School of Education

EDST6756
Extension Mathematics Method 2

Semester 2, 2017
Contents

1. LOCATION ............................................................................................................. 2
2. STAFF CONTACT DETAILS ............................................................................. 2
3. COURSE DETAILS ............................................................................................... 2
   Summary of Course ................................................................................................. 2
   Student Learning Outcomes ...................................................................................... 3
   AITSL Professional Graduate Teaching Standards .................................................. 3
   National Priority Area Elaborations ........................................................................ 4
4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH..... 4
5. TEACHING STRATEGIES ..................................................................................... 4
6. COURSE CONTENT AND STRUCTURE ............................................................... 5
7. ASSESSMENT ......................................................................................................... 6
8. RESOURCES ......................................................................................................... 11

IMPORTANT:
For student policies and procedures relating to assessment, attendance and student support, please
see website, https://education.arts.unsw.edu.au/students/courses/course-outlines/

The School of Education acknowledges the Bedegal and Gadigal people as the traditional
custodians of the lands upon which we learn and teach.
1. LOCATION

Faculty of Arts and Social Sciences
School of Education
EDST6756 Extension Mathematics Method 2 (6 units of credit)
Semester 2 2017

2. STAFF CONTACT DETAILS

Course Coordinator: Edward Habkouk
Email: e.habkouk@unsw.edu.au
Phone: 
Availability: By email or by appointment

3. COURSE DETAILS

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Extension Mathematics Method 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit Points</td>
<td>6 units of credit</td>
</tr>
<tr>
<td>Workload</td>
<td>Includes 150 hours including class contact hours, readings, class preparation, assessment, follow up activities, etc.</td>
</tr>
<tr>
<td>Schedule</td>
<td></td>
</tr>
<tr>
<td>Lecture</td>
<td>Thu 4pm (John Goodsell 119)</td>
</tr>
<tr>
<td>Tutorials</td>
<td>Thu 5pm-7pm (John Goodsell 119)</td>
</tr>
</tbody>
</table>

Summary of Course

This course continues for students studying EDST6726. The focus of this course is on being accountable for developing student's knowledge and appreciation of mathematics, through the use of formative and summative assessment, including NAPLAN results to guide teacher planning. This will include the higher level courses in the syllabus.

The main ways in which the course has changed since last time as a result of student feedback: More opportunities to ask questions about the assessment requirements prior to the due date and greater opportunities to experiment with their teaching skills among their peers.

Important Information

Assessment: Students must pass ALL assignments in order to pass the course. Only by passing all assignments can the Graduate Attributes (AITSL Professional Graduate Teaching Standards) be achieved.

Attendance: Students are expected to give priority to university study commitments. Unless specific and formal permission has been granted, failure to attend 80% of classes in a course may result in failure.
### Student Learning Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Assessment/s</th>
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<tbody>
<tr>
<td>1</td>
<td>1, 2</td>
</tr>
<tr>
<td>2</td>
<td>1, 2</td>
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<tr>
<td>3</td>
<td>1, 2</td>
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<tr>
<td>4</td>
<td>1, 2</td>
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<tr>
<td>5</td>
<td>1, 2</td>
</tr>
<tr>
<td>6</td>
<td>1, 2</td>
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</tbody>
</table>

### AITSL Professional Graduate Teaching Standards

<table>
<thead>
<tr>
<th>Standard</th>
<th>Assessment/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3</td>
<td>1</td>
</tr>
<tr>
<td>1.5</td>
<td>1</td>
</tr>
<tr>
<td>2.1</td>
<td>2</td>
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<tr>
<td>2.3</td>
<td>2</td>
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<td>2.4</td>
<td>2</td>
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<td>2.5</td>
<td>1, 2</td>
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<td>2.6</td>
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<td>5.1</td>
<td>2</td>
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<tr>
<td>5.2</td>
<td>2</td>
</tr>
<tr>
<td>5.3</td>
<td>2</td>
</tr>
<tr>
<td>5.5</td>
<td>2</td>
</tr>
</tbody>
</table>
4. RATIONALE FOR THE INCLUSION OF CONTENT AND TEACHING APPROACH

The design of this course will enable teachers to engage with higher level syllabi eg. Mathematics, Extension 1 and 2. Students will be encouraged to evaluate their teaching to programs and strategies to improve student learning.

5. TEACHING STRATEGIES

Teaching strategies used during the course will include:

- Small group cooperative learning, such as Jigsaw, to understand the importance of teamwork in an educational context and to demonstrate the use of group structures as appropriate to address teaching and learning goals.
- Explicit teaching, including lectures, to demonstrate an understanding of students’ different approaches to learning and the use of a range of teaching strategies to foster interest and support learning.
- Structured occasions for reflection on learning, such as the use of learning journals, to allow students to reflect critically on and improve teaching practice and strategies.
- Extensive opportunities for whole group and small group dialogue and discussion, allowing students the opportunity to demonstrate their capacity to communicate and liaise with the diverse members of an education community, and to demonstrate their knowledge and understanding of method content.
- Online learning from readings on the Moodle website.
- Specific numeracy and problem solving strategies.

These activities will occur in a classroom climate that is supportive and inclusive of all learners.
### 6. COURSE CONTENT AND STRUCTURE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Tutorials</th>
</tr>
</thead>
</table>
| 1 27 July | Mathematical Modelling *(Advice on Assessment 1)*  
  E.1, E.4, E.5, E.6, E.8 | Student Centred Learning  
  Introduction to the "Harkness" model |
| 2 3 Aug | INFORMative Assessment  
  NAPLAN proficiencies  
  Implementing Rich Tasks  
  e.g. NRich Mathematics |
| 3 10 Aug | Chance & Data  
  Stage 4/5 *(Advice on Assessment 2)* | IBL/Portfolios and  
  *Oral Presentations* |
| 4 17 Aug | Senior Syllabus  
  Introducing topics in the HSC Senior Courses  
  Mathematics/Mathematics Extension 1  
  C.3, C.4, C.5, C.6, C.8, C.13, C.14 | *Assessment 1 due 16 Aug @ 5pm*  
  *Oral Presentations* |
| 5 24 Aug | **Feedback:** Assessment 1  
  Mathematics Course HSC Calculus | *Oral Presentations* |
| 6 31 Aug | Extension 1 HSC  
  HSC Marking, Judging, Grading, RoSA & Rubrics | *Oral Presentations and Polynomials Extension 1 and 2* |
| 7 7 Sept | Extension 1 HSC  
  Permutations and combinations | *Oral Presentations*  
  Complex numbers Ext 2 |
| 8 14 Sept | **Feedback:** Assessment 2  
  Further Mathematics Extension 2 topics | *Assessment 2 due 13 Sept. @ 5pm*  
  *Oral Presentations*  
  Further Extension 2 topics |
7. ASSESSMENT

<table>
<thead>
<tr>
<th>Assessment Task</th>
<th>Length</th>
<th>Weight</th>
<th>Student Learning Outcomes Assessed</th>
<th>AITSL Professional Graduate Teaching Standards Assessed</th>
<th>National Priority Area Elaborations</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 1 Evaluation</td>
<td>2500 words or equivalent</td>
<td>40%</td>
<td>1 – 4</td>
<td>1.3, 1.5, 2.5, 2.6, 3.6</td>
<td>C.3, C.4, C.5, C.6, C.8, C.13, C.14, D.6, D.7, D.8, D.9, D.10, D.11, D.12, D.13, D.14, D.15, D.16, D.17, D.18, D.19, E.1, E.4, E.5, E.6, E.8, F.5, F.6, F.7</td>
<td>Week 4 16 Aug @ 5pm</td>
</tr>
<tr>
<td>Assessment 2 Assessment and Reporting</td>
<td>3500 words or equivalent</td>
<td>60%</td>
<td>1 – 6</td>
<td>2.1, 2.3, 2.4, 2.5, 2.6, 2.8, 2.9, 3.1, 3.2, 3.5, 5.1, 5.2, 5.3, 5.5</td>
<td>A.5, A.8, B.1, B.2, B.4, B.5, B.6, B.7, B.10, C.3, C.4, C.5, C.6, C.8, C.13, C.14, D.6, D.7, D.8, D.9, D.10, D.11, D.12, D.13, D.14, D.15, D.16, D.17, D.18, D.19, E.1, E.4, E.5, E.6, E.8, F.5, F.6, F.7</td>
<td>Week 8 13 Sept. @ 5pm</td>
</tr>
</tbody>
</table>

Students are required to follow their lecturer’s instructions when submitting their work for assessment. All assessment will be submitted online via Moodle by 5pm. Students no longer need to use a cover sheet. Students are also required to keep all drafts, original data and other evidence of the authenticity of the work for at least one year after examination. If an assessment is mislaid the student is responsible for providing a further copy. Please see the Student Policies and Procedures for information regarding submission, extensions, special consideration, late penalties and hurdle requirements etc.

**Assessment 1: Evaluation of a Lesson**

Choose one mathematics lesson you taught during the Practicum and evaluate it. It must be an actual lesson plan you used not a revised or modified version. In your evaluation of the lesson, identify any significant experiences students had during the lesson, reflect on what you did as the teacher, indicate any significant decision-making moments in the lesson and explore any alternative strategies which could have been used. Include details of specific literacy and numeracy needs and strategies needed to inform the teaching of Mathematics. Validate your decisions by referring to the literature and the recommended readings.

For the mathematics lesson you chose, you should:
1. **Briefly** describe the context of the lesson (e.g. the topic, NESA Mathematics syllabus reference(s), and class).

2. **Explain** how you met the needs of all students in your class, including students with special education needs, non-English speaking background students, students with particular learning needs and students needing differentiated materials including age appropriate learning for each stage of development.

3. **Give** the original lesson plan using the template in the handbook (include rationale, outcomes, and sequence of activities).

4. **Critically** examine what worked and why it worked.

5. **Critically** examine what did not work, and why it did not.

6. **Reflect** on what you would do differently to improve your lesson if you could teach the lesson again. Include comments from your mentor and how you addressed any concerns.

7. **Reflect** on how you used ICT in your lessons and how it assisted with the development of conceptual understanding.

8. You need to demonstrate your knowledge of the outcomes and how you assessed the current level of understanding of your students, how you assessed that the outcomes had been met or how you recorded and monitored student progress for your chosen lesson.

This assignment should help prepare you for the collection of material in your first year of teaching and is indicative of the kinds of evidence you will be required to show the NSW Institute of Teachers to attain Professional Competence.
### SPECIFIC CRITERIA

#### Understanding of the question or issue and the key concepts involved
- Understanding of the task and its relationship to relevant areas of theory, research and practice
- Rationale linked to outcomes in the syllabus

#### Depth of analysis and/or critique in response to the task
- Ability to plan and assess for effective learning using knowledge of the NSW syllabus documents or other curriculum requirements of the Education Act
- Reasons for the choice of teaching and learning strategies effectively explained
- Demonstration of knowledge, respect and understanding of the social, ethnic, cultural and religious backgrounds of students and how these factors may affect learning
- Demonstrates knowledge of resources that will engage and extend all students
- Clear statement of syllabus outcomes
- Lesson goal(s) clearly linked to syllabus outcomes and chosen strategies
- Effective use of student group structures to address teaching and learning goals

#### Familiarity with and relevance of professional and/or research literature used to support response
- Reference specifically to material, research and ideas presented in method lectures, readings from the prescribed text and other sources, relevant lectures from the combined method lecture series and from the professional experience lectures on diversity
- Reference all sources of your work including yourself if you are the author

#### Structure and organisation of response
- Well organised and useful for future teaching

#### Presentation of response according to appropriate academic and linguistic conventions
- Clarity and accuracy in use of key terms and concepts in mathematics teaching
- Appropriate academic conventions are used

### GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME

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Lecturer: [Name]
Date: [Date]
Recommended: [Score] /20 (FL PS CR DN HD) Weighting: 40%

NB: The ticks in the various boxes are designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualize and/or amend these specific criteria. The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.
Assessment 2: Assessment and Reporting

During your first practicum you should have observed how the Mathematics Department in your school programs, plans, moderates and administers assessment, and reports to students and parents. This includes both formative and summative assessment.

Write a reflection in which you discuss:
- the planning and programming of units of work and assessment
- the range of types of tasks used by teachers
- how effectively and explicitly tasks are linked to outcomes and teaching programs
- the methods used to give students feedback
- record-keeping processes
- reporting to students, parents and caregivers
- how assessment tasks influenced subsequent lessons
- your own contribution to all of these aspects
- your experience of ICT used
- school policies for classroom management.

You should refer to specific assessment tasks in which you were involved and you should present TWO samples of student work to illustrate your comments. You should also refer to your course texts and any relevant academic research.

NB: You MUST remove any identifying material from your samples (e.g. – name of the school or student).

Assessment criteria

You will be assessed on how well you:
1. Demonstrate your awareness of how educational processes in your practicum school meet the needs of all students including:
   a. Aboriginal and Torres Strait Islander students
   b. Students with Special Education needs
   c. Non-English Speaking Background students.
2. Show your knowledge and understanding of the learning needs of the students in the school.
3. Demonstrate your understanding of the process of planning and programming of learning and assessment.
4. Discuss your observations of other teachers and their strategies.
5. Refer to specific and appropriate school data.
6. Support your comments with references to appropriate research.
7. Express yourself in grammatically correct standard Australian English.
**SPECIFIC CRITERIA**

**Understanding of the question or issue and the key concepts involved**
- Understanding of the task and its relationship to relevant areas of theory, research and practice.
- Rationale linked to outcomes in the syllabus.

**Depth of analysis and/or critique in response to the task**
- Ability to plan and assess for effective learning using knowledge of the NSW syllabus documents or other curriculum requirements of the education act.
- Reasons for the choice of teaching and learning strategies effectively explained.
- Demonstration of knowledge, respect and understanding of the social, ethnic, cultural and religious backgrounds of students and how these factors may affect learning.
- Demonstrates knowledge of resources that will engage and extend all students.
- Clear statement of syllabus outcomes.
- Lesson goal(s) clearly linked to syllabus outcomes and chosen strategies.
- Effective use of student group structures to address teaching and learning goals.

**Familiarity with and relevance of professional and/or research literature used to support response**
- Reference specifically to material, research and ideas presented in method lectures, readings from the prescribed text and other sources, relevant lectures from the combined method lecture series and from the professional experience lectures on diversity.
- Reference all sources of your work including yourself if you are the author.

**Structure and organisation of response**
- Presentation is logically structured, organised and professionally carried out.

**Presentation of response according to appropriate academic and linguistic conventions**
- Clarity and accuracy in use of key terms and concepts in mathematics teaching.
- Appropriate academic conventions are used.

**GENERAL COMMENTS/RECOMMENDATIONS FOR NEXT TIME**

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**Lecturer**

**Recommended:** /20 (FL PS CR DN HD)

**Date**

**Weighting:** 60%

**NB:** The ticks in the various boxes are designed to provide feedback to students; they are not given equal weight in determining the recommended grade. Depending on the nature of the assessment task, lecturers may also contextualise and/or amend these specific criteria. The recommended grade is tentative only, subject to standardisation processes and approval by the School of Education Learning and Teaching Committee.
8. RESOURCES

Course Texts


All students must have copies of the following NESA Mathematics syllabuses:

- Mathematics 7-10 Syllabus (2012),
- Stage 6 Syllabus, Mathematics, Preliminary and HSC Courses (current and proposed)

It is possible to download these syllabuses from the NESA website http://www.boardofstudies.nsw.edu.au/ or https://syllabus.bostes.nsw.edu.au/

Further readings

Readings on the UNSW Moodle course page include (but not limited to):


Henderson, R. (2012). Teaching Literacies. Pedagogies and Diversity in the Middle Years, Oxford University Press, Australia


Professional websites for Mathematics teachers:
www.mansw.nsw.edu.au
www.aamt.com.au

http://www.boardofstudies.nsw.edu.au
https://syllabus.bostes.nsw.edu.au/

NESA decides what is to be taught, and examined. It also provides information about syllabus development, assessment requirements and examination timetables. The main function of this site is to provide teachers and students useful reference material, links to various related sites and an annotated bibliography of texts relevant to the syllabus and to Mathematics teaching.
http://www.det.nsw.edu.au - The Department of Education and Training. The DET has the responsibility for administering and staffing government schools and producing support material which can be found at:


www.cecnsw.catholic.edu.au - The Catholic Education Commission

www.curriculum.edu.au - A part of the Curriculum Corporation of Victoria website
This is a tutorial which is useful if you are uncertain of how to use the internet and/or want ideas for using the internet in the classroom, teaching students how to explore English sites etc. Well worth a browse.

http://www.nswteachers.nsw.edu.au - The teaching standards detailed on the NSW Institute of Teachers website

http://www.naplan.edu.au/ - The National Assessment Program Literacy and Numeracy website
http://www.acara.edu.au/ - The Australian Curriculum, Assessment and Reporting Authority