



## COURSE OUTLINE

EDU309

# Teaching Science in Primary Schools

**Course Coordinator:** Emily Ross (eross@usc.edu.au) **School:** School of Education and Tertiary Access

2021 | Semester 2

USC Sunshine Coast

USC Caboolture

USC Fraser Coast

USC Gympie

**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 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

This course engages Big Ideas in science with chemical and physical sciences to build your science literacy & proficiency as a science teacher. Throughout the course you will plan & take part in hands-on activities & investigations to explore science concepts and model the pedagogy of science. You will build your familiarity with the Australian Curriculum - Science by exploring the links between the curriculum strands, science Big Ideas & science classroom activities

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

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
<b>BLENDED LEARNING</b>			
<b>Tutorial/Workshop 1</b> – There will be a scheduled weekly tutorial of 2 hours. Weekly tutorial notes and other learning materials will be available to accompany all tutorials to support learning. This course will be supported by technology-enabled learning and teaching including recorded videos and Zoom.	2hrs	Week 1	10 times
<b>Lecture</b> – A blended learning approach is used to deliver the lecture for 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 recorded videos and Zoom.	2hrs	Week 1	10 times

### 1.3. Course Topics

- Understand and apply 'big ideas', including the particle model for matter, energy and forces, and the Nature of Science
- Australian Curriculum: Science – the 'Science Understanding' strand, 'Science Inquiry Skills' strand and 'Science as a Human Endeavour' strand
- Science pedagogies and managing a science classroom: student engagement, learning by inquiry, active learning, context, argumentation, representations
- Engage with technologies to enhance science education
- How science literacy links with the general capabilities of literacy and numeracy
- Apply safety and ethics to practice

### 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	GRADUATE QUALITIES MAPPING	PROFESSIONAL STANDARD MAPPING
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...	Australian Institute for Teaching and School Leadership
<p><b>1</b> Build strong personal science literacy and engage with Big Ideas in science in a range of learning and investigative contexts. Develop skills for promoting scientific literacy and integration of literacy and numeracy skills.</p>	<p>Knowledgeable Creative and critical thinker</p>	<p>2 - Know the content and how to teach it 2.1 - Content and teaching strategies of the teaching area 3.2 - Plan, structure and sequence learning programs 3.3 - Use teaching strategies 3.4 - Select and use resources</p>
<p><b>2</b> Evaluate links between science content, the Australian Curriculum - Science (ACS), literacy and numeracy capabilities, and learning theory and teaching strategies that contribute to planning science education activities.</p>	<p>Knowledgeable Empowered</p>	<p>1.2 - Understand how students learn 2 - Know the content and how to teach it 2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.5 - Literacy and numeracy strategies 3 - Plan for and implement effective teaching and learning 3.2 - Plan, structure and sequence learning programs 3.3 - Use teaching strategies 3.4 - Select and use resources 4 - Create and maintain supportive and safe learning environments 4.4 - Maintain student safety 5.1 - Assess student learning</p>

COURSE LEARNING OUTCOMES	GRADUATE QUALITIES MAPPING	PROFESSIONAL STANDARD MAPPING
On successful completion of this course, you should be able to...	Completing these tasks successfully will contribute to you becoming...	Australian Institute for Teaching and School Leadership
<p>3 Apply innovative and adaptive science education design, including use of resources, including ICT, ethics and risk management protocols, application of literacy and numeracy strategies to promote scientific literacy, to plan science activities and events that facilitate student engagement and achievement</p>	<p>Creative and critical thinker Empowered</p>	<p>2 - Know the content and how to teach it 2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.5 - Literacy and numeracy strategies 2.6 - Information and Communication Technology (ICT) 3 - Plan for and implement effective teaching and learning 3.2 - Plan, structure and sequence learning programs 3.3 - Use teaching strategies 3.4 - Select and use resources 4 - Create and maintain supportive and safe learning environments 4.4 - Maintain student safety 4.5 - Use ICT safely, responsibly and ethically 6.2 - Engage in professional learning and improve practice 6.3 - Engage with colleagues and improve practice 7 - Engage professionally with colleagues, parents/carers and the community</p>
<p>4 Develop competency incorporating design technologies approaches to support your science teaching, further learning and professional advancement. Explore literacy and numeracy strategies to promote scientific literacy.</p>	<p>Engaged Sustainability-focused</p>	<p>2.5 - Literacy and numeracy strategies 2.6 - Information and Communication Technology (ICT) 4.5 - Use ICT safely, responsibly and ethically 6.2 - Engage in professional learning and improve practice 6.3 - Engage with colleagues and improve practice 6.4 - Apply professional learning and improve student learning 7.1 - Meet professional ethics and responsibilities</p>

## 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 ED303, ED304 or ED306

### 5.2. Co-requisites

Not applicable

### 5.3. Anti-requisites

Not applicable

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

ED304 students (Bachelor of Primary Education) will have successfully completed minimum of 12 Education Courses, not including school placement courses.

## 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

Early feedback is provided as part of task 1a and 2a. The expectations of the course assessment will become very clear through participation in collaborative activities that emulate the nature of the assessment in the course.

### 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	1a	Quiz/zes	Individual	15%	30 minutes	Week 4	In Class
All	1b	Activity Participation	Individual	35%	Tutorial activity and completed template. See format.	Week 6	Online Assignment Submission with plagiarism check and in class
All	2a	Activity Participation	Individual	15%	30 minutes	Week 9	In Class
All	2b	Activity Participation	Individual	35%	15-30 second video in tutorial and completed template	Week 11	Online Assignment Submission with plagiarism check and in class

#### All - Assessment Task 1a: Chemical Science Quiz

<b>GOAL:</b>	The goal of this task is to demonstrate science content knowledge and curriculum understanding aligned with the Australian Curriculum: Science for primary school teachers.	
<b>PRODUCT:</b>	Quiz/zes	
<b>FORMAT:</b>	Online Quiz, closed book, multiple choice and short answer	
<b>CRITERIA:</b>	<b>No.</b>	<b>Learning Outcome assessed</b>
	1	Understanding Big Ideas in chemical science and applying them to a range of contexts. <b>1</b>
	2	Understanding the Australian Curriculum: Science. <b>2</b>

### All - Assessment Task 1b: Chemical Science Investigation

<b>GOAL:</b>	The goal of this task is to demonstrate understanding of Chemical Science through the design, trial and production of a scientific investigation project.															
<b>PRODUCT:</b>	Activity Participation															
<b>FORMAT:</b>	<p>Contemporary science teaching and learning develops students' ability to follow an inquiry approach by creating and completing investigations in science. This course will teach you how to create an investigation suitable for primary aged students then allow you time to complete the investigations yourself to deepen your personal understanding of inquiry through investigations. There are two parts to this investigation assignment.</p> <p>Part A. (week 5 tutorial) Working in a small group in tutorial (just as students would in a classroom), you will design and trial a predetermined investigation that explores a significant element of the Australian Curriculum: Science (Chemical Science), for Mid-Upper Primary students. Materials will be provided in tutorial. Your investigation plan will be cultivated over several lessons.</p> <p>Part B. (Individual component) Your final product will require consolidation of the science concepts learnt in the previous weeks and only minimal research into the topic of the investigation. It will be an individual submission and will include your investigation task sheet located on Blackboard with curriculum links, a risk management evaluation, explanation of the science for primary teachers, graphs and data tables relevant to the investigation. (In essence, this is similar to planning for teaching and learning in science through investigations for primary students.) Your written explanations must be your own and should not be in collaboration with peers. Submit Week 6.</p> <p>You will need to:</p> <ul style="list-style-type: none"><li>• Plan and evaluate a science investigation including ethical and risk management protocols to address a stated aim.</li><li>• Identify the year level(s) and curriculum components that are most suitable for the investigation (3-8). Remember to consider developmental appropriateness.</li><li>• Demonstrate knowledge and understanding of the concepts, substance and methods</li><li>• Demonstrate how to link literacy and numeracy strategies to the investigation process for the promotion of scientific literacy.</li><li>• Demonstrate a knowledge of a range of resources including ICT, when applicable, to engage students</li><li>• Demonstrate collaborative planning and shared workload in the group section.</li><li>• Demonstrate your own thinking and understanding in the individual response sections.</li></ul>															
<b>CRITERIA:</b>	<table border="1"><thead><tr><th>No.</th><th></th><th>Learning Outcome assessed</th></tr></thead><tbody><tr><td>1</td><td>Demonstrate knowledge and understanding of the Australian curriculum: Science content, human Endeavour and Inquiry skills.</td><td>1 2</td></tr><tr><td>2</td><td>Apply knowledge and understanding of science ethics and safety with materials.</td><td>3</td></tr><tr><td>3</td><td>Design of an investigation and synthesis of the Science content learning outcomes.</td><td>3 4</td></tr><tr><td>4</td><td>Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.</td><td>1</td></tr></tbody></table>	No.		Learning Outcome assessed	1	Demonstrate knowledge and understanding of the Australian curriculum: Science content, human Endeavour and Inquiry skills.	1 2	2	Apply knowledge and understanding of science ethics and safety with materials.	3	3	Design of an investigation and synthesis of the Science content learning outcomes.	3 4	4	Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.	1
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3	Design of an investigation and synthesis of the Science content learning outcomes.	3 4														
4	Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.	1														

### All - Assessment Task 2a: Physical Science Quiz

<b>GOAL:</b>	The goal of this task is to demonstrate science content knowledge and curriculum understanding aligned with the Australian Curriculum: Science for primary school teachers.									
<b>PRODUCT:</b>	Activity Participation									
<b>FORMAT:</b>	Online Quiz, closed book, multiple choice and short answer									
<b>CRITERIA:</b>	<table border="1"><thead><tr><th>No.</th><th></th><th>Learning Outcome assessed</th></tr></thead><tbody><tr><td>1</td><td>Understanding Big Ideas in physical science and applying them to a range of contexts.</td><td>2</td></tr><tr><td>2</td><td>Understanding the Australian Curriculum: Science.</td><td>1</td></tr></tbody></table>	No.		Learning Outcome assessed	1	Understanding Big Ideas in physical science and applying them to a range of contexts.	2	2	Understanding the Australian Curriculum: Science.	1
No.		Learning Outcome assessed								
1	Understanding Big Ideas in physical science and applying them to a range of contexts.	2								
2	Understanding the Australian Curriculum: Science.	1								

## All - Assessment Task 2b: Physical Science Investigation

<b>GOAL:</b>	The goal of this task is to demonstrate understanding of Physical Science through the design, trial, and production of a scientific investigation project		
<b>PRODUCT:</b>	Activity Participation		
<b>FORMAT:</b>	<p>Contemporary science teaching and learning develops students' ability to follow an inquiry approach by creating and completing investigations in science. This course will teach you how to create an investigation suitable for primary aged students then allow you time to complete the investigations yourself to deepen your personal understanding of inquiry through investigations. There are two parts to this investigation assignment.</p> <p>Part A. Working in a small group in tutorial (just as students would in a classroom), you will design, trial and video an investigation that explores a significant element of the Australian Curriculum – Science (Physical Science), for Mid-Upper Primary. Your investigation plan will be cultivated over several previous lessons. Tutorial activity and completed template will be in preparation from weeks 6-9. Week 10 students will complete the final activity in tutorial and complete the final written components at home. Participate in final Tutorial activity Week 10,</p> <p>Part B. Your final product will require research into the topic of the investigation. It will be an individual submission and will include your investigation task sheet located on Blackboard with curriculum links, a risk management evaluation, explanations of the science for teachers, graphs and data tables relevant to the investigation. (In essence, this is similar to planning for teaching and learning in science through investigations for primary students.) Your written explanations must be your own and should not be in collaboration with peers. Submit template Week 11, Monday 5pm.</p> <p>You will need to: • Plan, video and evaluate a science investigation, including ethical and risk management protocols to address a stated aim. • Identify the year level(s) and curriculum components that are most suitable for the investigation (3-8). Remember to consider developmental appropriateness. • Demonstrate knowledge and understanding of the concepts, substance and methods of science. • Demonstrate a knowledge of a range of resources including ethical use of ICT to engage students • Demonstration of collaborative planning and shared workload in group sections • Demonstrate your own thinking and understanding in the individual response sections. • Upload video and templates in two separate uploads to Blackboard.</p>		
<b>CRITERIA:</b>	<b>No.</b>		<b>Learning Outcome assessed</b>
	1	Knowledge and understanding of the Australian curriculum: Science content, human Endeavour and Inquiry skills.	1 2
	2	Applied knowledge and understanding of science ethics and safety with materials and ICT.	3
	3	Design of an investigation and synthesis of the Science content learning outcomes.	3 4
	4	Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.	1

## 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	Loxley, P.; Dawes, L.; Nicholls, L. & Dore, B.	0	Teaching Primary Science: Promoting Enjoyment and Developing Understanding	Pearson Education Ltd
Recommended	Michael Allen	2014	Misconceptions in Primary Science	McGraw-Hill Education (UK)

## 8.2. Specific requirements

It is your responsibility to attend tutorial/workshops to obtain the Course topics and seek clarification. It will be necessary to spend time outside of class preparing for the content exam. There are two weeks in which a laptop will be required in tutorial. If you don't have one, please make arrangements to share with another student.

## 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](mailto: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](mailto: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](mailto: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](mailto:studentcentral@usc.edu.au)