COURSE OUTLINE

# EDU761 Teaching Senior Secondary Science 2

**Course Coordinator:** Erin Siostrom (esiostrom@usc.edu.au) **School:** School of Education and Tertiary Access

2021 | Semester 2

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| USC Sunshine Coast | ON CAMPUS | Most of your course is on campus but you may be able to do some components of this course online. |

*Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.*

## 1. What is this course about?

### 1.1. Description

In this course you will develop specialised knowledge and skills for implementing the Queensland Senior Secondary Science Curriculum in your first subject area. This course extends your knowledge of Science teaching using principles of problem-based learning, project-based learning, experiential learning and experimental investigation. You will learn how to design lessons, units and work programs for Years 11 and 12 Science. You will explore a range of pedagogy, assessment and reporting strategies that maximise learning outcomes for your students.

### 1.2. How will this course be delivered?

| ACTIVITY | HOURS | BEGINNING WEEK | FREQUENCY |
|---|---|---|---|
| **ON CAMPUS** | | | |
| **Tutorial/Workshop 1** – A blended learning approach is used to deliver this course, including a mix of synchronous and asynchronous materials and activities accessed through Blackboard. This course will be supported by technology-enabled learning and teaching including zoom. | 2hrs | Week 1 | 10 times |
| **Lecture** – You are required to engage with a weekly 2 hour lecture, associated activities and required/recommended course reading materials accessed through Blackboard and using the required text. | 2hrs | Week 1 | 10 times |

### 1.3. Course Topics

- Queensland Senior Science curricula
- Curriculum planning and alignment of content, pedagogy and assessment for senior science
- Assessment and reporting practices in senior science
- Facilitating engaging experimental investigations for your students
- Student safety and risk assessment
- Integrating resources including information and communication technologies (ICT) into science curriculum
- Literacy

## 2. What level is this course?

700 Level (Specialised)

Demonstrating a specialised body of knowledge and set of skills for professional practice or further learning. Advanced application of knowledge and skills in unfamiliar contexts.

## 3. What is the unit value of this course?

12 units

## 4. How does this course contribute to my learning?

| COURSE LEARNING OUTCOMES<br>On successful completion of this course, you should be able to... | GRADUATE QUALITIES MAPPING<br>Completing these tasks successfully will contribute to you becoming... | PROFESSIONAL STANDARD MAPPING<br>Australian Institute for Teaching and School Leadership |
|---|---|---|
| 1 Demonstrate your mastery of Science content and senior Science curriculum knowledge in developing Science inquiry sequences, teaching and learning activities and assessment. | Creative and critical thinker<br>Engaged | 2.1 - Content and teaching strategies of the teaching area<br>2.2 - Content selection and organisation<br>3.1 - Establish challenging learning goals<br>3.2 - Plan, structure and sequence learning programs<br>3.3 - Use teaching strategies |
| 2 Apply deep knowledge of teaching and learning strategies that support the diversity of learners engaged in senior Science. | Knowledgeable<br>Engaged | 2.2 - Content selection and organisation<br>2.3 - Curriculum, assessment and reporting<br>2.6 - Information and Communication Technology (ICT)<br>3.1 - Establish challenging learning goals<br>3.4 - Select and use resources<br>4.1 - Support student participation<br>4.2 - Manage classroom activities<br>5.1 - Assess student learning |
| 3 Apply deep knowledge of the principles of assessment and reporting that monitor senior students' levels of achievement and progress in senior Science. | Knowledgeable<br>Engaged | 5.1 - Assess student learning<br>5.2 - Provide feedback to students on their learning<br>5.3 - Make consistent and comparable judgements<br>5.4 - Interpret student data<br>5.5 - Report on student achievement |
| 4 Apply deep knowledge of planning, resourcing, teaching and managing senior Science. | Knowledgeable<br>Engaged | 2.1 - Content and teaching strategies of the teaching area<br>2.2 - Content selection and organisation<br>2.3 - Curriculum, assessment and reporting<br>2.5 - Literacy and numeracy strategies<br>2.6 - Information and Communication Technology (ICT)<br>3.1 - Establish challenging learning goals<br>3.2 - Plan, structure and sequence learning programs<br>3.3 - Use teaching strategies<br>3.4 - Select and use resources<br>4.1 - Support student participation<br>4.2 - Manage classroom activities<br>4.5 - Use ICT safely, responsibly and ethically<br>5.1 - Assess student learning |
| 5 Create oral and/or written communication concerning curriculum teaching, learning and assessment in senior secondary Science for classroom and professional contexts. | Knowledgeable | |

## 5. Am I eligible to enrol in this course?

Refer to the USC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

### 5.1. Pre-requisites

Enrolled in Program ED706 and two from Biology, Agriculture, Chemistry, Physics, Marine Science, Psychology or Science Teaching areas

### 5.2. Co-requisites

EDU760

### 5.3. Anti-requisites

Not applicable

### 5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

## 6. How am I going to be assessed?

### 6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

### 6.2. Details of early feedback on progress

In Week 2 you will lead a (formative) group conversation similar to Task 1 for practice and feedback.

### 6.3. Assessment tasks

| DELIVERY MODE | TASK NO. | ASSESSMENT PRODUCT | INDIVIDUAL OR GROUP | WEIGHTING % | WHAT IS THE DURATION / LENGTH? | WHEN SHOULD I SUBMIT? | WHERE SHOULD I SUBMIT IT? |
|---|---|---|---|---|---|---|---|
| All | 1 | Oral and Written Piece | Individual | 20% | 10 min presentations plus a 250-word activity plans | Week 4 | In Class |
| All | 2a | Examination | Individual | 20% | 25 minutes | Week 6 | Online Assignment Submission with plagiarism check |
| All | 2b | Activity Participation | Individual | 20% | 30 minutes | Week 9 | In Class |
| All | 3 | Portfolio | Individual | 40% | 2200 words | Week 10 | Online Assignment Submission with plagiarism check |

**All - Assessment Task 1:** Leading a science demonstration and class discussion

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| **GOAL:** | The goal of this task is to demonstrate your capacity to engage students with Science through demonstrations and discussion.For students who do two Science teaching areas this task is for teaching area 2. For example, if you do a Biology major and a Chemistry minor, then this will be a chemistry task. |
| **PRODUCT:** | Oral and Written Piece |
| **FORMAT:** | Submit: Week 4 or 5 as arranged with your tutor. You are taking the role of a teacher of senior students who is presenting a demonstration stimulus (real, modelled or virtual) and associated discussion linked to a key idea or key concept of your senior syllabus.The demonstrations and class discussions must be based on 2019 QCAA senior syllabus subject matter. The purpose of this is to develop your ability to facilitate a class discussion using Socratic questioning, to engage every student in the discussion, and to guide the discussion towards desired outcomes linked to your curriculum. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Application of knowledge of science content and senior Science curriculum elements to plan, resource and teach and manage an inquiry learning activity. | 1 |
| | 2 | Application of deep knowledge of teaching and learning strategies that support the diversity of learners engaged in senior Science. | 2 |
| | 3 | Oral and written communication skills | 5 |

### All - Assessment Task 2a: Examination

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| GOAL: | The goal of this task is to demonstrate your knowledge of the senior secondary lecture topics. |
| PRODUCT: | Examination |
| FORMAT: | The exam will consist of two parts<br>Part 1 – Senior Secondary Quiz<br>You will participate in a 25 -minute online Quiz during your lecture in week 6 to demonstrate your understanding of senior secondary curriculum. 20 questions will cover topics from the Senior Secondary Lecture Series including:<br>• History of senior schooling in Queensland<br>• Types of senior secondary syllabuses<br>• Role of cognitive verbs in senior secondary syllabuses and assessment<br>• Curriculum design and alignment<br>• ATAR and QCE processes for senior secondary<br>• Access and reasonable adjustment for senior secondary assessment<br>• Diagnostic, formative, summative assessment and reporting in senior secondary<br>• Summative assessment feedback and moderation practices in senior secondary<br>• The role of literacy and numeracy and 21st century skills in senior secondary<br>You will require access to your own mobile device to undertake the examination during the lecture time. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Knowledge and understanding of senior secondary curriculum, pedagogy, and assessment. | 1 |

### All - Assessment Task 2b: Exam

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|---|---|
| GOAL: | The goal of this task is to demonstrate your knowledge of the Course topics. |
| PRODUCT: | Activity Participation |
| FORMAT: | Part 2 – Teaching Science Specific short answer questions<br>You will participate in a 30 minute online short answer questions to demonstrate your knowledge and understanding with course topics including:<br>• Science pedagogical and content knowledge for senior secondary classroom practice<br>• Science inquiry learning, curriculum, planning and teaching strategies that engage senior science students and their application in the senior Science syllabuses<br>• Ethical and responsible selection and use of resources including ICT<br>• Purpose of formative assessment and feedback to students (including feedback, moderation and reporting)<br><br>You will be required to undertake the exam during the lecture time. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Application of Science curriculum pedagogical and content knowledge to classroom scenarios. | 1 |
| | 2 | Knowledge of assessment, planning and design for Senior Secondary students. | 2 |
| | 3 | Deep knowledge of resources to support student learning of Senior Secondary students. | 2 |

**All - Assessment Task 3:** Inquiry Science Portfolio

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|---|---|
| **GOAL:** | The goal of this task is to demonstrate your understanding of science inquiry learning and how to integrate inquiry in student experiments using a 21st Century approach and skills. |
| **PRODUCT:** | Portfolio |
| **FORMAT:** | This task is for teaching area 2. For example, if you do a Biological Sciences major and a Chemical Sciences minor then this will be a chemistry task<br><br>Prepare a portfolio that identifies, describes and justifies inquiry learning in school science that includes:<br>• an overview of inquiry learning for Queensland science students<br>• a range of inquiry approaches to suggested and mandatory practicals from your QCAA senior syllabus that include 21st Century Skills<br>• a brief analysis of what knowledge and skills students require for the QCAA senior science Student experiment or Research investigation. This must be different from what you choose in Teaching Senior Secondary Science 1.<br>• an original, engaging three lesson sequence that demonstrates appropriate application of an inquiry approach to a QCAA senior science student experiment or research investigation assessment<br>• A justification of your choice of resources, teaching strategies, and how you will challenge all students<br>• A description of diagnostic or formative as appropriate, including an explanation and justification of the feedback process you will use with students throughout the lesson sequence. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Application of science curriculum knowledge and resources to develop science inquiry sequences that engage and include all students. | 1 |
| | 2 | Application of teaching and learning strategies that support a diversity of learners to engage with senior science including the literacy, numeracy, ICT and 21st-century skills as appropriate. | 2 4 |
| | 3 | Application of knowledge of principles of assessment (diagnostic/formative/summative) and feedback. | 3 |
| | 4 | Use of credible evidence and sources. | 5 |
| | 5 | Written communication and academic literacies including grammar, English expression, APA referencing conventions, and technical accuracy. | 5 |

## 7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

## 8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site– Please log in as soon as possible.

### 8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

| REQUIRED? | AUTHOR | YEAR | TITLE | PUBLISHER |
|---|---|---|---|---|
| Required | Venville, G. and Dawson, V. | 2012 | The Art of Teaching Science | Allen & Unwin: Singapore |

### 8.2. Specific requirements

You will need to successfully complete a laboratory induction quiz in week 1 prior to attending tutorials

## 9. How are risks managed in this course?

Health and safety risks for this course have been assessed as low. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff.

## 10. What administrative information is relevant to this course?

### 10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

### 10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

The final mark is in the percentage range 47% to 49.4%
The course is graded using the Standard Grading scale
You have not failed an assessment task in the course due to academic misconduct

### 10.3. Assessment: Submission penalties

Late submission of assessment tasks may be penalised at the following maximum rate:
- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day - 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task. Weekdays and weekends are included in the calculation of days late. To request an extension you must contact your course coordinator to negotiate an outcome.

### 10.4. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the Learning Advisers web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

### 10.5. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to Student Hub, email studentwellbeing@usc.edu.au or call 07 5430 1226.

## 10.6. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, , injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, AccessAbility Services can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to Student Hub, email AccessAbility@usc.edu.au or call 07 5430 2890.

## 10.7. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website: http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

## 10.8. General Enquiries

**In person:**

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

**Tel:** +61 7 5430 2890
**Email:** studentcentral@usc.edu.au