



## COURSE OUTLINE

EDU209

# Teaching Mathematics in the Early Years

**Course Coordinator:** Catherine Thiele (cthiele@usc.edu.au) **School:** School of Education and Tertiary Access

2021 | Semester 2

USC Sunshine Coast

USC Moreton Bay

USC Fraser 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

You will develop an understanding of the Australian Curriculum: Mathematics (Prep to Year 3). You will explore current research in early learning and teaching of mathematics to enable you to conceptualise, plan and design learning, teaching and assessments. You will consider a range of strategies including play-based and inquiry learning as well as interpret student thinking and diagnose misconceptions to improve student learning. You will also explore the linkages with literacy, numeracy and ICT and develop your mathematical content knowledge.

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

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
<b>ON CAMPUS</b>			
<b>Tutorial/Workshop 1</b> – 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
<b>Online</b> – You are required to engage with an online 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

1. How children learn mathematics
2. Mathematics and Numeracy: Early Number
3. Planning for and assessing mathematics learning
4. Mathematics Language
5. Early number and computational thinking
6. Patterning and algebraic thinking
7. Measurement and Geometry
8. Probability and Statistics
9. Developing an identity as a mathematics teacher
10. Exam, feedback and review.

### 2. What level is this course?

200 Level (Developing)

Building on and expanding the scope of introductory knowledge and skills, developing breadth or depth and applying knowledge and skills in a new context. May require pre-requisites where discipline specific introductory knowledge or skills is necessary. Normally, undertaken in the second or third full-time year of an undergraduate programs.

### 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
1 Apply knowledge of the Australian Curriculum Mathematics content and substance.	Knowledgeable Creative and critical thinker Empowered	2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.3 - Curriculum, assessment and reporting 2.5 - Literacy and numeracy strategies 3.3 - Use teaching strategies
2 Apply mathematical learning theory and developmentally appropriate pedagogy	Knowledgeable Creative and critical thinker Empowered	2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.3 - Curriculum, assessment and reporting 3.3 - Use teaching strategies
3 Develop a repertoire of mathematical pedagogies, assessment and resources to meet the needs of a diverse range of early years learners	Creative and critical thinker Empowered Ethical Engaged	2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.3 - Curriculum, assessment and reporting 2.5 - Literacy and numeracy strategies 3.3 - Use teaching strategies 3.4 - Select and use resources 3.6 - Evaluate and improve teaching programs 4.2 - Manage classroom activities 5.1 - Assess student learning 5.4 - Interpret student data
4 Plan and develop learning environments and learning episodes that reflect a sound understanding of mathematical concepts, literacy and ICTs	Knowledgeable Creative and critical thinker Empowered Sustainability-focussed	2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.3 - Curriculum, assessment and reporting 2.5 - Literacy and numeracy strategies 3.6 - Evaluate and improve teaching programs 4.2 - Manage classroom activities

#### 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,ED306

##### 5.2. Co-requisites

Not applicable

##### 5.3. Anti-requisites

EDU341

##### 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

Early Feedback will occur during tutorials and lectures prior to the first assessment in a variety of forms such as: peer support, tutor modelling, examples to view, open discussions, etc.

### 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	Plan	Individual	30%	Rationale Statement (500 words) and Lesson Plan	Week 4	Online Assignment Submission with plagiarism check
All	2	Plan	Group	30%	10 minute teaching segment and lesson plan	Refer to Format	In Class
All	3	Examination	Individual	40%	90 minutes	Week 10	In Class

#### All - Assessment Task 1: Rationale Statement and Lesson Plan

<b>GOAL:</b>	The goal of this task is to apply mathematical learning theory, developmentally appropriate pedagogy and knowledge of the Australian Curriculum: Mathematics to develop a rationale statement and lesson plan.	
<b>PRODUCT:</b>	Plan	
<b>FORMAT:</b>	<p>Rationale Statement (500 words): Your statement will apply your knowledge of mathematical learning theory and developmentally appropriate pedagogies by explaining your lesson plan structure and choices. You will describe your understandings underpinning your lesson plan choices. These ideas are to be supported by literature using APA6 referencing.</p> <p>Lesson Plan (1000 words): You will develop a written lesson plan using the template provided on Blackboard. The lesson plan is to develop a new mathematical concept for young learners in Prep, Year 1, Year 2, or Year 3. You will write a lesson that aligns with the Australian Curriculum using developmentally appropriate teaching and learning pedagogies. The lesson plan will indicate assessment opportunities and resources that will meet the needs of a diverse classroom. The lesson will be equivalent to 40 minutes of mathematics. It may be divided into mini lessons as appropriate to the age group. The template will require you to consider how you know that the students understand the lesson concepts.</p>	
<b>CRITERIA:</b>	<b>No.</b>	<b>Learning Outcome assessed</b>
	1	Apply knowledge of the Australian Curriculum: Mathematics content and substance. <b>1</b>
	2	Apply mathematical learning theory and developmentally appropriate pedagogy <b>2</b>
	3	Develop a repertoire of mathematical pedagogies, assessment and resources to meet the needs of a diverse range of early years learners <b>3</b>
	4	Written communication skills and academic literacies including English expression, grammar, spelling, punctuation, APA referencing conventions.

### All - Assessment Task 2: Teaching Segment and Lesson Plan

<b>GOAL:</b>	The goal of this task is to create and deliver a 10 minute teaching segment and provide a written lesson plan to demonstrate knowledge of the Australian Curriculum: Mathematics.	
<b>PRODUCT:</b>	Plan	
<b>FORMAT:</b>	<p>Submit: Weeks 7-9. Lesson Plan You and your partner will create a written lesson plan using the template provided on Blackboard. The lesson plan will developmentally and sequentially build upon a mathematical concept for a year level (years 1-3). Like Task One, the lesson plan is to demonstrate developmentally appropriate pedagogy and understandings of mathematical learning theory. PLEASE NOTE: This lesson plan concept must be different to Task One and a different age group is suggested. Teaching segment You will individually teach one of the activities (from the co-planned lesson plan) to the tutorial for approximately 10 minutes. You will need to locate materials and resources related to the concept you plan to teach, model the teaching of the selected mathematical concept by incorporating suitable teaching pedagogy and mathematical language for an Early Years class (Yrs 1-3) and demonstrate good questioning and communication skills (verbal and non-verbal) while you are teaching. Note: Practice teaching as though the 'students' need to learn the concept and the new associated terminology. Do not assume we know. Teach us. Reflection At the end of your teaching segment you will personally reflect both positively and negatively on the effectiveness of your pedagogy, appropriateness of resources and the quality of your questions. This personal reflection is written after the teaching segment - it is not submitted.</p>	
<b>CRITERIA:</b>	<b>No.</b>	<b>Learning Outcome assessed</b>
	1	Apply knowledge of the Australian Curriculum: Mathematics content and substance. <b>1</b>
	2	Apply mathematical learning theory and developmentally appropriate pedagogy (Explicit modelling of concepts and effective teaching strategies) <b>2</b>
	3	Develop a repertoire of mathematical pedagogies, assessment and resources to meet the needs of a diverse range of early years learners (appropriate and effective teaching resources and use of ICTs if applicable) <b>3</b>
	4	Plan and develop learning environments and learning episodes that reflect a sound understanding of mathematical concepts, literacy and ICTs <b>4</b>
	5	Oral communication skills (verbal and non-verbal) -teaching presence and engagement with peers during teaching segment <b>1</b>
	6	Written communication skill and academic literacies including English expression, grammar, spelling and punctuation.

### All - Assessment Task 3: In-class exam

<b>GOAL:</b>	The goal of this task is to synthesise knowledge of mathematical learning theory, curriculum content, pedagogy and resources.
<b>PRODUCT:</b>	Examination
<b>FORMAT:</b>	<p>Part A Multiple choice and short answer questions based on the key topics from lecture course material, readings, tutorial activities and Australian Curriculum content. Part B You will be provided with an Early Years primary classroom scenario which you will analyse and reflect upon in terms of; Alignment with the content and proficiency strands of the Australian Curriculum: Mathematics; Identify Mathematical understandings of the students (assessment); Identify and evaluate the pedagogy; Identify and evaluate the learning happening in the classroom; Explain how you would change the teaching and learning in the scenario so that it is effective for all learners.</p>

CRITERIA:	No.	Learning Outcome assessed
	1	Apply knowledge of the Australian Curriculum: Mathematics content and substance. <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">1</span>
	2	Apply mathematical learning theory and developmentally appropriate pedagogy <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">2</span>
	3	Develop a repertoire of mathematical pedagogies, assessment and resources to meet the needs of a diverse range of early years learners <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">3</span>
	4	Plan and develop learning environments and learning episodes that reflect a sound understanding of mathematical concepts, literacy and ICTs <span style="border: 1px solid blue; border-radius: 50%; padding: 2px;">4</span>

## 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	Robyn Jorgensen, Shelley Dole, Kevin Larkin	2020	Teaching Mathematics in Primary Schools	Allen & Unwin

### 8.2. Specific requirements

It is the responsibility of the student to provide resources for the teaching segment.

## 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)