School of Education

EDUC2749: K-6 Numeracy

Callaghan and Ourimbah
Semester 1 - 2025

COURSE OUTLINE

OVERVIEW

Course Description

This course provides an introduction to teaching and learning in Mathematics in K-6 contexts. Students will explore the NSW Mathematics K-6 syllabus incorporating the Australian Curriculum, planning for teaching and learning which incorporates strategies for differentiation, task development, identification of student misconceptions, algebraic thinking and real life problem solving.

Academic Progress Requirements

Nil

Requisites

Course Replacement:
You cannot enrol if you have successfully completed any of the following course(s):
EDUC3739
Enrolment in this course is dependent on meeting the Teacher Education Admission Milestone which requires meeting at least one of the following criteria:
- Three HSC Band 5s (including one in English), or
- Successful completion of 80 units of courses at the University of Newcastle, or
- Regulatory authority approved comparable pathways, or
- Commencement in the program prior to 2016

Assumed Knowledge

Contact Hours

Callaghan
Live Virtual Lecture
Online
1 hour(s) per week(s) for 12 week(s) starting Week 1

Tutorial
Face to Face On Campus
2 hour(s) per week(s) for 12 week(s) starting Week 1

Ourimbah
Live Virtual Lecture
Online
1 hour(s) per week(s) for 12 week(s) starting Week 1

Tutorial

Face to Face On Campus
2 hour(s) per week(s) for 12 week(s) starting Week 1

Unit Weighting	10
Workload	Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

CONTACTS

Course Coordinator

Callaghan and Ourimbah
Mr Glyn Regler
Glyn.Regler@newcastle.edu.au
Consultation:

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

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SYLLABUS

Course Content

The study of:

- big ideas in mathematics and mathematical concepts and processes: such as developing number sense, place value, additive and multiplicative thinking
- the knowledge base underpinning the pedagogies and practices of teaching and learning mathematics
- models of pedagogy for teaching and assessing primary mathematics
- range of strategies for differentiating teaching in primary mathematics – problem solving in mathematics- planning and communicating mathematical processes - key ideas in mathematics and common student misconceptions
- ways of differentiating curriculum to meet the diverse needs of learners in the mathematics classroom
- the place of primary mathematics in the continuum of learning in K-12, including a particular understanding of the links between Stage 3 and Stage 4
- the Mathematics K-6 Syllabus, support documents and NSW Primary Curriculum Foundation Statements
- the nature and role of mathematics in describing and modelling patterns and relationships that can be generalised, and as a means of interpreting the world
- working with data (basic statistical literacy) including planning, gathering, organizing, applying data to solve problems, and communicating results through the selection of appropriate representations

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Demonstrate their understanding of the development of children's mathematical knowledge, skills and understanding in Number and Algebra, Measurement and Geometry, and Statistics and Probability.

2. Demonstrate their understanding of the processes children use in Working Mathematically.

3. Demonstrate their understanding and use of the NSW Mathematics K-6 syllabus incorporating the Australian Curriculum (2024) to plan for learning and teaching in all aspects of numeracy.

4. Demonstrate effective planning for learning which incorporates :a) Planning a sequence of lesson overviews and developing one of these into a full lesson plan b) Modifying content and overcoming student misconceptions c) Assessment strategies: diagnostic, formative and summative and d) Strategies for generalising

Course Materials

Required Text:

Siemon, D., Beswick, K., Brady, K., Clark, J., Faragher, R., & Warren, E. (2021).*Teaching Mathematics: Foundations to middle years* (3 ed.). South Melbourne, Victoria: Oxford University Press.

NSW Education Standards Authority (2023). Mathematics K-10 Syllabus.
Mathematics K–10 - Course overview | NSW Curriculum | NSW Education Standards Authority

Australian Curriculum, Assessment and Reporting Authority (2022) National Numeracy Learning Progressions.
Version 3 of National Literacy and Numeracy Learning Progressions | The Australian Curriculum (Version 8.4)

Recommended Text:

Booker, G., Bond, D., & Seah, R., (2020) Teaching Primary Mathematics, 6th Ed., Pearson.

Sullivan, P. & Lilburn, P. (2017). *Open-ended Maths Activities* (Revised edition). South Melbourne: Oxford University Press.

Teaching mathematics: Using research-informed strategies
Overview of research - Research article – Sullivan, P. (2011) Teaching Mathematics: Using research-informed strategies (acer.edu.au) Chapter 5, page 24 to 30

SCHEDULE

Week	Week Begins	Lecture	Tutorial	Assessment Due
1	24 Feb	Introduction to EDUC2749 Effective Principles for Maths Instruction	Maths Anxiety Syllabus Numeracy Progressions	
2	3 Mar	Place Value & The proficiencies and reasoning (WM)	Number and Place Value Analysis practice	
3	10 Mar	Representing Number Additive Thinking	Practical applications for Representing Number & Additive thinking	
4	17 Mar	Multiplicative Thinking	Practical applications for Multiplicative thinking	Assignment 1 Part A Sunday 23 March - 23:59
5	24 Mar	Connectionist Approach and teaching using Big Ideas	Lesson Planning K-2 Micro Learning	
6	31 Mar	Interpreting Fractions	Partitioning Factions Proportional Thinking	Assignment 1 – Part B Sunday 6 April – 23:59
7	7 Apr	Catering for diversity in the maths classroom	Differentiation and Diversity in the classroom	
RECESS 14 April to 27 APRIL				
8	28 Apr	Effective Assessment strategies - for, as and of Learning	Opportunities for assessment	Assignment 2 - Part A Sunday 4 May– 23:59
9	5 May	**Geometric Measure** Length, Position, Angles Technology TPACK	**Geometric Measure** Length, Position, Angles	
10	12 May	**2D special structures** Area **3D special structures** Capacity	**2D special structures** Area **3D special structures** Capacity	Assign – 2 Part B
11	19 May	**Non spatial measurement** Temperature, Mass & time	Peer Teaching	Assign -2 Part B
12	26 May	**Statistics and Probability** Data & Chance	Peer Teaching	Assign 2 Part B
13	2 Jun			
Exams				
Exams				

ASSESSMENTS

This course has 2 assessments. Each assessment is described in more detail in the sections below.

Assessment Name		Due Date	Involvement	Weighting	Learning Outcomes
1	Task Development	Part A Due Week 4, by the end of tutorial Part B due to Turnitin Week 6 Sunday 6th April by 11:59pm	Individual	50%	1, 3, 4
2	Lesson Plan	Part A due to Turnitin Week 8 Sunday 4th May by 11:59pm Part B due in Week 10,11,12 Peer Teaching in class.	Combination	50%	1, 2, 3, 4

Late Submissions The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

Assessment 1 – Work Sample Analysis, Task Development

Assessment Type	Work sample analysis / Remediation plan
Purpose	The purpose of this assignment is for students to develop a written series of sequential lesson overviews and one detailed lesson plan referenced to the revised NSW Mathematics K-6 Syllabus.
Description	**PART A (25%)** Group Work Sample Analysis – submitted to CANVAS during Week 4 tutorials. During tutorials, students will be placed in groups of 4-6 to carry out an error analyse of a K-6 student's mathematics work-sample. Using the revised Mathematics K-6 Syllabus outcomes, content descriptors and the Numeracy Progression to guide this analysis, identification (content &/or process) of errors, needs and strengths will be recorded on the proforma. ** The Analysis proforma can be found in the Assessment 2 folder on CANVAS and should include a cover sheet stating the names of all group members before submitting online. **PART B (25%)** Lesson Sequence Planning Overview - CANVAS – Week 6 Individually, students are to submit a 4 Lesson Sequence Planning Overview to include: • most appropriate outcomes (both content and working mathematically processes), • content descriptors/points, • most appropriate numeracy progression indicator to be addressed in the sequence. Then provide very brief descriptions of the following phases of the lesson: • Orientation phase- include learning intention / focus area (We are learning to… WALT) • Explicit teaching phase - include teacher 'think alouds' & open-ended questions • Exploration phase - include differentiation and assessment • Consolidation phase – how students will reflect on the learning from the lesson ** The Lesson Sequence Planning Overview proforma can be found in the Assessment 2 folder on CANVAS.
Weighting	50% (Part A -25% and Part B -25%)

Length	Equivalent to 2000 words
Due Date	Part A Due Week 4, by the end of tutorial Part B due to Turnitin Week 6 Sunday 6 April until 11:59pm
Submission Method	Online
Assessment Criteria	Rubric is on Canvas
Return Method	Online
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

Assessment 2 – Lesson Plan, Peer Teaching

Purpose	The purpose of this assignment is for students to develop a written series of sequential lesson overviews and one detailed lesson plan referenced to the revised NSW Mathematics K-6 Syllabus.
Description	**PART A – FULL LESSON PLAN – To be submitted online by one member of each GROUP NOTE: GROUP COMPLETION IN OWN STUDY TIME. (25%)** In groups, make an appointment to communicate and share your individual overviews of the 4-lesson sequence with your group in a ZOOM session/s and a Google doc. * Choose just ONE lesson from all lesson sequences to collaboratively write out as a FULL lesson plan Lesson Sequence Planning Overview proforma. *The lesson must be engaging and focused on investigating and problem solving with pre-designed open-ended questions, NOT based on written exercises or commercial worksheets. *Modelled mathematical thinking (think alouds) by the teacher during the explicit phase is expected. *Assessment and differentiation are required in the Exploratory phase. *The exploratory phase must include activities that link to interactives (such as MAB) or simple resources available from home (e.g. buttons / pebbles / pasta). Groups are responsible for bringing their own resources. *The lesson plan must include the most appropriate: outcomes (both content and process) and content descriptor/point from the syllabus; numeracy progression indicator; differentiation; grouping strategies; appropriate resources (MUST include ICT); and assessment. NOTE: Use the proforma on Canvas to complete each section required. One member of each group is to submit the group lesson plan to Turnitin by 11:59pm by the end of week 8 Sunday 4th. **PART B - Each student will be graded during tutorials based on their own individual teaching effort and effect.** *The lesson plan will be a hurdle requirement and it is your individual teaching of the lesson that will be assessed. Your tutor will assess the teaching of the Orientation, Explicit and Exploratory phases. **GROUP TEAM TEACHING (25%)** * Compulsory tutorial attendance in week 10,11,12 for assessment task completion. *Your group will team teach the Orientation, Explicit and Exploratory parts of this lesson to your tutorial group in weeks 10,11,12. *In the Orientation/Explicit teaching phases you will ask questions of the tutorial group and respond to questions. *The Exploration activity will be completed by the tutorial group during tutorial time Procedure: Each group (consisting of approx. 4 group members) will have 25 minutes teaching *High standard of academic literacy is required throughout.
Weighting	50% (Part A -25% and Part B -25%)
Length	Equivalent to 2000 words
Submission Method	Online
Assessment Criteria	Rubric is on Canvas

Return Method	Online
Feedback Provided	Online - 3 weeks after extension date.
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

ADDITIONAL INFORMATION

Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

*Skills are those identified for the purposes of assessment task(s).

Attendance

Attendance/participation will be recorded in the following components:

- Tutorial (Method of recording: Class Roll)

Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.

Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

Learning Analytics

The University uses an evidence-based approach to enhancing student learning and delivering support. Our careful analysis of data through learning analytics informs decision making processes related to student learning, academic outcomes, and support services. Learning analytics may be used to identify targeted individual opportunities for additional support services or interventions.

Interviews on Assessment Items

An Interview may be conducted on any assessment item in this course, in accordance with the Interview on Assessment Items Procedure. The purpose of the interview is to verify the author of the material submitted in response to the assessment task and provide a quality assurance measure.

In the event the Course Coordinator is not satisfied that a student's oral responses are

consistent with the work originally submitted, the matter will be referred to the Student Academic Conduct Officer, who will take appropriate action under the Student Conduct Rule.

Academic Integrity and Ethical Academic Conduct Policy

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations.

Please refer to the Academic Integrity and Ethical Academic Conduct Policy

Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s).

Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure.

Use of generative artificial intelligence in course assessments

It is critical that any work submitted for assessment is your own original work. Before using generative AI tools (such as ChatGPT, Perplexity, Microsoft Copilot, etc) in any assessable work you must ensure that such use is in line with the requirements for the course and expectations of your Course Coordinator

Misuse of AI tools may be considered a breach of the University's Student Conduct Rule and could result in disciplinary action.

Artificial Intelligence detection software may be used to review any work you submit. If you have used AI in any way other than has been expressly permitted by your course coordinator, you may be engaging in academic misconduct and be subject to penalties.

For information, refer to:

- Generative AI Tools
- Academic Integrity

Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures that support a safe and respectful environment at the University

This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.
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