EDTE4340

Science in the Secondary School II

Session 1, In person-scheduled-weekday, North Ryde 2022

Macquarie School of Education

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General Information

Unit convenor and teaching staff
Hye Eun Chu
hye-eun.chu@mq.edu.au

Lab Technician
Katelyn Mills
katelyn.mills@mq.edu.au

Credit points
10

Prerequisites
(EDTE4330 or TEP433) and (TEP401 or EDTE4010 or EDST3010)

Corequisites

Co-badged status

Unit description
This unit examines curricula, resources and instructional strategies appropriate for the teaching of Biology, Chemistry, Physics, and Earth and Environmental Sciences for Senior Science in Years 11 and 12.

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:

ULO1: Demonstrate knowledge and understanding of the concepts, substance, and structure of the content/strategies for Stage 6 of the science syllabuses (Biology/Earth and Environmental Science/Chemistry/Physics).
ULO2: Interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of students.
ULO3: Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
ULO4: Demonstrate critical thinking about the potential of information and

communication technologies (ICT) to enhance the quality of learning and teaching to engage students with science.

ULO5: Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning progress.

ULO6: Develop oral communication skills, listening skills, and teamwork skills.

General Assessment Information

Assessment Presentation and Submission Guidelines Please follow these guidelines when you submit each assignment:

- Allow a left and right-hand margin of at least 2cm in all assignments.
- Please type all assignments using 12-point font and 1.5 spacing.
- All assessments must be submitted through Turnitin in .doc or .pdf format
- It is the responsibility of the student to ensure that all assessments are successfully submitted through Turnitin.
- Faculty assignment cover sheets are NOT required.

Draft Submissions & Turnitin Originality Reports

- Students may use Turnitin's Originality Report as a learning tool to improve their academic writing if this option is made available in the unit.
- Students are strongly encouraged to upload a draft copy of each assessment to Turnitin at least one week prior to the due date to obtain an Originality Report.
- The Originality Report provides students with a similarity index that may indicate if plagiarism has occurred. Students will be able to make amendments to their drafts prior to their final submission on the due date.
- Generally, one Originality Report is generated every 24 hours up to the due date.

Please note:

- Students should regularly save a copy of all assignments before submission.
- Students are responsible for checking that the correct file has been uploaded, that their submission has been successful and that it has been submitted by the due date and time.

Assignment extensions and late penalties

- In general, there should be no need for extensions except through illness or misadventure that would be categorised as serious and unavoidable disruption according to the University definition of same, see: https://students.mq.edu.au/study/my-

study-program/special-consideration

- Applications for extensions must be made via AskMQ according to the Special Consideration policy. Extensions can only be granted if they meet the Special Considerations policy and are submitted via https://ask.mq.edu.au/. This will ensure consistency in the consideration of such requests is maintained.
- Late submissions: Unless a Special Consideration request has been submitted and approved, (a) a penalty for lateness will apply – 10/100 marks of credit (10% of the total assessment weighting) will be deducted per day for assignments submitted after the due date – and (b) no assignment will be accepted seven days (incl. weekends) after the original submission deadline. No late submissions will be accepted for timed assessments – e.g., quizzes, online tests. A zero result for the assignment will be recorded after the late submission period has ended if no task has been received.
- 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.

Requesting a re-assessment of an assignment

If you have evidence that your task has been incorrectly assessed against the grade descriptors you can request a re-mark. To request a re-mark you need to contact the unit convenor within 7 days of the date of return of the assignment and provide a detailed assessment of your script against the task criteria. Evidence from your assignment must be provided to support your judgments.

Note:

- Please do not request a re-mark for a Failed assessment as they are all double-marked as a part of the moderation process.
- The outcome of a re-mark may be a higher/lower or unchanged grade.
- Grades are standards referenced and effort is NOT a criterion.

University policy on grading

Criteria for awarding grades for assessment tasks

Assignments will be awarded grades ranging from HD to F according to guidelines set out in the University's Grading Policy. The following descriptive criteria are included for your information.

Descriptive Criteria for awarding grades in the unit

In order to meet the unit outcomes and successfully pass this unit, students must make a genuine attempt at all assessment tasks. Where any submitted assessment task is considered to be unsatisfactory in this regard, the highest possible final grade that can be awarded for the unit will be 45.

Students will be awarded grades ranging from HD to F according to guidelines set out in the policy: https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policies/assessment-in-effect-from-session-2-2016

The following generic grade descriptors provide university-wide standards for awarding final grades.

Grade	Descriptor
HD (High Distinction)	Provides consistent evidence of deep and critical understanding in relation to the learning outcomes. There is substantial originality and insight in identifying, generating and communicating competing arguments, perspectives or problem solving approaches; critical evaluation of problems, their solutions and their implications; creativity in application as appropriate to the discipline.
D (Distinction)	Provides evidence of integration and evaluation of critical ideas, principles and theories, distinctive insight and ability in applying relevant skills and concepts in relation to learning outcomes. There is demonstration of frequent originality in defining and analysing issues or problems and providing solutions; and the use of means of communication appropriate to the discipline and the audience.
Cr (Credit)	Provides evidence of learning that goes beyond replication of content knowledge or skills relevant to the learning outcomes. There is demonstration of substantial understanding of fundamental concepts in the field of study and the ability to apply these concepts in a variety of contexts; convincing argumentation with appropriate coherent justification; communication of ideas fluently and clearly in terms of the conventions of the discipline.
P (Pass).	Provides sufficient evidence of the achievement of learning outcomes. There is demonstration of understanding and application of fundamental concepts of the field of study; routine argumentation with acceptable justification; communication of information and ideas adequately in terms of the conventions of the discipline. The learning attainment is considered satisfactory or adequate or competent or capable in relation to the specified outcomes
F (Fail)	Does not provide evidence of attainment of learning outcomes. There is missing or partial or superficial or faulty understanding and application of the fundamental concepts in the field of study; missing, undeveloped, inappropriate or confusing argumentation; incomplete, confusing or lacking communication of ideas in ways that give little attention to the conventions of the discipline.

Note: If you fail a unit with a professional experience component, the fail grade will be on your transcript irrespective of the timing of the placement.

Withdrawing from this unit

If you are considering withdrawing from this unit, please seek academic advice via https://ask.mq.edu.au before doing so as this unit may be a co-requisite or prerequisite for units in the following sessions and may impact on your progression through the degree.

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.

Assessment Tasks

Name	Weighting	Hurdle	Due
Lesson Plan	40%	No	15/4/2022
Design a test (Teaching and Assessment)	50%	No	5/June/2022
Ongoing assessment	10%	No	All weeks

Lesson Plan

Assessment Type [1]: Lesson plan
Indicative Time on Task [2]: 30 hours
Due: **15/4/2022**
Weighting: **40%**

The aim of this assignment is for students to consider media reports of recent breakthroughs in scientific research and their place within the Stage 6 syllabus. This assignment is an opportunity for students to develop the skill of interpreting research findings in science to relate them to people's lives (max 1500 words, 20% for 1st teaching science subject and 20% for 2nd teaching science subject)

On successful completion you will be able to:

- Demonstrate knowledge and understanding of the concepts, substance, and structure of the content/strategies for Stage 6 of the science syllabuses (Biology/Earth and Environmental Science/Chemistry/Physics).
- Interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of students.
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning progress.

Design a test (Teaching and Assessment)

Assessment Type [1]: Design Task
Indicative Time on Task [2]: 40 hours
Due: **5/June/2022**
Weighting: **50%**

This assignment has two components – Part (i) Design science activities and test items (40%)

and Part (ii) presentation (10%). Students must complete both components satisfactorily. The purpose of this assignment is for students to become familiar with the Stage 6 (Years 12) Science Syllabus and assessment (Bio/Chem/EES/Phy) [no more than 20 pages (11-point letter size and single line space)]

On successful completion you will be able to:

- Demonstrate knowledge and understanding of the concepts, substance, and structure of the content/strategies for Stage 6 of the science syllabuses (Biology/Earth and Environmental Science/Chemistry/Physics).
- Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
- Demonstrate critical thinking about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage students with science.
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning progress.
- Develop oral communication skills, listening skills, and teamwork skills.

Ongoing assessment

Assessment Type [1]: Participatory task
Indicative Time on Task [2]: 5 hours
Due: **All weeks**
Weighting: **10%**

Students' completion of online activities and engagement during face ti face session (or zoom session) will be assessment.

On successful completion you will be able to:

- Demonstrate knowledge and understanding of the concepts, substance, and structure of the content/strategies for Stage 6 of the science syllabuses (Biology/Earth and Environmental Science/Chemistry/Physics).
- Interpret research findings both in science and science education and relate these where appropriate to current syllabus documents and to the lives of students.
- Plan lesson sequences using knowledge of student learning, content and effective

teaching strategies
- Demonstrate critical thinking about the potential of information and communication technologies (ICT) to enhance the quality of learning and teaching to engage students with science.
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning progress.
- Develop oral communication skills, listening skills, and teamwork skills.

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[1] If you need help with your assignment, please contact:

- the academic teaching staff in your unit for guidance in understanding or completing this type of assessment
- the Writing Centre for academic skills support.

[2] Indicative time-on-task is an estimate of the time required for completion of the assessment task and is subject to individual variation

Delivery and Resources

iLearn

This unit has a full web presence through iLearn.

Students will need regular access to a computer and the Internet to complete this unit.

Weekly access to iLearn is compulsory for all students. Important assessment information will be posted here, as will other relevant unit notices and materials, including a reading template and guide to lecture note taking to assist your studies.

Access and technical assistance

Information for students about access to the online component of this unit is available at ilearn.mq.edu.au/login/MQ/. You will need to enter your student username and password.

Please do NOT contact the Unit Convenor regarding iLearn technical help.

No extensions will be given for any technical issues. Allow enough time for your submissions.

Assistance is available from IT Helpdesk ph: 1800 67 4357 or log a request at help.mq.edu.au. OneHelp is the online IT support service for both students and staff.

ICT skills

This unit requires students to use several ICT and software skills:

- Internet access: The iLearn site contains materials for this unit; it is also required for the online submission of all Assessment Tasks, and for the use of Turnitin submission for ALL tasks.

- Word processing, visual representations, and document formatting: You are required to use an appropriate form of software to present your assignments.
- Uploading of assessment tasks to iLearn.

Structure

Students must take two workshops, one for a major option (science subject studied to the third year at university) and the other one for a minor option (science subject studied to at least first year and preferably to the 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 comprises a series of zoom sessions and face-to-face on-campus workshops. You will find the Zoom links on the unit's iLearn page along with the materials for each workshop. In the zoom sessions and on-campus workshops, students will discuss issues and questions arising from the lecture video clips and prescribed readings. They are expected to base their arguments/ discussions on evidence from published research articles and other relevant materials. Attendance at all tutorials is expected. There will be a supporting website for the unit providing additional readings, links and materials.

Students are required to participate in small group activities, whole-class discussions, to read the weekly material in advance, and to complete brief tasks either as individuals or in pairs. The weekly program for the course with the accompanying readings/ preparation is available on the following pages or on the unit ILearn site.

Unit Schedule

Please refer to the unit iLearn page for information about the schedule of classes.

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://policies.mq.edu.au). Students should be aware of the following policies in particular with regard to Learning and Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Assessment Procedure
- Complaints Resolution Procedure for Students and Members of the Public

- Special Consideration Policy

Students seeking more policy resources can visit Student Policies (https://students.mq.edu.au/support/study/policies). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

To find other policies relating to Teaching and Learning, visit Policy Central (https://policies.mq.edu.au) and use the search tool.

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/admin/other-resources/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) 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 or if you are a Global MBA student contact globalmba.support@mq.edu.au

Academic Integrity

At Macquarie, we believe academic integrity – honesty, respect, trust, responsibility, fairness and courage – is at the core of learning, teaching and research. We recognise that meeting the expectations required to complete your assessments can be challenging. So, we offer you a range of resources and services to help you reach your potential, including free online writing and maths support, academic skills development and wellbeing consultations.

School of Education Procedures

In addition, the following policies and procedures of the School of Education are applicable in this unit.

Attendance

All Internal tutorials/workshops begin in Week 1 of Session. Activities completed during weekly tutorials/workshops (internal) or on-campus days (external) are essential for building the core knowledge and/or skills required to demonstrate the learning outcomes of this unit [and to meet the AITSL Graduate Teacher Standards and/or ACECQA requirements]. Attendance at all tutorials/workshops or on-campus days is expected and the roll will be taken.

Students are required to attend the tutorial/workshop in which they are enrolled. Any changes to tutorial enrolments must be completed officially through e-student. Please do not contact the unit convenor requesting a change.

Unit Expectations

- Students are expected to read weekly readings before completing tasks and attending workshops.
- Students are expected to attend weekly workshops before completing tasks.

Note: It is not the responsibility of unit staff to contact students who have failed to submit assignments. If you have any missing items of assessment, it is your responsibility to make contact with the unit convenor.

Electronic Communication

It is the student's responsibility to check all electronic communication on a regular weekly basis. Communication may occur via:

- Official MQ Student Email Address
- The Dialogue function on iLearn
- Other iLearn communication functions

External Students

1. The on-campus sessions on (insert dates) are essential to student engagement and learning and attendance on all days is expected. Failure to attend or to have an approved Special Consideration may result in a Fail grade for the unit. Please see attendance requirements in this unit guide.
2. Prior to the on-campus sessions, you should have read the prescribed readings and listened to the lectures. Summarise the main points and make a note of the key terms and definitions.
3. Prepare any discussion questions of your own that you wish to share.
4. Please make effective use of the online component of the unit and access iLearn regularly. Keep up to date with listening to the lectures on a weekly basis.

Student Support

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

The Writing Centre

The Writing Centre provides resources to develop your English language proficiency, academic writing, and communication skills.

- Workshops
- Chat with a WriteWISE peer writing leader
- Access StudyWISE
- Upload an assignment to Studiosity
- Complete the Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides

- Ask a Librarian

Student Services and Support

Macquarie University offers a range of Student Support Services including:

- IT Support
- Accessibility and disability support with study
- Mental health support
- Safety support to respond to bullying, harassment, sexual harassment and sexual assault
- Social support including information about finances, tenancy and legal issues

Student Enquiries

Got a question? Ask us via AskMQ, or contact Service Connect.

IT Help

For help with University computer systems and technology, visit 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.

5Rs Framework

The 5Rs Framework, developed by the School of Education at Macquarie University, is embedded throughout your teacher education course. Your use of the 5Rs Framework will help you develop the capabilities that will make your teaching career sustainable and fulfilling. In this unit, you will learn using the 5Rs framework in the following important ways:

Research engaged: In the "Stage 6 Lesson Plan" assignment (Task 1) student teachers will interpret recent science research findings to relate them to people's lives within stage 6 contents.

Responsive:

In the "Teaching and Assessment" assignment (Task2), student teachers will be responsive by giving and receiving peer-feedback on their delivered lab practical activity to teach and assess science concepts in stage 6.