COURSE OUTLINE

# EDU748 Teaching Senior Secondary Mathematics

**Course Coordinator:** Margaret Marshman (mmarshma@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 Mathematics curriculum. You will learn how to design lesson plans and learning sequences that will engage diverse learners. You will explore and evaluate a range of pedagogy, assessment and reporting strategies that maximise learning outcomes for senior students, including developing strategies for supporting literacy, numeracy and ICT learning within Mathematics.

### 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

- Senior Curriculum documents in Mathematics
- Curriculum planning and alignment of content, pedagogy and assessment
- Teaching and learning strategies for engagement in Mathematics
- Assessment and reporting practices in the senior phase
- Mathematical modelling and problem solving
- Integrating resources, including information and communication technologies (ICT) into mathematics curriculum
- Literacy and numeracy in senior mathematics
- Embedding Aboriginal and Torres Strait Islander histories, culture and knowledges in the senior mathematics curriculum

## 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 Apply your knowledge of Mathematics content and curriculum to develop activities for mathematical modelling and problem-solving teaching sequences and assessment strategies to engage all learners. | 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 a student-centred approach to curriculum planning, assessment, feedback and reporting of student achievement in Mathematics. | Creative and critical thinker<br>Engaged | 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>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 |
| 3 Demonstrate quality teaching strategies that support the diversity of learners in senior Mathematics. | Engaged | 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>5.1 - Assess student learning |
| 4 Apply knowledge of the use of graphics calculators and other technologies to support the use of mathematical modelling and Problem solving in Mathematics. | Creative and critical thinker<br>Engaged | 2.1 - Content and teaching strategies of the teaching area<br>2.6 - Information and Communication Technology (ICT)<br>3.4 - Select and use resources<br>4.5 - Use ICT safely, responsibly and ethically |
| 5 Create oral and/or written communication concerning curriculum teaching, learning and assessment in senior secondary mathematics for classroom and professional contexts. | Empowered | |

## 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 a Mathematics Teaching area

### 5.2. Co-requisites

Not applicable

### 5.3. Anti-requisites

Not applicable

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

Students enrolled in this course will have completed undergraduate studies with a Mathematics major or minor.

## 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

Feedback on the assessment tasks will be available during tutorials in Weeks 2 and 3.

### 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 | Group | 20% | 6 minutes per group member | Week 4 | In Class |
| All | 2a | Examination | Individual | 20% | 25 minutes | Week 6 | Online Assignment Submission with plagiarism check |
| All | 2b | Examination | Individual | 20% | 40 minutes | Week 9 | In Class |
| All | 3 | Portfolio | Individual | 40% | 2200 words | Week 10 | Online Assignment Submission with plagiarism check |

**All - Assessment Task 1:** Assessment in Mathematics

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|---|---|
| **GOAL:** | The goal of this task is to demonstrate your understanding of problem solving and modelling, assessment, moderation, and its alignment with the requirements of the chosen Senior Mathematics curriculum document. |
| **PRODUCT:** | Oral |
| **FORMAT:** | In groups of 2 or 3 you will complete one of the Problem-solving and modelling tasks (PSMT) provided on Blackboard from General Mathematics, Mathematics Methods, or Specialist Mathematics. There will be some time provided in tutorials in weeks 1 and 2 to work on the task.<br>In week 3 you will use the Instrument Specific Marking Guide (ISMG) to mark some responses to the PSMT and as a tutorial group moderate this marking.<br><br>In the tutorial during week 4 as a group you will do a multimedia presentation including:<br>• The mathematics and technology needed to successfully complete the PSMT<br>• Alignment of the task with the curriculum<br>• Challenges and learnings from completing, assessing and moderating the PSMT<br><br>Each member is expected to speak for 5 minutes. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Understanding and application of knowledge of mathematics content, curriculum, and assessment strategies | 1 2 |
| | 2 | Understanding and knowledge of the role of technology in senior secondary mathematics | 3 |
| | 3 | Professional oral and written communication including grammar, English expression, and technical accuracy. | 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 2 3 |

### All - Assessment Task 2b: Examination Part 2

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|---|---|
| GOAL: | The goal of this task is to demonstrate your knowledge of the senior secondary mathematics specific pedagogy. |
| PRODUCT: | Examination |
| FORMAT: | Part 2 – Teaching Mathematics exam<br>Specific short answer questions<br>During the lecture in week 9 you will participate in a 40-minute exam giving short answer questions to demonstrate your knowledge and understanding with course topics including:<br>• Mathematics pedagogical and content knowledge for senior secondary classroom practice<br>• Mathematics and inquiry learning curriculum, planning and teaching strategies that engage senior mathematics students and their application in the senior Mathematics syllabuses<br>• Ethical and responsible selection and use of resources including ICT |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Application of knowledge and understanding of teaching and learning strategies, concepts and processes in Mathematics | 1 |
| | 2 | Application of knowledge and understanding of assessment processes (formative and summative) in Mathematics | 2 |
| | 3 | Knowledge of the role of ICT including graphics calculators in senior secondary Mathematics | 4 |
| | 4 | Knowledge of Senior Secondary students. | 3 |
| | 5 | Written communication and academic literacies including grammar, English expression, and technical accuracy. | 5 |

**All - Assessment Task 3:** Retrospective Learning Sequence

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|---|---|
| **GOAL:** | The goal of this task is to demonstrate your understanding and application of teaching, learning and assessment in senior mathematics. |
| **PRODUCT:** | Portfolio |
| **FORMAT:** | Review the sample internal assessment: Examination (for units 1 or 2) information available from the QCAA website for either General Mathematics: https://www.qcaa.qld.edu.au/senior/senior-subjects/mathematics/generalmathematics/assessment<br>Or Mathematics Methods:<br>https://www.qcaa.qld.edu.au/senior/senior-subjects/mathematics/mathematicsmethods/assessment<br>Prepare a portfolio that identifies, describes and justifies teaching and learning that support students to undertake the internal assessment task. Draw on syllabus and course readings to provide an account that:<br>• Identifies the unit and topics for this assessment task<br>• Explains how the assessment task connects with the senior secondary syllabus<br>• Explains how student achievements in formative and summative assessment tasks might be used to plan teaching and learning sequences<br>• Justify three specific sequential examples of teaching and learning experiences that you would draw upon to engage students in this unit for one topic and prepare them for assessment task.<br>Provide a formative assessment task that will assess the learning in these three experiences and detail the feedback process you will use with students. |

| CRITERIA: | No. | | Learning Outcome assessed |
|---|---|---|---|
| | 1 | Knowledge and application of mathematics unit objectives, subject matter, sample learning experiences, resources, literacy, numeracy, ICT and 21st-century skills that engage students. | 1 2 |
| | 2 | Justification of assessment, feedback and pedagogical decision making. | 3 |
| | 3 | Use of credible evidence and sources. | 5 |
| | 4 | 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 | Goos, M., Stillman, G., and Vale, C. | 2017 | Teaching Secondary School Mathematics | Australia: Allen & Unwin |

### 8.2. Specific requirements

Nil

## 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