EDCU13020 *Mathematics Curriculum*

Term 2 - 2020

Profile information current as at 12/10/2024 12:24 pm

All details in this unit profile for EDCU13020 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student).The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

In Mathematics Curriculum, students build on the knowledge acquired in previous Mathematics units to develop deep understanding of the structure, sequencing and links between critical concepts and skills in content across the year levels in the Australian Curriculum: Mathematics. They apply this knowledge to identify issues or challenges to mathematical understanding and problem-solving in key stages of the learning sequence as a guide for developing diagnostic assessment tools. Students develop resources to prevent or overcome difficulties in the development of Mathematical knowledge and skills and design and justify approaches to using physical and digital resources to teach specific sub-strands of the curriculum to overcome barriers to learning and improve the transfer of mathematical reasoning, logic and analysis to problem-solving situations. Personal numeracy competence is enhanced in this unit as students develop suggested marking guides for diagnostic assessment using appropriate and accurate mathematical procedures and communication.

Details

Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *7*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites

Prerequisite:- Students must successfully complete the unit EDCU12038 prior to enrolling in this unit.
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 2 - 2020

- Bundaberg
- Cairns
- Mackay
- Noosa
- Online
- Rockhampton
- Townsville

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website

This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Practical and Written Assessment**
Weighting: 50%
2. **Presentation and Written Assessment**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Student feedback

Feedback
Moodle organisation and navigation supported learning, and the content scaffolded knowledge and skills required for the assessment tasks.

Recommendation
Retain unit learning materials to scaffold understanding.

Feedback from Unit coordinator's reflection

Feedback
Assessment tasks are authentic and support practical application in classroom settings.

Recommendation
Retain the assessment tasks and emphasise practical application in the individual component of Assessment Task 2.

Feedback from Student feedback

Feedback
Students value assessment feedback to support their learning.

Recommendation
Provide markers with examples and resources to support the provision of task-specific feedback on assessments.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Analyse the structure and organisation of content in the Mathematics curriculum to identify key stages in concept development as a focus for learning and diagnostic assessment
2. Appraise Mathematics content to identify possible misconceptions or barriers to learning for diverse student groups
3. Distinguish evidence-based approaches to teaching Mathematics that promote engagement, understanding and mathematical proficiency for students from diverse backgrounds including Aboriginal and Torres Strait Islander students
4. Design diagnostic tools and reliable guides for assessing students' knowledge and skills in Mathematics
5. Reflect on professional learning to describe processes and strategies that improve teaching practice and student learning
6. Justify the selection and use of resources that scaffold students' understanding of core mathematical concepts
7. Identify opportunities for students to use ICTs purposefully to gain mathematical knowledge and proficiency.

Successful completion of this unit provides opportunities for students to engage with the Australian Professional Standards for Teachers (Graduate Career Stage) focus areas of:
1.1 Physical, social and intellectual development and characteristics of students
1.2 Understand how students learn
1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds
1.4 Strategies for teaching Aboriginal and Torres Strait Islander students
2.1 Content and teaching strategies of the teaching area
2.5 Literacy and numeracy strategies
2.6 Information and Communication Technology (ICT)
3.4 Select and use resources
5.1 Assess student learning
6.2 Engage in professional learning and improve practice
6.4 Apply professional learning and improve student learning

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level | • Introductory Level | • Intermediate Level | • Graduate Level | ◦ Professional Level | ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Practical and Written Assessment - 50%	•	•	•	•	•		
2 - Presentation and Written Assessment - 50%		•				•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes						
	1	2	3	4	5	6	7
1 - Communication				•	•		
2 - Problem Solving	•	•		•		•	
3 - Critical Thinking	•	•	•	•	•	•	•
4 - Information Literacy			•				
5 - Team Work	•	•	•	•			
6 - Information Technology Competence							•
7 - Cross Cultural Competence		•	•				
8 - Ethical practice		•					
9 - Social Innovation							
10 - Aboriginal and Torres Strait Islander Cultures							

Alignment of Assessment Tasks to Graduate Attributes

Assessment Tasks	Graduate Attributes									
	1	2	3	4	5	6	7	8	9	10
1 - Practical and Written Assessment - 50%	•	•	•	•	•		•			
2 - Presentation and Written Assessment - 50%	•	•	•	•		•		•		

Textbooks and Resources

Textbooks

EDCU13020

Prescribed

Teaching Mathematics: Foundations to Middle Years
Second Edition (2015)
Authors: Siemon, D., Beswick, K., Brady, K., Clark, J., Faragher, R., & Warren E.
Oxford University Press
ISBN: 9780195523829
Binding: Paperback

Additional Textbook Information
Both paperback and eBook version of the textbook can be purchased at the CQUniversity Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)

View textbooks at the CQUniversity Bookshop

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: American Psychological Association 7th Edition (APA 7th edition)
For further information, see the Assessment Tasks.

Teaching Contacts

Hayley Griffin Unit Coordinator
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Schedule

Week 1 - 13 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Mathematics in the Primary Classroom Part 1 of 2	Chapter 1 - Understanding School Mathematics Chapter 10 – Developing a Sense of Number and Algebra	

Week 2 - 20 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic
Mathematics in the Primary Classroom Part 2 of 2	Chapter 11 – Developing a Sense of Measurement and Geometry Chapter 12 - Developing a Sense of Statistics and Probability	

Week 3 - 27 Jul 2020

Module/Topic	Chapter	Events and Submissions/Topic

Learner Diversity in Mathematics	Chapter 8 - Understanding Diversity Chapter 4 – Thinking Mathematically	

Week 4 - 03 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Diagnostic Assessment in Mathematics Part 1 of 2	Chapter 5 – Communicating Mathematically Chapter 6 – Representing Mathematically	

Week 5 - 10 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Diagnostic Assessment in Mathematics Part 2 of 2		

Vacation Week - 17 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 24 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Professional Learning for Teachers of Mathematics	Chapter 2 - Learning Mathematics Chapter 3 - Teaching Mathematics Chapter 29 - Becoming a Professional Teacher of Maths	**Assessment 'for' Learning: Creating Diagnostic Tools** Due: Week 6 Thursday (27 Aug 2020) 11:45 pm AEST

Week 7 - 31 Aug 2020

Module/Topic	Chapter	Events and Submissions/Topic
Instructional Resources for Developing Mathematical Understanding Part 1 of 2	Chapter 14 - Number Ideas and Strategies F – 4 Chapter 15 - Place Value F - 4 Chapter 22 - Number: Fractions, Decimals and Reals 5 - 9	

Week 8 - 07 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Instructional Resources for Developing Mathematical Understanding Part 2 of 2	Chapter 13 - Algebraic Thinking F – 4 Chapter 25 - Algebraic Thinking 5 – 9	

Week 9 - 14 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Learning Engagement: Meeting the Needs of Students from Diverse Backgrounds	Chapter 19 – Measurement concepts and strategies F - 4 Chapter 26 – Measurement concepts and strategies 5 - 9	

Week 10 - 21 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Learning Mathematics and Teaching Mathematics	Chapter 20 - Geometric Thinking F - 4 Chapter 27 - Geometric Thinking 5 - 9	

Week 11 - 28 Sep 2020

Module/Topic	Chapter	Events and Submissions/Topic
Numeracy in the Primary Classroom	Chapter 9 – Numeracy in the Curriculum Chapter 21 - Early Statistics and Probability Chapter 28 - Statistics and Probability 5 - 9	

Week 12 - 05 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic

Review and Conclusion		**Resources for Learning: Expanding Professional Knowledge** Due: Week 12 Thursday (8 Oct 2020) 11:45 pm AEST

Review/Exam Week - 12 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 19 Oct 2020

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Assessment 'for' Learning: Creating Diagnostic Tools

Assessment Type
Practical and Written Assessment

Task Description
This task requires you to examine the relationship between curriculum, pedagogy and assessment and apply your knowledge and understanding to develop and enhance assessment practices and teaching in mathematics. This assessment comprises of the following activities:

> *Conduct* a thorough analysis of a mathematical concept represented within the *Australian Curriculum: Mathematics* and record the analysis in a graphic organiser.
>
> *Research* common misconceptions associated with the specific mathematical concept.
>
> *Create* diagnostic assessment tools that capture evidence of students' readiness for learning the concept, determine misconceptions that students may have developed and support the teacher to identify the cause of the faulty thinking.
>
> *Produce* a written response, of 1000 words, that addresses the barriers to learning the concept and proposes appropriate pedagogical responses that support mathematical proficiency. You will need to consider learners with differing levels of prior knowledge from diverse backgrounds, including individuals from various linguistic, cultural, religious, educational and socioeconomic backgrounds, and students who identify as Aboriginal and/or Torres Strait Islander.
>
> *Consider* how the context of this assessment task contributed to your professional learning and record these conclusions in a personal, written reflection of 500 words.

Detailed instructions and a suggested format for completing this assessment task are available in the Assessment Task 1 section in Moodle.

Assessment Due Date
Week 6 Thursday (27 Aug 2020) 11:45 pm AEST

Return Date to Students
Week 9 Friday (18 Sept 2020)

Weighting
50%

Assessment Criteria
Knowledge and understanding of the concepts, substance and structure of the content in the Mathematics curriculum (APST 2.1)
Ability to create and modify appropriate assessment tools that determine students' prior knowledge and achievement and understanding of mathematical concepts (APST 5.1)
Knowledge and understanding of barriers to mathematical proficiency and appropriate pedagogical responses to differentiate for diverse learning needs (APST 1.1, 1.2, 1.3, 1.4, 2.5)
Demonstrated understanding of the relationship between professional learning for teachers and improved student outcomes (APST 6.2, 6.4)

Application of academic writing conventions and adherence to APA style and referencing

Successful completion of Assessment Task 1 in Mathematics Curriculum provides opportunities for students to demonstrate the Australian Professional Standards for Teachers focus areas of 1.1, 1.2, 1.3, 1.4, 2.1, 2.5, 5.1, 6.2 and 6.4.

Referencing Style

- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Submit as one word document with the file name EDCU13020_AT1_SURNAME_First name

assessmentOutcome

- Analyse the structure and organisation of content in the Mathematics curriculum to identify key stages in concept development as a focus for learning and diagnostic assessment
- Appraise Mathematics content to identify possible misconceptions or barriers to learning for diverse student groups
- Distinguish evidence-based approaches to teaching Mathematics that promote engagement, understanding and mathematical proficiency for students from diverse backgrounds including Aboriginal and Torres Strait Islander students
- Design diagnostic tools and reliable guides for assessing students' knowledge and skills in Mathematics
- Reflect on professional learning to describe processes and strategies that improve teaching practice and student learning

assessmentGradAttribute

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Cross Cultural Competence

2 Resources for Learning: Expanding Professional Knowledge

Assessment Type
Presentation and Written Assessment

Task Description
This task requires you to investigate resources and ICTs that address barriers and misconceptions relating to a mathematical concept, which can be located in a specific year level, Content Description or Achievement Standard within the *Australian Curriculum: Mathematics*. The results of your investigation will contribute to the expansion of professional knowledge, amongst fellow preservice and beginning teachers, through the establishment of a bank of resources for teaching Mathematics in primary classrooms. This assessment comprises of the following activities:

> *Consider* common misconceptions or barriers that are associated with a mathematical concept and investigate how the faulty thinking can be corrected, or the barriers overcome, through features or characteristics of resources that scaffold students' understanding of the mathematical concept.
>
> *Select* two resources (one ICT based) that address a misconception or barrier and *create* a presentation that introduces the resources to an audience of beginning teachers. The selection of the resources should consider the mathematical learning needs of learners from a range of diverse backgrounds and experiences.
>
> *Compile* a written justification, of 1200 words, that explains the selection of resources for supporting interventions that address the barriers or misconceptions. The justification should address how the resources are inclusive of students with differing levels of understanding and experience, and describe how the resources promote engagement, understanding and mathematical proficiency.

Detailed completion and submission instructions for this assessment task are available in the Assessment Task 2 section in Moodle.

Assessment Due Date
Week 12 Thursday (8 Oct 2020) 11:45 pm AEST

Return Date to Students

Assessment tasks will be returned following moderation, in preparation for Certification of Grades.

Weighting
50%

Assessment Criteria
Knowledge and understanding of resources that address mathematical misconceptions or barriers to understanding for learners from diverse backgrounds and experiences (APST 1.1, 1.3)
Knowledge and selection of appropriate resources that engage students in learning mathematics and expand learning opportunities (APST 3.4)
Knowledge and selection of purposeful ICTs that support mathematical knowledge and proficiency (APST 2.6)
Application of academic writing conventions and adherence to APA style and referencing

Successful completion of Assessment Task 2 in Mathematics Curriculum provides opportunities for students to demonstrate the Australian Professional Standards for Teachers focus areas of 1.1, 1.3, 2.6 and 3.4.

Referencing Style

- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Use one of the submission options described in the Assessment Task 2 section in Moodle, with the file name/s EDCU13020_AT2_SURNAME_First name

assessmentOutcome

- Appraise Mathematics content to identify possible misconceptions or barriers to learning for diverse student groups
- Justify the selection and use of resources that scaffold students' understanding of core mathematical concepts
- Identify opportunities for students to use ICTs purposefully to gain mathematical knowledge and proficiency.

assessmentGradAttribute

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence
- Ethical practice

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem