EDTE4330

Science in the Secondary School I

Session 1, Special circumstances 2021

Macquarie School of Education

Contents

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

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

Credit points
10

Prerequisites
130cp and (EDTE3870 or TEP387) or (EDST3140 and EDST3010)

Corequisites

Co-badged status

Unit description
This unit introduces students to modern approaches for the teaching and learning of Science in secondary schools. Curricula, resources and instructional strategies appropriate to teaching Science are examined, with particular attention to years 7-10 Science.

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 of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum.

ULO2: Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses.

ULO3: Implement teaching strategies for using ICT that engage students in their learning.

ULO4: Demonstrate knowledge and understanding of research into how students learn

science concepts.

ULO5: Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities.

ULO6: Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities.

ULO7: Explore educational ideas through action research.

ULO8: Develop communication 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 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 7days 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
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
Reflective inquiry based activity design	40%	No	16/4/2021
Students' understanding of a science concept/beliefs	50%	No	21/5/2021

Name	Weighting	Hurdle	Due
participation and engagement	10%	No	All semester

Reflective inquiry based activity design

Assessment Type [1]: Design Task
Indicative Time on Task [2]: 30 hours
Due: **16/4/2021**
Weighting: **40%**

The aim of the assignment is to give you the opportunity to develop your expertise in inquiry-based, student-centred science teaching by using this approach in one lesson of your choice and engaging in reflection on this lesson. (1600-2000 words).

On successful completion you will be able to:

- Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum.
- Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses.
- Implement teaching strategies for using ICT that engage students in their learning.
- Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities.
- Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities.
- Develop communication skills.

Students' understanding of a science concept/beliefs

Assessment Type [1]: Case study/analysis
Indicative Time on Task [2]: 35 hours
Due: **21/5/2021**
Weighting: **50%**

The aim of this assignment is to provide you with the opportunity to develop research skills for diagnosing and solving problems in the classroom (1600-2000 words)

On successful completion you will be able to:

- Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum.
- Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses.

- Demonstrate knowledge and understanding of research into how students learn science concepts.
- Demonstrate knowledge and understanding of strategies for differentiating teaching to meet specific learning needs of students across a range of backgrounds and abilities.
- Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities.
- Explore educational ideas through action research.
- Develop communication skills.

participation and engagement

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

Professional dialogue and participation including online dialogue.

On successful completion you will be able to:
- Demonstrate knowledge of the content of Stages 4 and 5 science of the current NSW 7-10 syllabus and impending NSW syllabus for the Australian Curriculum.
- Demonstrate understanding of a range of teaching strategies related to the content of Stages 4 and 5 of the science syllabuses.
- Implement teaching strategies for using ICT that engage students in their learning.
- Demonstrate knowledge and understanding of research into how students learn science concepts.
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- Plan and implement effective science lessons that provide achievable challenges for students of varying backgrounds and abilities.
- Explore educational ideas through action research.

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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

Delivery

The classes for EDTE4330 are workshops and online work.

There will be five workshops, one x 3 hours workshops in Weeks 1, 3, 5, 7, and 12.

There will also be on-line work will need to be done in preparation for the workshops and other work to be completed as follow-up to them. More information will be in your EDTE4330 iLearn page.

The areas of study in EDTE4330 include the history and philosophy of science, inquiry-based teaching and learning approaches, the use of scientific language, writing/reading in science, classroom management, ICT for learning about science, group work and discussion, assessment, along with children's ideas about science and how these might differ from those presently held by members of the scientific community. Work will continue on lesson planning and implementation according to the prerequisite units. In each workshop session and online work, detailed strategies for the teaching and learning of each of the prescribed focus areas, contexts and domains of the current NSW Stage 4/5 science syllabus will be presented and discussed in terms of their effectiveness. This will then be linked together with the Stage 6 science syllabus documents and discussion of the National Curriculum for science as appropriate.

Many of the workshop strategies are hands-on so that students are able to gain practical knowledge of activities that can be used in science classrooms at the junior secondary level. The workshops are organised to model a school classroom, where effective learning and teaching takes place including the use of laptops. Each workshop provides a choice of activities usually negotiated by the students in small groups. The lecturer's role is to provide guidance where necessary and highlight important issues in the overall theme of the workshop along with current, relevant science education research. Students are expected to participate in all workshops as individuals, in small groups and as a whole class.

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.

Various activities and materials for discussion and critical reflection are included and external students especially are encouraged to use this web component. Electronic links and suggested references will be included in the Resources section. Please check the iLearn unit regularly.

Support Resources

Macquarie University has a range of services for students. If you are struggling with any aspect of academic life or career trajectory and skills, we have great supports within the university.

Please refer to the comprehensive list of support services here.

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

The unit comprises five three-hour workshops in Weeks 1, 3, 5, 10 and 12. 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. There are also online learning activities which you will complete in preparation for, and following, each Zoom workshop. Details of these activities an be found on iLearn. Attendance at all Zoom workshops is expected.

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

You can find the EDTE4330 unit schedule on the unit iLearn Page.

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

- 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). 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

School of Education Procedures

In addition, the following policies and procedures of the School of Education are applicable in this unit. Attendance for undergraduate units All Internal tutorials begin in Week 2 of Session.

Attendance for undergraduate units Activities completed during weekly tutorials (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 or on campus days is expected and the roll will be taken.

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

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 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

If you are a Global MBA student contact 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/.

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.