



EDUC108

Science: Today and Tomorrow

S3 External 2014

Education

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General Information

Unit convenor and teaching staff
Unit Convenor
Patricia Stockbridge
patricia.stockbridge@mq.edu.au
Credit points
3
Prerequisites
Corequisites
Co-badged status
Unit description
<p>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.</p>

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:

- Demonstrate understanding of essential science concepts across the four sciences
- Reflect on your own science knowledge and understanding and how this was acquired
- Engage with and safely perform laboratory tasks and conduct practical work
- Gather, process and present scientific information to solve problems
- Analyse and prepare science reports
- Demonstrate your understanding of content covered in lectures and tutorials

Assessment Tasks

Name	Weighting	Due
<u>Perceptions of science</u>	15%	Wed 17 December 2014
<u>Assignment 2</u>	35%	Wed 14 January, 2015
<u>Exam</u>	50%	Exam period

Perceptions of science

Due: **Wed 17 December 2014**

Weighting: **15%**

See Unit Guide

On successful completion you will be able to:

- Demonstrate understanding of essential science concepts across the four sciences
- Reflect on your own science knowledge and understanding and how this was acquired
- Analyse and prepare science reports

Assignment 2

Due: **Wed 14 January, 2015**

Weighting: **35%**

See Unit Guide

On successful completion you will be able to:

- Engage with and safely perform laboratory tasks and conduct practical work
- Gather, process and present scientific information to solve problems
- Analyse and prepare science reports
- Demonstrate your understanding of content covered in lectures and tutorials

Exam

Due: **Exam period**

Weighting: **50%**

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

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.

Weekly reading and a wider reading of science content material will enhance your understanding of these key science concepts. You are strongly advised to update and consolidate your understanding of basic science concepts by reading some of the science textbooks located in the Curriculum section of the library.

You are expected to present yourself for examination at the time and place designated in the University Examination Timetable. The timetable is available in draft form approximately eight weeks before the commencement of the examinations and in final form approximately four weeks before the commencement of the examinations. <http://www.timetables.mq.edu.au/exam>

The only exception to not sitting the examination at the allocated time and place is because of documented illness or unavoidable disruption. In these circumstances you may wish to consider applying for Special Consideration. Information about unavoidable disruption and the special consideration process is available at <http://www.reg.mq.edu.au/Forms/APSCon.pdf>

If a supplementary examination is granted as a result of the Special Consideration process, then the examination will be scheduled after the conclusion of the official examination period. The policy of Macquarie University is NOT to set early examinations for individual or groups of students. All students are expected to ensure that they are available until the end of the teaching semester, that is, the final day of the official examination period.

On successful completion you will be able to:

- Demonstrate understanding of essential science concepts across the four sciences
- Gather, process and present scientific information to solve problems
- Demonstrate your understanding of content covered in lectures and tutorials

Delivery and Resources

ABOUT THIS UNIT

EDUC 108: Science: Today and Tomorrow is a 3-credit point designated planet unit of one semester duration. It has been developed as a science based unit to assist beginning teachers with science teaching both at primary and high school levels and, for those under-graduate students who are not directly involved with teaching but nevertheless are interested in science.

The unit aims will address a range of science topics and their associated basic concepts drawn from the four major science disciplines – biology, earth and environmental science, chemistry and physics. There will be opportunities for engagement with practical work and the use of ICT to facilitate conceptual knowledge and understanding of science. The unit will cover some of the theories of science and their development, a historical perspective and science research.

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

Assessment Policy <http://mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://mq.edu.au/policy/docs/grading/policy.html>

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

Grievance Management Policy http://mq.edu.au/policy/docs/grievance_management/policy.html

Disruption to Studies Policy http://www.mq.edu.au/policy/docs/disruption_studies/policy.html *The Disruption to Studies Policy is effective from March 3 2014 and replaces the Special Consideration Policy.*

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/

WRITTEN ASSIGNMENTS

Submitting Written Assignments

Include both the Department of Education assignment coversheet signed and dated along with the correct designed feedback sheet for each assignment.

- Students alone are responsible for assignment submission. Students are advised to keep an electronic copy/photocopy of all assignment.
- Use a word processor for your assignment. If access to word processing is a problem please seek assistance from Student IT Services www.sith.mq.edu.au
- Use headings to separate clearly the various sections of the assignment. Make sure you cover all the sections which are defined in the assignment description.
- Complete the corresponding cover sheet (attached at the end of this Unit Outline—in reverse order so you can tear them off), sign it, attach it to the front of your report, and submit your assignment as instructed below.
- Please do not place assignments in plastic sleeves.
- Make sure you keep a copy of your assignment in case of loss.

No resubmission of assignments is allowed.

GRADING

Macquarie University uses standards-based assessment, meaning that that your performance will be compared to a set of predetermined criteria. Grades ranging from fail (F) to high distinction (HD) will be awarded. The following general standards apply:

HD	Your assignment meets all the assignment outcomes in such an exceptional way and with such marked excellence that it deserves the highest level of recognition
D	Your assignment clearly deserves a very high level of recognition as an excellent achievement in the unit.
C	Your assignment is substantially better than would normally be expected of competent students in the unit.
P	Your assignment satisfies the assignment outcomes
F	Your assignment does not meet the stated assignment objectives and outcomes.

Academic senate has a set of guidelines on the distribution of grades across the range from high distinction to fail. Your final result will include one of these grades plus a standardised numerical grade (SNG). For explanation of the policy see: <http://www.mq.edu.au/policy/docs/grading/policy.html>

NOTE: Numerical marks will NOT be awarded for specific assessment. They will only be awarded with your final grade.

APPEALS AGAINST GRADES

University regulations allow students to appeal final unit grades if they feel they have been marked unfairly. Details of the grade appeal policy can be found here: www.mq.edu.au/policy/docs/grade_appeal/policy. Appeals are directed to the Head of Department and must be lodged on the appropriate university form, accessible at: <http://www.registrar.mq.edu.au/academic-index.htm>

Grading appeals can be lodged on the following grounds:

- The unit coordinator did not provide the outline as required;
- Assessment requirements as specified in the unit outline were varied in an unreasonable way;
- A clerical error has occurred in the computation of the grade;
- Due regard has not been paid to the evidence of illness or misadventure that was submitted by the specified date;
- I have been disadvantaged in some way due to the conduct of the final examination; and
- The examiner's judgement was not objectively applied because of prejudice against the individual.

EXTENSIONS AND SPECIAL CONSIDERATION

Late submissions will be assessed as follows:

- Late with evidence of sickness or misadventure: normal marking after submission.
- Late with prior approval: normal marking if revised deadline is met.
- Late without prior approval or after revised deadline: a penalty of 5% of the total assignment mark per day overdue.

Extensions to assignment submission dates will only be granted in the case of documented "unavoidable disruption". A request for extension must be submitted to the unit convenor on a form obtainable from the Department of Education Office (C3A 828). This should preferably be submitted well before the due date. A penalty of 5% of the total assignment mark per day late will be applied for unapproved late submissions.

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) 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 Support

Macquarie University provides a range of student support services, including medical services, free counseling, and welfare information and advocacy (e.g. legal, financial, tenancy) under the banner 'Campus Wellbeing'. These services can be accessed at <http://www.campuslife.mq.edu.au/campuswellbeing>.

Student writing and academic skills

Writing and other academic skills are taken into account in the overall assessment of work. Markers will insist that ideas are expressed clearly and will penalise the type of **writing** that requires them to interpret ideas that have been vaguely or misleadingly expressed. Students who are experiencing particular difficulties in writing are advised to seek assistance from the Study Skills Support Centre: <http://www.mq.edu.au/studyskillssupport/>. Services include study skills workshops and individual consultations, as well as useful online resources. Free academic writing programs are also offered.

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.

Students with disabilities/health conditions

The Disability Support Unit provides support and assistance to students with a disability/health condition to enable them to achieve their academic potential. Service is tailored to individual need following an interview and the provision of supporting documentation.

Students who are enrolled at Macquarie University can register with the Disability Support Unit by downloading and returning an Advice of Disability/Health Condition form from www.registrar.mq.edu.au/academic-index.html and making an appointment to see a disability advisor. Annual registration with the Disability Support Unit is required for all disabilities and health conditions. The following contacts may assist:

Louella Freeman, Disability Liason Officer, Department of Education Ph: 9850 8619 Email: louella.freeman@mq.edu.au

Nicole Saunders, Administrative Assistant, Disability Support Unit Ph: 9850 6494 Email: disability@mq.edu.au In person: Level 2, Lincoln Building (C8A)

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

IT Help

For help with University computer systems and technology, visit <http://informatics.mq.edu.au/help/>.

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

IT services

Student IT Help (www.sith.mq.edu.au) provide students with wide-ranging technology support and assistance for usernames and passwords, eStudent, student email, myMQ, and so on. In addition, OneHelp (<https://help.mq.edu.au>) is an online IT support service for both students and staff. Browse both sites to determine which is most appropriate for your needs.

Graduate Capabilities

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:

Assessment tasks

- Perceptions of science
- Assignment 2

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

- Demonstrate understanding of essential science concepts across the four sciences

- Reflect on your own science knowledge and understanding and how this was acquired

Assessment task

- Assignment 2

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

- Demonstrate understanding of essential science concepts across the four sciences
- Engage with and safely perform laboratory tasks and conduct practical work
- Analyse and prepare science reports
- Demonstrate your understanding of content covered in lectures and tutorials

Assessment tasks

- Assignment 2
- Exam

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

- Gather, process and present scientific information to solve problems
- Analyse and prepare science reports

Assessment tasks

- Perceptions of science
- Assignment 2
- Exam

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

- Engage with and safely perform laboratory tasks and conduct practical work
- Gather, process and present scientific information to solve problems
- Analyse and prepare science reports

Assessment tasks

- Perceptions of science
- Assignment 2
- Exam

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

- Reflect on your own science knowledge and understanding and how this was acquired

Assessment tasks

- Perceptions of science
- Assignment 2

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

- Demonstrate understanding of essential science concepts across the four sciences
- Reflect on your own science knowledge and understanding and how this was acquired
- Gather, process and present scientific information to solve problems
- Analyse and prepare science reports
- Demonstrate your understanding of content covered in lectures and tutorials

Assessment tasks

- Perceptions of science
- Assignment 2
- Exam

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 outcome

- Gather, process and present scientific information to solve problems

Assessment task

- Assignment 2

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

- Engage with and safely perform laboratory tasks and conduct practical work
- Analyse and prepare science reports

Assessment task

- Assignment 2

Note on Graduate Capabilities

As a participant of the University's learning community you will learn:

1. **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.
2. **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.
3. **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.
4. **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.
5. **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.
6. *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.

Professional Teaching Standards

The NSW Institute of Teachers is an accreditation body overseeing teacher-training programs within NSW (see www.nswteachers.nsw.edu.au).

