1. **What is this course about?**

1.1 **Description**
This course will challenge you to engage positively with mathematics as you explore the proficiency strands of the Australian Curriculum: Mathematics; understanding, fluency, problem solving and reasoning and how these can be used to develop pedagogy for learning and teaching in primary school classrooms. This course develops your personal identity as a mathematics teacher across the primary curriculum.

1.2 **Course topics**
- Inquiry based learning experiences
- Conceptual knowledge and application of Number and Algebra, Measurement and Geometry, and Statistics and Probability
- Diagnosing student understanding
- Differentiating curriculum to be inclusive of all learners
- Literacy, numeracy and ICT capability as general capabilities embedded in all curriculum areas
- Proficiency strands of the Australian Curriculum: Mathematics and addressing Science, Technology, Engineering and Mathematics (STEM) Education

2. **What level is this course?**
400 level Graduate - Independent application of graduate knowledge and skills. Meets AQF and professional requirements. May require pre-requisites and developing level knowledge/skills. Normally taken in the 4th 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?**

<table>
<thead>
<tr>
<th>Specific Learning Outcomes</th>
<th>Assessment tasks</th>
<th>Graduate Qualities or Professional Standards mapping</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulate and solve problems and develop problem solving, thinking and reasoning skills in primary students; position mathematics learning within educational theory and critical perspectives.</td>
<td>Task 1: Conference poster Task 2: Rich Mathematics Task, Assessment Rubric and Reflective Essay.</td>
<td>Knowledgeable, building disciplinary and interdisciplinary knowledge through a scholarly approach incorporating global and regional perspectives</td>
</tr>
<tr>
<td>Apply inquiry methods for students to investigate problems; promote higher order thinking skills, creativity, imagination, intellectual risk taking, problem solving and reflection, in relevant contexts for a diverse range of learners</td>
<td>Task 1: Conference Poster Task 2: Rich Mathematics Task, Assessment Rubric and Reflective Essay.</td>
<td>Creative and critical thinkers, generating original ideas and concepts, and appreciating innovation and entrepreneurship</td>
</tr>
<tr>
<td>Demonstrate understanding of the role of developing numeracy through mathematics; knowledge and application of mathematical concepts and procedures; promote general capabilities through mathematics learning experiences in the primary school.</td>
<td>Task 1: Conference Poster Task 3: In-class Quiz</td>
<td>Creative and critical thinkers, generating original ideas and concepts, and appreciating innovation and entrepreneurship</td>
</tr>
<tr>
<td>Demonstrate an understanding of the roles of all types of assessment in mathematics; summarise methods for gathering and using information on students’ mathematics skills in planning and implementing learning experiences.</td>
<td>Task 2: Rich Mathematics Task, Assessment Rubric and Reflective Essay. Task 3: In-class Quiz</td>
<td>Knowledgeable Empowered, having the confidence and capacity to develop full potential</td>
</tr>
</tbody>
</table>

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 **Enrolment Restrictions**

This course is only available to students enrolled in ED303, ED304, ED306, UU301 or XU301

5.2 **Pre-requisites**

N/A

5.3 **Co-requisites**

N/A

5.4 **Anti-requisites**

N/A

5.5 **Specific assumed prior knowledge and skills (where applicable)**

- Understanding of primary school mathematics to year 7
- Understanding of mathematical language in a primary school context
- Understanding of teachers’ roles in supporting confident mathematics learners
6. How am I going to be assessed?

6.1 Grading scale
Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

6.2 Assessment Tasks

<table>
<thead>
<tr>
<th>Task No.</th>
<th>Assessment Tasks</th>
<th>Individual or Group</th>
<th>Weighting</th>
<th>What is the duration / length?</th>
<th>When should I submit?</th>
<th>Where should I submit it?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Conference Poster</td>
<td>Group</td>
<td>30%</td>
<td>1000 words (on poster)</td>
<td>Week 4, during tutorial</td>
<td>Poster: Hard copy during Tutorial</td>
</tr>
<tr>
<td>2</td>
<td>Rich Mathematics Task, Assessment Rubric and Reflective Essay</td>
<td>Group</td>
<td>40%</td>
<td>1500 word reflection</td>
<td>Week 7, Friday by 5pm</td>
<td>Blackboard (SafeAssign)</td>
</tr>
<tr>
<td>3</td>
<td>In-class Quiz</td>
<td>Individual</td>
<td>30%</td>
<td>1.5 hours</td>
<td>Week 10, during lecture</td>
<td>Lecture</td>
</tr>
</tbody>
</table>

Assessment Task 1: Conference Poster

**Goal:** The goal of this task is to engage with the process of real-world mathematical problem solving (numeracy) and apply this to learning mathematics in primary school classrooms.

**Product:** A conference poster

**Format:** As a group of 4, create a conference poster of a real-world problem solving task that you have personally explored and researched. The stimulus for the problem can be any real-world situation of interest to you that you might like to explore (e.g., how much water is wasted by a dripping tap? Is red wine and chocolate good for your health? What is the best mobile phone plan? More suggestions given in lecture). You are to investigate your problem and create a poster to display your findings, designed to be ‘read’ at a glance. Your group will present the poster findings and group reflections during the tutorial.

**The poster will include:**
- The problem or question of investigation
- Your theoretical and practical teaching and learning approaches to solving the problem
- The results of your investigation (including the mathematics behind solving the problem)
- A 1000 word (equivalent) reflection that outlines: the mathematical concepts and processes you engaged during this real-world problem solving investigation; the theoretical perspectives that support and value this approach to teaching and learning mathematics in primary classrooms; how this task might be adapted for primary students; how ICT can be used to expand learning opportunities in real-world problem solving; Numeracy as a General Capability.
- An APA6 Reference list on the back
### Course Outline: EDU400 Teaching Primary School Mathematics

#### Criteria:
- Mathematical communication of formulation and solution of a real-world problem
- Applied knowledge of mathematics curriculum, inquiry, teaching and learning and Literacy / Numeracy as general capabilities
- Reflection that evaluates and discusses the task and its application to learning mathematics and problem solving in diverse primary school classrooms and in relation to the 21st Century Numeracy Model.
- Communicating mathematically (written and presentation)
- Collaborative group work and collaboration for problem solving
- Written and verbal communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions.

<table>
<thead>
<tr>
<th>Generic skill assessed</th>
<th>Skill assessment level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>Graduate</td>
</tr>
<tr>
<td>Problem solving</td>
<td>Graduate</td>
</tr>
<tr>
<td>Communication</td>
<td>Graduate</td>
</tr>
</tbody>
</table>

#### Assessment Task 2: Rich Mathematics Task, Assessment Rubric and Reflective Essay

**Goal:** The goal of this task is to demonstrate capacity to design and assess mathematical processes of problem solving, thinking, mathematical communication.

**Product:** A rich mathematical task, an assessment rubric for assessing learning and a reflective essay.

**Format:** In this pair activity, you and your partner will:

a) apply current theories and research about how students learn mathematics to design (or source) a rich mathematics task that can simultaneously be used as an assessment task of students' mathematical learning.

b) create an assessment rubric that aligns to the rich mathematics task and provides criteria and standards of achievement for a particular year level.

c) trial this rich mathematics task with a primary aged child (or two) and then assess the child's work sample using your assessment rubric and provide feedback to the student on their learning.

d) Finally, from a teacher's perspective, you will write a 1500 word reflective essay that critically evaluates and appraises the value of the task and the assessment rubric for assessing the child's mathematics understanding. Your reflective essay will also outline implications for future teaching and learning.

Note: Your rich mathematics task, assessment rubric and completed assessment rubric scoring (standard of achievement) needs to accompany the reflective essay as appendices.

#### Criteria:
- Professional design and construction of a rich mathematics learning task that links to the assessment
- Practical knowledge, understanding and application of mathematics assessment and assessment tools to determine children's knowledge of mathematical concepts
- Critical reflection that appraises the effectiveness of the learning and the assessment tool and how this determines future learning experiences.
- Reflection on self-practices of assessment in mathematics
- Written communication skills and academic literacies including English expression grammar, spelling, punctuation, APA referencing conventions

<table>
<thead>
<tr>
<th>Generic skill assessed</th>
<th>Skill assessment level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>Graduate</td>
</tr>
<tr>
<td>Communication</td>
<td>Graduate</td>
</tr>
</tbody>
</table>
Assessment Task 3: In-class Quiz

<table>
<thead>
<tr>
<th>Goal:</th>
<th>The goal of this task is to synthesise knowledge of curriculum, pedagogy and assessment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product:</td>
<td>1½ hour In-class Quiz</td>
</tr>
</tbody>
</table>
| Format: | **Part A:** Mathematics Quiz Questions. Multiple choice and short answer quiz questions based on the Australian Curriculum content, key topics from lecture course material and tutorial activities. Example exercises will be given weekly.  
**Part B:** Mathematics Case Study Response Questions. You will demonstrate your knowledge of mathematics concepts as you analyse samples of student work, diagnose student conceptual understanding and then plan for subsequent learning. Example case study exercises will be given during tutorials. |
| Criteria: | • Apply knowledge of mathematics curriculum, pedagogy and assessment and reporting  
• Interpretation of student data and implications for future teaching and learning  
• Application of key concepts within the mathematics curriculum and how to promote rich understanding  
• Justification of choice of resources, manipulatives, teaching strategies and assessment in mathematics teaching |

<table>
<thead>
<tr>
<th>Generic skill assessed</th>
<th>Skill assessment level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Problem solving</td>
<td>Graduate</td>
</tr>
</tbody>
</table>

7. What are the course activities?

7.1 Directed Study Hours

The directed study hours for this course are a portion of the workload for this course. A 12-unit course will have a total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. A blended learning approach is used to deliver this course, including a mix of synchronous and asynchronous materials and activities accessed through Blackboard. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

7.2 Course content

<table>
<thead>
<tr>
<th>Teaching Week / Module</th>
<th>What key concepts/content will I learn?</th>
<th>What activities will I engage in to learn the concepts/content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module 1</td>
<td>What is mathematics? What is numeracy? How children learn mathematics Exploring the proficiency strands and general capabilities Creating and developing investigative learning experiences Catering to diversity in the classroom Pedagogy to develop conceptual understanding of Number and Algebra</td>
<td>Lecture, tutorial</td>
</tr>
<tr>
<td>Weeks 1 - 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Module 2</td>
<td>Assessment practices in classrooms Diagnosing student understanding Using evidence and data to inform teaching and learning Pedagogy to develop conceptual understanding of Measurement and Geometry</td>
<td>Lecture, tutorial</td>
</tr>
</tbody>
</table>
Module 3
Weeks 7-10
Pedagogy to develop conceptual understanding of Statistics and Probability and the numeracy demands of the other learning areas
Literacy and numeracy
In-class Quiz
Lecture, tutorial
Text chapters as directed
Australian Curriculum: Mathematics

Please note that the course activities may be subject to variation.

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

Please note that 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)

Please note that you need to have regular access to the resource(s) listed below as they are required:

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Publisher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jorgensen, R., &amp; Dole, S.</td>
<td>2011</td>
<td>Teaching Mathematics in Primary School (2nd ed.)</td>
<td>Allen &amp; Unwin</td>
</tr>
<tr>
<td>ACARA</td>
<td>2017</td>
<td>Australian Curriculum: Mathematics</td>
<td>ACARA</td>
</tr>
</tbody>
</table>

Recommended Readings


8.2 Specific Requirements

N/A

9. Risk management

Health and safety risks have been assessed as low.

It is your responsibility as a student 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. It is also your responsibility to familiarise yourself with the University’s general health and safety principles by reviewing the online Health Safety and Wellbeing training module 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 on the following conditions applying:

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

10.3 Assessment: Submission penalties

Late submission of assessment tasks will 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 and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to Student Hub. Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 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
10.6 General Enquiries
In person:
- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC South Bank** - 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

10.7 School specific information
The assessment tasks in this course support pre-service teachers to *explicitly* demonstrate the following Australian Professional Standards for Teachers (Graduate)

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Australian Professional Standards for Teachers (Graduate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task 1: Conference Poster</td>
<td>2.1, 2.2, 2.4, 2.5, 2.6</td>
</tr>
<tr>
<td></td>
<td>3.1, 3.3, 3.4, 3.6, 3.7</td>
</tr>
</tbody>
</table>
| Task 2: Rich Mathematics Task, Assessment Rubric and Reflective Essay | 1.2
|                                              | 2.1, 2.2, 2.3, 2.4, 2.5, 2.6                             |
|                                              | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7                        |
|                                              | 5.1, 5.2, 5.3, 5.4, 5.5                                   |
|                                              | 6.3                                                      |
| Task 3: In-class Quiz                        | 2.1, 2.2, 2.3, 2.5                                       |
|                                              | 3.1, 3.2, 3.3, 3.4, 3.5, 3.6                             |
|                                              | 5.1, 5.2, 5.3, 5.4, 5.5                                   |