COURSE OUTLINE

EDU747 Teaching Junior Secondary Mathematics

School: School of Education and Tertiary Access

2022 | Semester 1

UniSC Sunshine Coast | 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 usc.edu.au 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
BLENDED LEARNING			
Learning materials – You are required to engage with the online learning materials, associated activities and required/recommended course reading materials accessed through Canvas and using the required text.	2hrs	Week 1	10 times
Tutorial/Workshop 1 – Face to face tutorials	2hrs	Week 1	10 times
Seminar – On Campus	2hrs	Week 2	4 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 On successful completion of this course, you should be able to...	GRADUATE QUALITIES MAPPING Completing these tasks successfully will contribute to you becoming...	PROFESSIONAL STANDARD MAPPING * Australian Institute for Teaching and School Leadership
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	Knowledgeable Creative and critical thinker	2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 4.1, 4.5
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	Creative and critical thinker	2.1, 2.4, 2.5, 2.6, 3.4
3 Demonstrate a deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in Mathematics	Knowledgeable Ethical	2.1, 2.3, 2.4, 2.5, 3.2, 5.1, 5.2, 5.3, 5.4
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.	Creative and critical thinker	2.6, 3.2, 3.3, 3.4, 4.1, 4.5
5 Create oral and/or written communication concerning curriculum, teaching, learning and assessment in senior secondary mathematics for classroom and professional contexts.	Knowledgeable Ethical	

* Competencies by Professional Body

CODE	COMPETENCY
AUSTRALIAN INSTITUTE FOR TEACHING AND SCHOOL LEADERSHIP	
2.1	Content and teaching strategies of the teaching area: Demonstrate knowledge and understanding of the concepts, substance and structure of the content and teaching strategies of the teaching area
2.2	Content selection and organisation: Organise content into an effective learning and teaching sequence.
2.3	Curriculum, assessment and reporting: Use curriculum, assessment and reporting knowledge to design learning sequences and lesson plans.
2.4	Understand and respect Aboriginal and Torres Strait Islander people to promote reconciliation between Indigenous and non-Indigenous Australians: Demonstrate broad knowledge of, understanding of and respect for Aboriginal and Torres Strait Islander histories, cultures and languages.

CODE	COMPETENCY
2.5	Literacy and numeracy strategies: Know and understand literacy and numeracy teaching strategies and their application in teaching areas.
2.6	Information and Communication Technology (ICT): Implement teaching strategies for using ICT to expand curriculum learning opportunities for students.
3.1	Establish challenging learning goals: Set learning goals that provide achievable challenges for students of varying abilities and characteristics.
3.2	Plan, structure and sequence learning programs: Plan lesson sequences using knowledge of student learning, content and effective teaching strategies.
3.3	Use teaching strategies: Include a range of teaching strategies.
3.4	Select and use resources: Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning.
4.1	Support student participation: Identify strategies to support inclusive student participation and engagement in classroom activities.
4.5	Use ICT safely, responsibly and ethically: Demonstrate an understanding of the relevant issues and the strategies available to support the safe, responsible and ethical use of ICT in learning and teaching.
5.1	Assess student learning: Demonstrate understanding of assessment strategies, including informal and formal, diagnostic, formative and summative approaches to assess student learning.
5.2	Provide feedback to students on their learning: Demonstrate an understanding of the purpose of providing timely and appropriate feedback to students about their learning
5.3	Make consistent and comparable judgements: Demonstrate understanding of assessment moderation and its application to support consistent and comparable judgements of student learning.
5.4	Interpret student data: Demonstrate the capacity to interpret student assessment data to evaluate student learning and modify teaching practice.

5. Am I eligible to enrol in this course?

Refer to the UniSC 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

You will receive feedback in tutorials on activities in the early weeks to support task 1.

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	Written Piece	Individual	25%	1250 words	Week 4	Online Assignment Submission with plagiarism check
All	2a	Oral	Group	0%	10-15 minutes	Refer to Format	In Class
All	2b	Written Piece	Individual	20%	1250 - 1500 words	Throughout teaching period (refer to Format)	Online Assignment Submission with plagiarism check
All	2c	Written Piece	Individual	20%	1000 words	Throughout teaching period (refer to Format)	Online Assignment Submission with plagiarism check
All	3	Examination - not Centrally Scheduled	Individual	35%	90 minutes	Week 10	In Class

All - Assessment Task 1: Reflective task

GOAL:	The goal of this task is to reflect on your transition from mathematics student to mathematics teacher by connecting your own experience as a learner with the experiences of students you may teach.
PRODUCT:	Written Piece
FORMAT:	Part a. Understanding yourself as learner of mathematics. Write your personal mathematical life history, describing and reflecting on your experiences of learning mathematics at school and at university. How did mathematics lessons make you feel? What were some of the challenges that you or your friends experienced in learning mathematics? What was the influence of different teachers and other people you may have encountered? Give specific examples to illustrate your story. Part b. Understanding a student's learning of mathematics. Choose one of the samples of student work provided on Canvas. • Analyse the task and identify the mathematical concept(s). • Describe what the student may have been thinking when they completed the task. What did they not understand or misunderstand? Part c. Imagining yourself as a future teacher of mathematics. Drawing on your own experience of learning mathematics and your analysis of this student's work, plan and script an instructional conversation with the student. The aims are to help the student understand the mathematical concept and develop a positive attitude towards mathematics. Identify any resources you will use. Use academic literature to support your description where appropriate.
CRITERIA:	**No.** / **Learning Outcome assessed** 1 — Application of appropriate mathematical content and pedagogical knowledge, ICT, literacy and numeracy, as appropriate to engage a diversity of students. — 1 2 2 — Written communication skills and academic literacies including use of credible evidence and sources, and APA referencing conventions — 5
GENERIC SKILLS:	Communication, Collaboration, Information literacy

All - Assessment Task 2a: Teaching segment

GOAL:	Task 2 is presented in three segments. Its overall goal is to develop your ability to plan, teach, and reflect on mathematics lessons and lesson sequences. The goal of this task is for you to develop your ability to teach a segment of the lesson to peers
PRODUCT:	Oral
FORMAT:	In week 1 students will choose/ be allocated a curriculum strand from the Australian Curriculum and week in which to present a team-taught lesson segment aligned with this strand. In pairs you will develop an inquiry or problem-based activity addressing a new mathematical concept in your allocated strand and team-teach this activity during the tutorial. The time allocation for teaching the activity is 10 - 15-minutes. This will be followed by feedback on the activity through discussion with peers.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 — This segment of Task 2 is not assessed, but it generates the initial experience that you will use to complete Task 2b and Task 2c. — 1 2 5
GENERIC SKILLS:	Communication, Organisation

All - Assessment Task 2b: Justification and reflection

GOAL:	The goal of this task is for you to develop your ability to reflect on teaching and use literature to justify your choices of activities, teaching strategies, and pedagogy.
PRODUCT:	Written Piece
FORMAT:	Based on feedback from the tutorial and discussion with your teaching partner, write a personal reflection on your teaching of the lesson segment, including links to literature. As a result, identify and justify any changes you would make to this lesson segment if you were to teach it again, and how you would expand the inquiry or problem-solving activity into a full lesson. Justify your pedagogical and assessment decision making using the curriculum and academic literature. Your justification should explain how the lesson 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.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 — Application of mathematical ideas, higher order thinking skills and inquiry-based pedagogies to design classroom activities for year 7 – 10 secondary learners — 2 2 — Deep understanding of diverse student learning needs and ethical student-centred approach to teaching and assessment in Mathematics — 3 3 — Understanding of the relevant issues and strategies available and justify the safe, responsible and ethical use of ICT, literacy, and numeracy in learning and teaching — 3 4 4 — Written communication skills and academic literacies including use of credible evidence and sources, and APA referencing conventions — 5
GENERIC SKILLS:	Problem solving, Information literacy

All - Assessment Task 2c: Learning sequence

GOAL:	The goal of this task is for you to develop your ability to prepare an inquiry or problem-based mathematics lesson sequence and lesson plan.
PRODUCT:	Written Piece
FORMAT:	Based on the lesson segment you taught in Task 2a and your reflection on teaching in Task 2b, prepare a 3-lesson learning sequence including a fully detailed 70-minute lesson plan which includes your inquiry or problem-solving activity as part of the first lesson in this sequence. The lesson plan will be for a Year 7 – 10 secondary class of 25 students. The lesson plan requirements will be provided on canvas. You will also identify the key activities for the next 2 lessons that could follow on from your initial lesson. One activity must include an ICT and you must identify the mathematics content and literacy and numeracy as appropriate in the activities. The lesson plan will Include mathematics content, teaching strategies, and assessment.
CRITERIA:	

No.		Learning Outcome assessed
1	Application of deep synthesised knowledge of the Australian Curriculum: Mathematics to planning and assessment.	1
2	Application of appropriate mathematical content and pedagogical knowledge, ICT, literacy and numeracy, as appropriate to engage a diversity of students.	1 2
3	Written communication skills and academic literacies including use of credible evidence and sources, and APA referencing conventions	5

GENERIC SKILLS:	Problem solving, Organisation

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 - not Centrally Scheduled
FORMAT:	A 90-minute examination with short answer and scenario questions. You may bring in two A4 pages of notes. The following topics will be included: • 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 students in Mathematics including Aboriginal and Torres Strait Islander students • Ethical use of ICT, strategies and resources in curriculum, assessment, and reporting
CRITERIA:	

No.		Learning Outcome assessed
1	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	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	Deep understanding of diverse student learning needs and adopt an ethical student-centred approach to teaching and assessment in mathematics	3
4	Deep understanding of the relevant issues and the strategies available to support the safe, responsible, and ethical use of ICT in learning and teaching	4

GENERIC SKILLS:	Problem solving, Applying technologies

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. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Weeks 1	What is mathematics? How can I use reflection to support my teaching?
Week 2	How can we teach through problem solving? How can we help students understand place value and decimals? Why is group work important?
Weeks 3	How can I help students to understand number? How can I help students develop a growth mindset? What is numeracy?
Week 4	How can I teach algebra for understanding? How can I make instruction relevant and interesting? How can I begin planning?
Week 5	How can I help students to think and reason statistically? What are some ideas for teaching probability? What is the role of technology in my teaching?
Week 6	What is geometric thinking? How can I help students learn geometry? How can I help students to think in 3D? How can I include literacy in my teaching?
Week 7	What is geometric thinking? How can I help students learn geometry? How can I help students to think in 3D? How can I include literacy in my teaching?
Week 8	Why STEM? How does STEM learning align with the Australian Curriculum? How can the learning areas be integrated effectively? What opportunities do you see for STEM contexts?
Week 9	What are some strategies to incorporate ATSI perspectives in my teaching? How can I build financial literacy? What is formative assessment? What is the role of assessment and moderation in my teaching? How can I harness parental support?
Week 10	Putting it all together

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 Canvas 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	EDITION	PUBLISHER
Required	Merrilyn Goos,Gloria Stillman,Colleen Vale,Sandra Herbert,Vince Geiger	0	Teaching Secondary School Mathematics	First Australian	n/a
Recommended	John Van de Walle,Karen Karp,Jennifer Bay-Williams,Amy Brass,Brendan Bentley,Sue Ferguson,Wendy Goff,Sharyn Livy,Margaret Marshman,David Martin,Cath Pearn,Theodosia Prodromou,Duncan Symons,Karina Wilkie	2019	Primary and Middle Years Mathematics: Teaching Developmentally	n/a	n/a

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 Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

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. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: 07 5430 1168 or using the SafeZone app. For general enquires contact the SafeUniSC team by phone 07 5456 3864 or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call 07 5430 1226 or email studentwellbeing@usc.edu.au.

10.5. 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.

10.6. 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.

10.7. 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.

10.8. 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
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10. General Enquiries

In person:

- **UniSC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **UniSC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **UniSC SouthBank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- **UniSC Gympie** - Student Central, 71 Cartwright Road, Gympie
- **UniSC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- **UniSC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au