



# EDST8229

## Teaching Science in the Secondary School 2

Session 1, Infrequent attendance, North Ryde 2021

*Macquarie School of Education*

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#### **Disclaimer**

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#### **Notice**

As part of [Phase 3 of our return to campus plan](#), most units will now run tutorials, seminars and other small group activities on campus, and most will keep an online version available to those students unable to return or those who choose to continue their studies online.

To check the availability of face-to-face activities for your unit, please go to [timetable viewer](#). To check detailed information on unit assessments visit your unit's iLearn space or consult your unit convenor.

## General Information

Unit convenor and teaching staff

Hye Eun Chu

[hye-eun.chu@mq.edu.au](mailto:hye-eun.chu@mq.edu.au)

Credit points

10

Prerequisites

EDST8228 and EDST8238

Corequisites

Co-badged status

EDST8229 special circumstances

Unit description

This unit continues the examination of the secondary Science curriculum and builds on the content and strategies covered in EDST8228. It considers the key concepts in Biology/ Chemistry/Physics/Earth and Environmental Science in the Stage 6 syllabus, appropriate research-informed teaching methods for developing these concepts, and the role of assessment in Science education in Years 11 and 12. Students will critically reflect on practical and professional issues relating to the key concepts, and teaching and assessment methods they encountered in their professional experience.

## 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:** Develop and integrate an in-depth, broad and coherent knowledge of the key concepts in syllabus, substance and structure of the content and strategies of teaching in Stage 6 of the science (Physics, Chemistry, Biology and Earth & Environmental Science syllabuses).

**ULO3:** Plan, evaluate lessons and critically reflect on learning and teaching sequences using in-depth knowledge of student learning, content and evidence-based teaching strategies.

**ULO2:** Develop and integrate an in-depth, broad and coherent knowledge of key

concepts in Stage 6 syllabus to understand assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning.

**ULO4:** Demonstrate effective oral communication skills, listening skills, and teamwork skills suitable for a range of professional contexts relevant to Science teaching.

**ULO5:** Engage in scholarly inquiry and critical reflection in relation to research-informed teaching practice.

## 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 their submission has been successful and 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 – two (2) marks out of 100 will be deducted per day for assignments submitted after the due date – and (b) no assignment will be accepted more than seven (7) days (incl. weekends) after the original submission deadline. No late submissions will be accepted for timed assessments – e.g., quizzes, online tests. Late penalties are applied by unit convenors or their delegates after tasks are assessed.
- 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 judgements.

**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
<b>HD</b> (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.
<b>D</b> (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.
<b>Cr</b> (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.
<b>P</b> (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.
<b>F</b> (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](https://ask.mq.edu.au).

## Assessment Tasks

Name	Weighting	Hurdle	Due
<a href="#"><u>Critical Reflections A: Major Option</u></a>	35%	No	week 6
<a href="#"><u>Critical Reflections B: Minor Option</u></a>	35%	No	week 6

Name	Weighting	Hurdle	Due
<a href="#"><u>Assessment Resource and Scholarly Justification</u></a>	20%	No	week 13
<a href="#"><u>Professional dialogue, engagement and participation in the unit activities.</u></a>	10%	No	all semester

## Critical Reflections A: Major Option

Assessment Type <sup>1</sup>: Essay

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **week 6**

Weighting: **35%**

Critical reflections on learning and teaching sequences, for the Syllabus Major option. Research-based reflections on unit plan, individual lessons planning, and pedagogical choices (1000 words)

On successful completion you will be able to:

- Develop and integrate an in-depth, broad and coherent knowledge of the key concepts in syllabus, substance and structure of the content and strategies of teaching in Stage 6 of the science (Physics, Chemistry, Biology and Earth & Environmental Science syllabuses).
- Plan, evaluate lessons and critically reflect on learning and teaching sequences using in-depth knowledge of student learning, content and evidence-based teaching strategies.
- Demonstrate effective oral communication skills, listening skills, and teamwork skills suitable for a range of professional contexts relevant to Science teaching.
- Engage in scholarly inquiry and critical reflection in relation to research-informed teaching practice.

## Critical Reflections B: Minor Option

Assessment Type <sup>1</sup>: Essay

Indicative Time on Task <sup>2</sup>: 25 hours

Due: **week 6**

Weighting: **35%**

Critical reflections on learning and teaching sequences, for the Syllabus Major option. Research-

based reflections on unit plan, individual lessons planning, and pedagogical choices (1000 words)

On successful completion you will be able to:

- Develop and integrate an in-depth, broad and coherent knowledge of the key concepts in syllabus, substance and structure of the content and strategies of teaching in Stage 6 of the science (Physics, Chemistry, Biology and Earth & Environmental Science syllabuses).
- Plan, evaluate lessons and critically reflect on learning and teaching sequences using in-depth knowledge of student learning, content and evidence-based teaching strategies.
- Demonstrate effective oral communication skills, listening skills, and teamwork skills suitable for a range of professional contexts relevant to Science teaching.
- Engage in scholarly inquiry and critical reflection in relation to research-informed teaching practice.

## Assessment Resource and Scholarly Justification

Assessment Type <sup>1</sup>: Essay

Indicative Time on Task <sup>2</sup>: 20 hours

Due: **week 13**

Weighting: **20%**

Design an assessment of learning task and justification: The test and accompanying justification will show scholarly, research-informed knowledge of science teaching and Syllabus documents (1000 words)

On successful completion you will be able to:

- Develop and integrate an in-depth, broad and coherent knowledge of the key concepts in syllabus, substance and structure of the content and strategies of teaching in Stage 6 of the science (Physics, Chemistry, Biology and Earth & Environmental Science syllabuses).
- Develop and integrate an in-depth, broad and coherent knowledge of key concepts in Stage 6 syllabus to understand assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning.
- Demonstrate effective oral communication skills, listening skills, and teamwork skills suitable for a range of professional contexts relevant to Science teaching.

## Professional dialogue, engagement and participation in the unit activities.

Assessment Type <sup>1</sup>: Participatory task

Indicative Time on Task <sup>2</sup>: 5 hours

Due: **all semester**

Weighting: **10%**

Professional dialogue, engagement and participation in the unit activities.

5% for major option 5% for minor option

On successful completion you will be able to:

- Demonstrate effective oral communication skills, listening skills, and teamwork skills suitable for a range of professional contexts relevant to Science teaching.
- Engage in scholarly inquiry and critical reflection in relation to research- informed teaching practice.

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<sup>1</sup> 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.

<sup>2</sup> 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

### About this unit

This unit builds on the EDST8228. 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. The EDST8229 is linked to professional experience gained during your professional experiences. 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 (science subject studied to the third year at university) and a minor option (science subject studied to at least first year and preferably to the second year at university or science subject needed to be upgraded).

### Classes



### *Science Curriculum Laboratory E7B317 - the location of all classes*

The Science Curriculum Laboratory is available for EDST8229 student use. At times the laboratory is closed so that workshops can be prepared. Students are asked not to disturb the laboratory staff at these times. There will be some variations in opening times during the semester - students are asked to double check on these times. Please phone/email Ms. Katelyn Mills to check the availability of the laboratory ahead of time.

In the interests of safety and security, students are asked to inform the laboratory assistant when entering and leaving the area. You are required to wear appropriate shoes and safety glasses at all times when conducting experimental work. Doors must be left locked. *Note:* Children are NOT permitted in the Laboratory OR the Preparation Room.

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.

**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.

#### **Structure**

The unit comprises two two-hour workshops in Weeks 1, 3, 5, 10 and 12. Students should choose two science subject options (major science subject and minor science subject). For example, if you are Bio major, you should choose Bio workshop and Phy/Chem workshop.

Due to the university's COVIDSafe plan, the workshops will all be completed via Zoom. You will find the Zoom links on the unit's iLearn page along with the materials for each workshop.

**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/](https://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](https://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.

**Attendance** The Master of Teaching is a professional, NESA accredited qualification. Attendance at all synchronous activities, completion of non-synchronous formative/diagnostic class tasks and involvement in professional forums is mandatory. All students must meet the 80% attendance requirement. Students are required to participate in small group activities, whole class discussion, 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 unit iLearn site.

## Unit Schedule

Unit Schedule can be found on iLearn.

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central \(https://policies.mq.edu.au\)](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](#)
- [Grade Appeal Policy](#)
- [Complaint Management Procedure for Students and Members of the Public](#)
- [Special Consideration Policy](#)

Students seeking more policy resources can visit [Student Policies \(https://students.mq.edu.au/support/study/policies\)](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 \(https://policies.mq.edu.au\)](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](https://ask.mq.edu.au) or if you are a Global MBA

student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@mq.edu.au)

### **School of Education Procedures**

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

#### **Attendance for MTeach units**

Master of Teaching (Primary and Secondary)

*Attendance at all synchronous activities, completion of non-synchronous formative/diagnostic class tasks and involvement in professional forums is **compulsory** as the Master of Teaching is a professional qualification. All students must meet the 80% attendance requirement.*

Students are required to attend the tutorial 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 tutorials
- Students are expected to listen/attend weekly lectures before completing tasks and attending tutorials

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. Prepare any discussion questions of your own that you wish to share.

3. 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/>

## Learning Skills

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

- [Getting help with your assignment](#)
- [Workshops](#)
- [StudyWise](#)
- [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

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)

If you are a Global MBA student contact [globalmba.support@mq.edu.au](mailto:globalmba.support@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.