference between passing and failing a unit. Late penalties are applied by unit convenors or delegates after tasks are assessed.

No assessable work will be accepted after the return/release of marked work on the same topic. If a student is still permitted to submit on the basis of unavoidable disruption, an alternative topic may be set.

Students should keep an electronic file of all assessments. Claims regarding "lost" assessments cannot be made if the file cannot be produced. It is also advisable to keep an electronic file of all drafts and the final submission on a USB untouched/unopened after submission. This can be used to demonstrate easily that the assessment has not been amended after the submission date.

### Academic honesty

The nature of scholarly endeavor, dependent as it is on the work of others, binds all members of the University community to abide by the principles of academic honesty. Plagiarism is a matter of particular importance. Plagiarism is defined as using the work or ideas of another person and presenting this as your own without clear acknowledgement of the source of the work or ideas.

The University's Academic Honesty Policy can be found on the Policy Central website: <http://www.mq.edu.au/policy/index.html>

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#">Perception of Science</a>	10%	No	30/08/2017
<a href="#">Communicating Science</a>	40%	No	11/10/2017
<a href="#">Examination</a>	40%	No	During Examination Period
<a href="#">Engagement</a>	10%	No	On-going

### Perception of Science

Due: **30/08/2017**

Weighting: **10%**

#### Perceptions of Science and Scientists

In the first lecture of this unit, you were asked to draw a scientist then compare your drawing with that of others. Reflect on the images of scientists portrayed in those drawings compared to scientists living and working today.

The purpose of this assignment is to gather information from your family/friends about their understanding/image of science and scientists and to reflect on these representations.

On successful completion you will be able to:

- 2. reflect on your own science knowledge and understanding and how this was acquired

## Communicating Science

Due: **11/10/2017**

Weighting: **40%**

The way in which science is communicated depends on the topic, its context and the engagement with the audience. What is important is that science is communicated accurately and that readers/listeners can make sense of scientific information.

As part of this unit you will be conducting fieldwork in the local environment. The field work aims to consolidate and extend your growing knowledge of local plants and animals as well as assist you to identify and respond to environmental issues on campus. Your field observations may be incorporated into on-going environmental monitoring programs being conducted at the University.

On successful completion you will be able to:

- 3. perform required laboratory tasks and conduct practical work
- 4. gather, process and present scientific information to solve problems
- 5. analyse and prepare science reports

## Examination

Due: **During Examination Period**

Weighting: **40%**

The examination for this unit is compulsory and will be held during the examination period.

**Weighting: 40%**

**Length: 2hours 30 minutes plus 10 minutes reading time.**

The examination questions will be drawn from the entire unit. Students are expected to demonstrate mastery of the content of the unit including material covered in the lectures and in the tutorials. It is essential that you have a strong understanding of the key science concepts in each of the major themes covered in this unit.

On successful completion you will be able to:

- 1. demonstrate understanding of basic science concepts across the four sciences
- 6. demonstrate your understanding of content covered in lectures and tutorials

## Engagement

Due: **On-going**

Weighting: **10%**

It is on-going assessment during tutorials. Consistent contribution to group activities and discussion including on-line environments are expected.

On successful completion you will be able to:

- 1. demonstrate understanding of basic science concepts across the four sciences
- 2. reflect on your own science knowledge and understanding and how this was acquired
- 3. perform required laboratory tasks and conduct practical work
- 4. gather, process and present scientific information to solve problems
- 5. analyse and prepare science reports
- 6. demonstrate your understanding of content covered in lectures and tutorials

## Delivery and Resources

### ***Prescribed texts***

American Association for the Advancement of Science. (2001). *Atlas of science literacy / Project 2061*. Washington DC: AAAS. Available as an online reference at <http://strandmaps.nsd.org>

Skamp, K. (Ed.) (2015). *Teaching primary science constructively* (5th ed.). Melbourne: Thomson.

Primary teacher education students may choose to purchase this text which will support their work in science and technology throughout the degree and beyond.

Sydney Morning Herald. Daily Newspaper. For regular science-based articles.

### ***Background readings in science***

Bryson, B. (2004). *A short history of nearly everything*. London: Black Swan.

Carson, R. (1962). *Silent spring*. Boston Mariner Books.

Darwin, C. (1859). *The origin of species*. London: Penguin.

Dawkins, R. (1991). *The blind watchmaker*. London: Penguin.

Dennett, D. (1995). *Darwin's dangerous idea: Evolution and the meanings of life*. London: Penguin.

Halvorsen, R. (2007). *The truth about vaccines*. London: Gibson Square.

Hawking, S. (2008). *A brief history of time*. Chatham: Bantam Press.

Horsfall, M. (2008). *Creating your eco-friendly garden*. Collingwood: CSIRO Publishing.

Lindenmayer, D. (2008). *On borrowed time: Australia's environmental crisis and what we must do about it*. Camberwell, Victoria: CSIRO/Penguin.

Rosser, S. (2008). *The A-Z of global warming*. London Schmall World Publishing.

Sobel, D. (2005). *The planets*. London: Fourth Estate.

Trefil, J. (2008). *Why science?* New York: Teachers College Press.

### **Background readings in science for schools**

Australian Academy of Science. (2005). *Primary Connections: Linking science with literacy*. Canberra: Australian Academy of Science.

Many titles available from <https://primaryconnections.org.au/>

Board of Studies, Teaching and Educational Standards. All NSW science syllabi and related documents are available from <http://www.boardofstudies.nsw.edu.au/>

Dawson, V., & Venville, G. (Eds.) (2007). *The art of teaching primary science*. Crows Nest: Allen and Unwin.

Devereux, J. (2007). *Science in the primary and early years*. London: Sage/Open University Press.

Gillespie, H. (2007). *Science for primary school teachers*. Maidenhead: McGraw Hill/Open University Press.

Gillespie, H. (2007). *Learning and teaching with virtual learning environments*. Exeter: Learning Matters.

Harlen, W. & Aualter, A. (2004). *The teaching science in primary schools*. London: David Fulton.

Kalantzis, M., & Cope, B. (2008). *New learning: Elements of a science of education*. Melbourne: Cambridge University Press.

Rosebery, A. & Warren, B. (Eds.) (2008). *Teaching Science to English Language Learners*. Ohio: NSTA.

Tytler, R. (2007). Re-imaging science education, Australian Education Review, Australian Council of Educational Research. *Australian Education Review*, 51. Melbourne: ACER. Retrieved January 10, 2011, from [http://www.acer.edu.au/research\\_reports/AER.html](http://www.acer.edu.au/research_reports/AER.html)

Venville, G., & Dawson, V. (Eds.) (2012). *The art of teaching science for middle and secondary school*. Crows Nest: Allen & Unwin.

Ward, H., Roden, J., Hewlett, C., & Foreman, J. (2008). *Teaching science in the primary classroom: A practical guide*. London: Sage

Easy to understand science textbooks suitable for school students are available in the Curriculum Collection on Level 3 in the Library.

## **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](http://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

### 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

- 1. demonstrate understanding of basic science concepts across the four sciences
- 2. reflect on your own science knowledge and understanding and how this was acquired
- 3. perform required laboratory tasks and conduct practical work
- 4. gather, process and present scientific information to solve problems
- 5. analyse and prepare science reports
- 6. demonstrate your understanding of content covered in lectures and tutorials

#### Assessment tasks

- Perception of Science
- Communicating Science
- Examination
- 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

- 2. reflect on your own science knowledge and understanding and how this was acquired
- 3. perform required laboratory tasks and conduct practical work
- 4. gather, process and present scientific information to solve problems
- 5. analyse and prepare science reports
- 6. demonstrate your understanding of content covered in lectures and tutorials

## Assessment tasks

- Communicating Science
- 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

- 1. demonstrate understanding of basic science concepts across the four sciences
- 3. perform required laboratory tasks and conduct practical work
- 4. gather, process and present scientific information to solve problems
- 5. analyse and prepare science reports
- 6. demonstrate your understanding of content covered in lectures and tutorials

## Assessment tasks

- Perception of Science
- 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

- 5. analyse and prepare science reports
- 6. demonstrate your understanding of content covered in lectures and tutorials

## Assessment tasks

- Communicating Science
- Engagement

## Changes since First Published

Date	Description
27/07/2017	The assignment submission dates have been changed.