



COURSE OUTLINE

EDU747

Teaching Junior Secondary Mathematics

Course Coordinator: Margaret Marshman (mmarshma@usc.edu.au) **School:** School of Education and Tertiary Access

2021 | Semester 1

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

This course builds capacity to design and discern effective pedagogy within Mathematics for Years 7 -10. You organise and plan lessons using the Australian Curriculum for Mathematics, apply your knowledge, understanding and skills to interpret, evaluate and adapt learning, in order to engage Junior Secondary students. You will develop deep knowledge of how to integrate Aboriginal and Torres Strait Islander perspectives into learning activities and critically reflect on your developing teaching practice.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
ON CAMPUS			
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
Tutorial/Workshop – 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

1.3. Course Topics

- Australian Curriculum: Mathematics – content and proficiency strands
- Concepts, principles and structure of Mathematics pedagogy and content for Years 7 – 10
- Linking learning theory with practice through lesson planning and assessment design to support and extend learner's understanding in Mathematics
- Critically review research relating to cognition, culture, inclusion and equity, and consider the implications for practice
- Differentiation of curriculum, interdisciplinary approaches, differences in experiences of students, language use and transition from Primary schooling
- Relationship between Mathematics, numeracy, and literacy
- Assessment, feedback and reporting in Mathematics, including NAPLAN
- ICT applications in teaching, learning and communication with parents and carers

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	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>1 Apply a deep synthesised knowledge of Australian Curriculum, Year 7 - 10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in Mathematics</p>	<p>Knowledgeable Creative and critical thinker</p>	<p>2.1 - Content and teaching strategies of the teaching area 2.2 - Content selection and organisation 2.3 - Curriculum, assessment and reporting 2.4 - Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation between Indigenous and non-Indigenous Australians 2.5 - Literacy and numeracy strategies 2.6 - Information and Communication Technology (ICT) 3.1 - Establish challenging learning goals 3.2 - Plan, structure and sequence learning programs 3.3 - Use teaching strategies 3.4 - Select and use resources 4.1 - Support student participation 4.5 - Use ICT safely, responsibly and ethically</p>
<p>2 Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design classroom activities for year 7 - 10 secondary learners</p>	<p>Creative and critical thinker</p>	<p>2.1 - Content and teaching strategies of the teaching area 2.4 - Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation between Indigenous and non-Indigenous Australians 2.5 - Literacy and numeracy strategies 2.6 - Information and Communication Technology (ICT) 3.4 - Select and use resources</p>
<p>3 Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in Mathematics</p>	<p>Knowledgeable Ethical</p>	<p>2.1 - Content and teaching strategies of the teaching area 2.3 - Curriculum, assessment and reporting 2.4 - Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation between Indigenous and non-Indigenous Australians 2.5 - Literacy and numeracy strategies 3.2 - Plan, structure and sequence learning programs 5.1 - Assess student learning 5.2 - Provide feedback to students on their learning 5.3 - Make consistent and comparable judgements 5.4 - Interpret student data</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>4 Demonstrate a critical understanding of the relevant issues and strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching.</p>	Creative and critical thinker	2.6 - Information and Communication Technology (ICT) 3.2 - Plan, structure and sequence learning programs 3.3 - Use teaching strategies 3.4 - Select and use resources 4.1 - Support student participation 4.5 - Use ICT safely, responsibly and ethically

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)

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

Feedback will be available in Weeks 2 and 3 on your lesson plan.

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	Written Piece	Group	10%	500 words	Week 3	Online Assignment Submission with plagiarism check
All	1b	Oral	Group	0%	15-20 mins	Refer to Format	In Class
All	1c	Written Piece	Individual	20%	1200 words	Refer to Format	Online Assignment Submission with plagiarism check
All	2	Written Piece	Individual	35%	1800-2300 words	Week 8	Online Assignment Submission with plagiarism check
All	3	Examination	Individual	35%	90 minutes	Week 10	Online Assignment Submission with plagiarism check

All - Assessment Task 1a: Lesson Plan

GOAL:	The goal of this task is for you to develop your ability to prepare a Mathematics lesson appropriate for the full range of student abilities.	
PRODUCT:	Written Piece	
FORMAT:	An inquiry or problem-based lesson plan addressing a new mathematical concept. A team-teaching segment of the lesson will be taught during the tutorial and an individual reflection and adaptation of the lesson plan. In groups of two, you are required to develop an inquiry or problem-based, 70-minute lesson plan for a Year 7 – 10 secondary class of 25 students addressing a new mathematical concept. The lesson plan requirements will be provided on blackboard. Your group must submit your lesson plan in week 3 to Blackboard.	
CRITERIA:	No.	Learning Outcome assessed
	1	Apply a deep and synthesised knowledge of Australian Curriculum, Year 7 – 10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in mathematics 1
	2	Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design and reflect on classroom activities for year 7 – 10 secondary learners 2
	3	Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in mathematics 3
	4	Demonstrate a critical understanding of the relevant issues and the strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching. 4

All - Assessment Task 1b: Teaching segment

GOAL:	The goal of this task is for you to develop your ability to teach a segment of the lesson to peers.	
PRODUCT:	Oral	
FORMAT:	Team teach a 15 - 20-minute segment with the same person with whom you collaborated to create the lesson plan. The teaching sequence will be video recorded Due: weeks 4 and 5 in tutorial	
CRITERIA:	No.	Learning Outcome assessed
	1	see 1a

All - Assessment Task 1c: Reflection and adapted lesson plan

GOAL:	The goal of this task is for you to develop your ability to reflect and adapt the lesson plan for future use.	
PRODUCT:	Written Piece	
FORMAT:	Using this video, reflect as a group on your teaching performance using the critical moment protocols discussed in lectures. You may also include peer reflections from the lesson. Write a personal reflection on your teaching, including links to literature, and explain how you would revise the lesson plan for future use. Upload your reflection to Blackboard Due: the week following teaching.	
CRITERIA:	No.	Learning Outcome assessed
	1	see 1a

All - Assessment Task 2: Case study: responding to diagnostic assessment

GOAL:	The goal of this task is to demonstrate your junior mathematics content and curriculum knowledge through the design of a teaching and learning sequence in response to NAPLAN data and diagnostic assessment.	
PRODUCT:	Written Piece	
FORMAT:	<p>You are a Year 8 mathematics teacher. The HOD has provided some common diagnostic tasks and the Year 7 NAPLAN data for the students in your class. You are to choose one of these tasks:</p> <ul style="list-style-type: none"> • Analyse the task and identify the mathematical concept(s). • Develop an A standard response to the sample task and identify the important features of this response. • Research common misconceptions and/or difficulties about this mathematical concept. Give specific examples of the characteristics of possible student response(s) for the misconception(s) you have described. • Then analyse the year 7 NAPLAN data provided to identify the misconceptions in the particular area of mathematics of your diagnostic task connected to your class of students. (You only need look at those NAPLAN questions directly related to your chosen diagnostic task.) • Describe the sequence of teaching and learning strategies that you will use in the following three lessons assuming that your students present you with a variety of responses to the task. One of the lessons must utilise an ICT resource. Include how you will assess whether the students have understood the lesson (formatively). <p>Justify your pedagogical and assessment decision making using the curriculum and academic literature. Your justification should explain how the teaching and learning sequence engages students of varying abilities and characteristics in an achievable challenge for junior mathematics. Include explanations of mathematics content, pedagogy, teaching strategies, ICT assessment, and literacy and numeracy as appropriate.</p>	
CRITERIA:	No.	Learning Outcome assessed
	1	Apply a deep synthesised knowledge of Australian Curriculum, Year 7 – 10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in mathematics 1
	2	Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design and reflect on classroom activities for year 7 – 10 secondary learners 2
	3	Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in mathematics 3
	4	Written communication skills including English expression grammar, spelling, and punctuation.
	5	Demonstrate a critical understanding of the relevant issues and the strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching. 4

All - Assessment Task 3: Examination

GOAL:	The goal of this task is for you to demonstrate your knowledge and understanding of curriculum, pedagogy and assessment in relation to mathematics in the junior phase of secondary schooling.																		
PRODUCT:	Examination																		
FORMAT:	<p>You are a Year 8 mathematics teacher. The HOD has provided some common diagnostic tasks and the Year 7 NAPLAN data for the students in your class. You are to choose one of these tasks:</p> <ul style="list-style-type: none">• Analyse the task and identify the mathematical concept(s).• Develop an A standard response to the sample task and identify the important features of this response.• Research common misconceptions and/or difficulties about this mathematical concept. Give specific examples of the characteristics of possible student response(s) for the misconception(s) you have described.• Then analyse the year 7 NAPLAN data provided to identify the misconceptions in the particular area of mathematics of your diagnostic task connected to your class of students. (You only need look at those NAPLAN questions directly related to your chosen diagnostic task.) <p>An examination with short answer and scenario questions. The exam will be released during the lecture time and you will have 2 hours to respond.</p> <p>The following topics will be included:</p> <ul style="list-style-type: none">• Inquiry based/ problem-based teaching and learning in junior secondary Mathematics• Assessment (informal and formal, diagnostic, formative and summative and their application), reporting (to students and parents/carers) and feedback strategies in Mathematics• Strategies for differentiating teaching to meet the specific learning needs of student in Mathematics• Ethical use of ICT strategies and resources in curriculum, assessment and reporting• Integration of Aboriginal and Torres Strait Islander histories, culture or languages into learning activities																		
CRITERIA:	<table border="1"><thead><tr><th>No.</th><th></th><th>Learning Outcome assessed</th></tr></thead><tbody><tr><td>1</td><td>Apply a deep synthesised knowledge of Australian Curriculum: Mathematics Year 7-10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in mathematics.</td><td>1</td></tr><tr><td>2</td><td>Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design and reflect on classroom activities for year 7 – 10 secondary learnerssecondary learners</td><td>2</td></tr><tr><td>3</td><td>Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in mathematics</td><td>3</td></tr><tr><td>4</td><td>Demonstrate a critical understanding of the relevant issues and the strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching.</td><td>4</td></tr><tr><td>5</td><td>Written communication skills, academic literacies, and APA referencing conventions.</td><td></td></tr></tbody></table>	No.		Learning Outcome assessed	1	Apply a deep synthesised knowledge of Australian Curriculum: Mathematics Year 7-10 mathematical content and pedagogies for inclusion, engagement and behaviour management to create engaging learning sequences in mathematics.	1	2	Apply a deep knowledge of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design and reflect on classroom activities for year 7 – 10 secondary learnerssecondary learners	2	3	Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in mathematics	3	4	Demonstrate a critical understanding of the relevant issues and the strategies available and justify the safe, responsible and ethical use of ICT in learning and teaching.	4	5	Written communication skills, academic literacies, and APA referencing conventions.	
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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.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Module 1 Weeks 1 - 3 How to teach mathematics in Years 7 – 10 using the Australian Curriculum Mathematics	Inquiry based and problem-solving pedagogies Exploring the Australian Curriculum: Mathematics (ACM) in Years 7 - 10 Lesson planning Learning and teaching number Text chapters: 1, 2, 3, 7 Further readings, previewing, and activities on Blackboard
Module 2 Weeks 4-8 Curriculum design, teaching, and assessment strategies in Mathematics	Exploring number, algebra, measurement, geometry, statistics and probability content in relation to Years 7 – 10 Spatial thinking and reasoning The use of questioning and diagnostic tasks to diagnose student thinking and identify misconceptions Evaluating student data Exploring the General Capabilities and Cross Curriculum Priorities of the Australian Curriculum – literacy, numeracy, ICT, ATSI perspectives Planning a sequence of learning activities that develop a mathematical concept and cater to a range of students STEM and other interdisciplinary activities Integrating Aboriginal and Torres Strait Islander histories, culture or languages Set text chapters: 4, 5, 7 - 11 Further readings and activities see Blackboard
Module 3 Weeks 9 - 10 Assessment and reporting in Mathematics	Exploring different types of assessment, feedback, moderation, reporting in mathematics Examining theories on the purpose of assessment 'of, for and as' learning in mathematics Connecting with parents Set text chapters: 6, 16 Further readings and activities see Blackboard
Module 4 week 10 Exploring key reports, initiatives and policy in relation to mathematics	Alice Springs Declaration United in our pursuit of Excellence Keeping QLD Schools Safe QLD Closing the Gaps Report National Numeracy Review Report Towards a 10-year plan for STEM Further readings and activities see Blackboard

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., Vale, V., Makar, K. Herbert, S. and Geiger, V.	2017	Teaching Secondary School Mathematics: Research and Practice for the 21st century.	Australia: Allen & Unwin

8.2. Specific requirements

Not applicable

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