



TEP 434

Science in the Secondary School II

S2 Day 2015

Dept of Education

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General Information

Unit convenor and teaching staff Lecturer Hye Eun Chu hye-eun.chu@mq.edu.au building C3A, Room 809
Credit points 3
Prerequisites TEP401(S) and TEP433(P)
Corequisites TEP402
Co-badged status
Unit description This unit builds on TEP433. Curricula, resources and instructional strategies appropriate for the teaching of Biology, Chemistry, Physics, and Earth and Environmental Sciences for Senior Science years 11 and 12 are examined. It is linked to the school experience gained in TEP402.

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:

- UO1 a knowledge of the changing policy context of secondary schooling in NSW (Board of Studies, NSWDET) and Australia (ACARA) with specific reference to science;
- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);

UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;

UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;

UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;

UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

General Assessment Information

Students complete Part A in one option; two 25% Part B assignments: one in the same option as Part A and the other in an option of your own choice; and 40% Part C in one option. For example, students might complete Parts A, B and C (75%) in the Chemistry option and only Part B (25%) in the Biology option.

Part A has a limit of 800 words and should take 6 hours to complete. Each assignment for Part B has a limit of 1500 words and should take 12 hours each to complete. Part C has a limit of maximum 15 pages (font size 11 and single space) and should take 16 hours to complete.

Assignments are submitted through Turnitin in the TEP434 iLearn. When marked, assignments will be returned through iLearn. Under no circumstances will assignments be accepted via FAX or email attachment.

Applications for extensions must be made in writing BEFORE the submission date to "ask.mq.edu.au". Extensions can only be granted by the Unit Convenor – Dr Hye-Eun Chu. This will ensure that consistency in the consideration of such requests is maintained.

Unless an extension is granted, late submissions will be penalised 5 per cent of the total possible mark for the assignment for each day late.

Students must keep a photocopy or electronic copy of assignments.

Information related to special consideration can be found at http://www.mq.edu.au/policy/docs/special_consideration/policy.html. The relevant application form can be found at <http://www.reg.mq.edu.au/academic-index.html>

Assessment Tasks

Name	Weighting	Due
<u>Part A: Animations/simulations</u>	10%	04/September/2015
<u>Part B: Current issues</u>	50%	09/October/2015
<u>Part C: Teaching HSC Options</u>	40%	6/November/2015

Part A: Animations/simulations

Due: **04/September/2015**

Weighting: **10%**

To develop concepts using computer animations/simulations in Biology/Chemistry/Physics/Earth & Environmental Science.

On successful completion you will be able to:

- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Part B: Current issues

Due: **09/October/2015**

Weighting: **50%**

The purpose of this assignment is for you to consider media reports of recent biological breakthroughs and their place within the Stage 6 Chemistry/Biology/Physics/Earth & Environmental Science syllabus. This assignment is an opportunity to develop the skill of interpreting research findings in science to relate them to the lives of adolescents.

On successful completion you will be able to:

- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;

PartC: Teaching HSC Options

Due: **6/November/2015**

Weighting: **40%**

The purpose of this assignment is for you to become familiar with one of the HSC options.

On successful completion you will be able to:

- UO1 a knowledge of the changing policy context of secondary schooling in NSW (Board of Studies, NSWDET) and Australia (ACARA) with specific reference to science;
- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Delivery and Resources

This unit builds on the units TEP433, TEP401 and TEP395. Curricula, resources and instructional strategies appropriate for the teaching of Biology, Chemistry, Physics and Earth and Environmental Sciences and General Science for Senior Science Years 11-12 are examined. TEP434 is linked to professional experience gained in TEP401/402. Students complete methodology studies in two of the four science specialist areas listed below but may attend all areas if they want to.

Students must take a major option (subject studied to third year at university) and a minor option (subject studied to at least first year and preferably to second year at university).

All workshops focus on strategies for teaching these subjects at the senior level and assume a level of content knowledge covered by the respective syllabus documents. Each subject area will incorporate relevant aspects of the Stage 6 General Science Syllabus. If your content knowledge of chemistry or physics is inadequate and you wish to attend these workshops, then it is advisable to complete first year units in chemistry or physics or to revise the relevant areas prior to the workshops each week.

The unit runs from 10th August until 6th November, 2015. The latest date for withdrawal without academic and/or financial penalty is Friday 31 August 2015 (Census date).

Day

Science Education Lab E7B 317

Time

Monday

Earth & Environmental Science

4.00pm – 6.00pm

Tuesday

Physics

4.00pm – 6.00pm

Wednesday

Chemistry

4.00pm – 6.00pm

Thursday

Biology

4.00pm – 6.00pm

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/

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) 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

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.

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 outcomes

- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO1 a knowledge of the changing policy context of secondary schooling in NSW (Board of Studies, NSWDET) and Australia (ACARA) with specific reference to science;
- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO6 the ability to interpret research findings both in science and science education and

relate these where appropriate to current syllabus documents and to the lives of adolescent students;

- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO1 a knowledge of the changing policy context of secondary schooling in NSW (Board of Studies, NSWDET) and Australia (ACARA) with specific reference to science;
- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;

- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively

engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO1 a knowledge of the changing policy context of secondary schooling in NSW (Board of Studies, NSWDET) and Australia (ACARA) with specific reference to science;
- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO4 the ability to critique (or reflect on) one's own professional practice with due regard to the input provided by experienced science teacher(s) (TEP402);
- UO5 a working knowledge of the relevant syllabus science documents from both the Board of Studies (NSW) and National Curriculum (ACARA) with specific reference to the final years of secondary schooling;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;
- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO2 the ability to plan and present lesson sequences based on research data collected during the professional experience (TEP 402);
- UO3 a developing knowledge of both formal and informal assessment procedures in current use in the NSW Stage 6 science syllabus documents;
- UO6 the ability to interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of adolescent students;
- UO7 to think critically about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage adolescent students with science;

Assessment tasks

- Part A: Animations/simulations
- Part B: Current issues
- Part C: Teaching HSC Options

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

- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part C: Teaching HSC Options

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 outcome

- UO8 a developing understanding of key elements of pedagogy including: the strategies needed to cater for the diversity of learners (including specific equity groups), actively engaging adolescent students in learning, classroom management, beginning and ending lessons, integrating a focus on literacy, developing and selecting resources, questioning, and assessment and evaluation.

Assessment tasks

- Part A: Animations/simulations
- Part C: Teaching HSC Options