COURSE OUTLINE

EDU353 Teaching Senior Secondary Science 1

School: School of Education and Tertiary Access

2026 | Trimester 2

UniSC Sunshine Coast
UniSC Moreton Bay

BLENDED LEARNING — Most of your course is on campus but you may be able to do some components of this course online.

Please go to unisc.edu.au 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

This course explores curriculum, pedagogy, assessment and reporting for Queensland Senior Secondary Science Syllabi, Years 11 and 12. You will learn about current trends and best practice in science education. You will apply your knowledge of your science discipline and pedagogical strategy to design and evaluate quality learning and assessment activities for Queensland senior science.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – You are required to engage and interact with asynchronous materials and activities accessed through Canvas modules, course readings and required texts.	2hrs	Week 1	9 times
Tutorial/Workshop 1 – You are required to attend weekly tutorial/workshop activities on campus.	2hrs	Week 1	10 times

1.3. Course Topics

- Senior Curriculum for Science in Queensland
- Principles of constructive alignment
- Knowledge of how students learn (memory, spacing, retrieval, cognitive overload)
- Strategies for establishing challenging and achievable learning goals with students
- Teaching strategies that support acquisition of new knowledge (explicit teaching, scaffolding, modelling, worked examples)
- Teaching strategies that support application and utilisation of knowledge (inquiry learning, independent problem solving) and why independent problem-solving is effective once a student approaches proficiency and why independent problem-solving should not represent a large proportion of teaching and learning time
- Ongoing formative (to determine prior knowledge/ misconceptions, evaluate progress and inform pedagogical planning) and summative assessment strategies, including moderation and reporting
- Embedding literacy, numeracy and ICT learning (including safe and ethical use of ICT) in [subject]
- Research and theory on Science education
- Safety, management protocols and risk assessment in Science
- Aboriginal perspectives and Torres Strait Islander perspectives on Science
- Inclusion of diverse learners
- why it is important to select appropriate teaching strategies for the students' familiarity with the knowledge of a subject
- How to plan a sequence of lessons that incorporate spacing and retrieval practice, build upon each other, meet students where they are in their learning and help students retrieve past learning and consolidate it in long-term memory

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Australian Institute for Teaching and School Leadership
1 Demonstrate your application of science content knowledge and Senior Science curriculum knowledge in developing science inquiry sequences, teaching and learning activities, and assessment.	Creative and critical thinker Engaged	2.1, 2.2, 2.3, 3.1, 3.2, 3.3
2 Apply knowledge of teaching and learning strategies that support the diversity of learners in senior science.	Creative and critical thinker Engaged	2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 5.1
3 Develop and apply understandings of principles of assessment and reporting that monitor senior students' levels of achievement and progress in senior Science.	Creative and critical thinker Engaged	5.1, 5.2, 5.3, 5.4, 5.5
4 Apply knowledge of planning, resourcing, teaching and managing to create learning experiences for students of Senior Secondary Science	Creative and critical thinker Engaged	2.1, 2.2, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1
5 Employ effective language, structure and text to communicate curriculum strategies and ideas.	Knowledgeable	3.5

* Competencies by Professional Body

CODE	COMPETENCY
AUSTRALIAN INSTITUTE FOR TEACHING AND SCHOOL LEADERSHIP	
2.1	Content and teaching strategies of the teaching area: Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area
2.2	Content selection and organisation: Organise content into an effective learning and teaching sequence.
2.3	Curriculum, assessment and reporting: Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans.
2.4	Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation between Indigenous and non-Indigenous Australians: Demonstrate broad knowledge of, understanding of and respect for Aboriginal and Torres Strait Islander histories, cultures and languages.
2.5	Literacy and numeracy strategies: Know and understand literacy and numeracy teaching strategies and their application in teaching areas.
2.6	Information and Communication Technology (ICT): Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.
3.1	Establish challenging learning goals: Set learning goals that provide achievable challenges for students of varying abilities and characteristics.
3.2	Plan, structure and sequence learning programs: Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.
3.3	Use teaching strategies: Include a range of teaching strategies.
3.4	Select and use resources: Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning.
3.5	Use effective classroom communication: Demonstrate a range of verbal and non-verbal communication strategies to support student engagement

CODE	COMPETENCY
4.1	Support student participation: Identify strategies to support inclusive student participation and engagement in classroom activities.
4.2	Manage classroom activities: Demonstrate the capacity to organise classroom activities and provide clear directions
4.3	Manage challenging behaviour: Demonstrate knowledge of practical approaches to manage challenging behaviour.
4.4	Maintain student safety: Describe strategies that support students' wellbeing and safety working within school and/or system, curriculum and legislative requirements.
4.5	Use ICT safely, responsibly and ethically: Demonstrate an understanding of the relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching.
5.1	Assess student learning: Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning.
5.2	Provide feedback to students on their learning: Demonstrate an understanding of the purpose of providing timely and appropriate feedback to students about their learning
5.3	Make consistent and comparable judgements: Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning.
5.4	Interpret student data: Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice.
5.5	Report on student achievement: Demonstrate understanding of a range of strategies for reporting to students and parents/ carers and the purpose of keeping accurate and reliable records of student achievement

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of "pre-requisites, co-requisites and anti-requisites".

5.1. Pre-requisites

Enrolled in Program (AE304 and a Biological Sciences or a Chemical Sciences Extended Minor) or (SE303 and a Biological or a Chemical Sciences Major or Extended Minor) or (ED315 and a Marine Science Major or Minor)

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

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

It is expected that students engaging in this course have undertaken tertiary science content courses that will be drawn upon to complete this course.

5.5. Microcredential Information

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

Assessor feedback around Task 1 Part 1 (Week 3) will assist you with subsequent assessment tasks.
Task 1 Part 2 (Weeks 4-6), gives you the opportunity to contribute and share ideas and outcomes with your peers via tutorial presentations.

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	25%	Part 1: 600 words Part 2: <5 minutes	Refer to Format	In Class
All	2	Examination - not Centrally Scheduled	Individual	30%	60 minutes	Week 9	In Class
All	3	Portfolio	Individual	45%	1800 words	Week 10	Online Assignment Submission with plagiarism check

All - Assessment Task 1: Evaluating Context-based Science

GOAL:	The goal of this task is to evaluate the contribution of context and inquiry to science education and to demonstrate your ability to apply indigenous Australian science context for teaching and learning senior science. For students who do two science teaching areas this task is for Teaching Area 1. For example if you do a Biological Science major and a Chemical Science minor then this will be a Biology task.
PRODUCT:	Oral and Written Piece
FORMAT:	Part 1 Written Piece due in Week 3: You will summarise and reflect on the findings of a provided article on secondary school science curricula. Part 2 Presentation in tutorial Week 4, 5 or 6: you will deliver a multimodal presentation of an example of Australian Indigenous History/Culture related to your Teaching Area, identify how it can link with QCAA senior syllabus Unit Objectives and Subject Matter and elaborate how it could influence your classroom curriculum.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 — Knowledge of integrating Aboriginal and Torres Strait Islander histories and cultures to engage a diversity of learners — 2 2 — Evaluation of context-based science for learning and engagement — 1 3 — Employment of effective language, structure and text to communicate curriculum strategies and ideas — 5
GENERIC SKILLS:	Communication

All - Assessment Task 2: Senior subject Quiz

GOAL:	The goal of this task is to demonstrate your subject-specific curriculum and pedagogical content knowledge and skills.
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	You will complete an in-class quiz in Week 9 consisting of multiple-choice and short-response items to demonstrate your knowledge and understanding of topics from your tutorials including: • Curriculum, planning and teaching strategies that engage senior students, and their application in your subject • Content knowledge for teaching your subject • Formative and Summative Assessment in your subject • Safety and Management of student activities in your subject • Teaching strategies involving ICT, literacy, and numeracy in your subject • Integration of 21st century skills in your subject • Personal reflection on practice This task may include a laboratory skills assessment
CRITERIA:	**No.** / **Learning Outcome assessed** 1 Knowledge and skills for senior secondary curriculum, teaching and assessment. — 1
GENERIC SKILLS:	Communication, Organisation

All - Assessment Task 3: Curriculum, Pedagogy and Assessment Portfolio

GOAL:	The goal of this task is to demonstrate your understanding and applications of curriculum, pedagogy and assessment in your Senior Secondary Teaching Area.
PRODUCT:	Portfolio
FORMAT:	For students who have two science teaching areas this is for teaching area 1. For example, if you do a Biological Science major and a Chemical Science minor then this will be a Biology task. Select one internal assessment (IA) sample task from QCAA; either a Student Experiment (SE) or Research Investigation (RI). Identify how the selected internal assessment task directly or indirectly connects to the final level of achievement awarded for this subject. • Provide the ISMG you will use to assess the task. • Critically analyse the sample task, identifying the intent, strengths and weaknesses of the task based on the syllabus and contemporary literature. • Discuss the suitability of the sample task to the corresponding QCAA unit, and how this would influence your pedagogical approach. • Describe and justify one modification you could make to the task to improve student engagement, learning and/or level of achievement without compromising assessment integrity. • Describe and justify a sequence of three lessons that relate to the module/unit of study and illustrate your knowledge of: a. knowledge of syllabus content b. aligning learning experiences to syllabus content c. discipline-specific pedagogy c. learning goals that create achievable challenges d. range of teaching strategies (making use of explicit teaching, spacing and retrieval practices, modelling/worked examples, and scaffolding as appropriate); e. management and resources f. The first lesson must include how you will identify where a student is in their learning through assessing what they know, or think they know. g. Planning and sequencing content and tasks to become increasingly challenging. h. Include opportunities to practise. i. responsive formative assessment design to evaluate progress, adjust instruction, provide targeted feedback, and support learning. Your rationale must specifically address why specific teaching strategies were selected, considering the students' familiarity with the content. Your rationale will also justify your choice of curriculum content, assessment, and resources, and should make specific reference to the course readings, Australian education policy frameworks and curriculum documents.
CRITERIA:	

No.		Learning Outcome assessed
1	Application of Science content knowledge and Senior Secondary Science curriculum knowledge in developing teaching and learning activities.	1
2	Application of knowledge of research-based teaching and learning strategies that support a diversity of learners.	2
3	Demonstrated understanding of planning, resourcing, managing and assessing learning experiences for students of Senior Secondary Science.	3 4
4	Employment of effective language, structure and text to communicate curriculum strategies and ideas.	5

GENERIC SKILLS:	Communication, Problem solving

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. 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 Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Required	Vaille Dawson,Grady Venville,Jennifer Donovan	2019	The Art of Teaching Science	3	Routledge

8.2. Specific requirements

You will need a lab coat for tutorials.
You will need to successfully complete required laboratory induction quiz materials prior to week 2 tutorials.

9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a moderate level of health and safety risk exists. Moderate risks are those associated with laboratory work such as working with chemicals and hazardous substances. You will be required to undertake laboratory induction training and it is also 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 Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

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 submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. 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
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central