



# TEP 430

## Mathematics in the Secondary School II

S2 Day 2013

*Education*

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## General Information

Unit convenor and teaching staff Unit Convenor Michael Cavanagh <a href="mailto:michael.cavanagh@mq.edu.au">michael.cavanagh@mq.edu.au</a> Contact via <a href="mailto:michael.cavanagh@mq.edu.au">michael.cavanagh@mq.edu.au</a>
Credit points 3
Prerequisites TEP429(P) and (TEP401(S) or TEP414(S))
Corequisites TEP402
Co-badged status
Unit description This unit continues the examination of the secondary mathematics curriculum and its teaching. There are three main themes: understanding the central concepts of school calculus; teaching methods, including unit planning and the role of assessment in mathematics education; and practical and professional issues arising from students' concurrent professional experience in TEP402. Particular emphasis is given to learning and teaching mathematics in years 11 and 12. Please consult the Secondary TEP Guide for recommended prior studies.

## Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at <https://www.mq.edu.au/study/calendar-of-dates>

## Learning Outcomes

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

- Demonstrate knowledge and understanding of research into how students learn and the implications for teaching
- Demonstrate knowledge and understanding of the concepts, substance and structure of the content and strategies of Stage 6 of the mathematics syllabuses
- Plan lesson sequences using knowledge of student learning, content and effective teaching strategies

Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning

Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

## Assessment Tasks

Name	Weighting	Due
<u>Unit planning</u>	25%	September 9
<u>Test development</u>	45%	October 14
<u>Unit portfolio</u>	30%	November 11

### Unit planning

Due: **September 9**

Weighting: **25%**

Students plan a unit of work and provide detailed lesson plans for a sequence of 3 lessons within the unit

On successful completion you will be able to:

- Demonstrate knowledge and understanding of the concepts, substance and structure of the content and strategies of Stage 6 of the mathematics syllabuses
- Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
- Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning

### Test development

Due: **October 14**

Weighting: **45%**

Students design a unit test and accompanying mark scheme

On successful completion you will be able to:

- Demonstrate knowledge and understanding of the concepts, substance and structure of the content and strategies of Stage 6 of the mathematics syllabuses
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

## Unit portfolio

Due: **November 11**

Weighting: **30%**

Students submit work relating to various tasks completed during the session

On successful completion you will be able to:

- Demonstrate knowledge and understanding of research into how students learn and the implications for teaching
- Demonstrate knowledge and understanding of the concepts, substance and structure of the content and strategies of Stage 6 of the mathematics syllabuses
- Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning

## Delivery and Resources

The unit is taught in 12 three-hour workshops: 4-7pm in C5A 222

The workshops are compulsory.

Students are expected to use ICT tools and devices in workshops and in preparation of their assignments. We will focus on the use of such tools for teaching the Stage 6 Mathematics syllabuses.

The main change to previous offerings in previous years is the inclusion of the Program Builder (Board of Studies, NSW) and the content of the Australian Curriculum - Mathematics.

## Unit Schedule

### Module 1 (Weeks 1-4)

Learning and teaching differential calculus

Unit planning

### Module 2 (Weeks 4-6)

Assessment and test development

### Module 3 (Weeks 7-11)

Learning and teaching integral calculus

JLPs

### Module 4 (Weeks 12-13)

Teaching for understanding

JLPs

## Policies and Procedures

Macquarie University policies and procedures are accessible from [Policy Central](#). Students should be aware of the following policies in particular with regard to Learning and Teaching:

Academic Honesty Policy [http://www.mq.edu.au/policy/docs/academic\\_honesty/policy.html](http://www.mq.edu.au/policy/docs/academic_honesty/policy.html)

Assessment Policy <http://www.mq.edu.au/policy/docs/assessment/policy.html>

Grading Policy <http://www.mq.edu.au/policy/docs/grading/policy.html>

Grade Appeal Policy <http://www.mq.edu.au/policy/docs/gradeappeal/policy.html>

Grievance Management Policy [http://mq.edu.au/policy/docs/grievance\\_management/policy.html](http://mq.edu.au/policy/docs/grievance_management/policy.html)

Special Consideration Policy [http://www.mq.edu.au/policy/docs/special\\_consideration/policy.html](http://www.mq.edu.au/policy/docs/special_consideration/policy.html)

In addition, a number of other policies can be found in the [Learning and Teaching Category](#) of Policy Central.

## Student Support

Macquarie University provides a range of Academic Student Support Services. Details of these services can be accessed at: <http://students.mq.edu.au/support/>

### UniWISE provides:

- Online learning resources and academic skills workshops [http://www.students.mq.edu.au/support/learning\\_skills/](http://www.students.mq.edu.au/support/learning_skills/)
- Personal assistance with your learning & study related questions.
- The Learning Help Desk is located in the Library foyer (level 2).
- Online and on-campus orientation events run by Mentors@Macquarie.

## Student Services and Support

Students with a disability are encouraged to contact the [Disability Service](#) who can provide appropriate help with any issues that arise during their studies.

## Student Enquiries

Details of these services can be accessed at <http://www.student.mq.edu.au/ses/>.

## IT Help

If you wish to receive IT help, we would be glad to assist you at <http://informatics.mq.edu.au/help/>.

When using the university's IT, you must adhere to the [Acceptable Use Policy](#). The policy applies to all who connect to the MQ network including students and it outlines what can be done.

## Graduate Capabilities

### Capable of Professional and Personal Judgement and Initiative

We want our graduates to have emotional intelligence and sound interpersonal skills and to demonstrate discernment and common sense in their professional and personal judgement. They will exercise initiative as needed. They will be capable of risk assessment, and be able to handle ambiguity and complexity, enabling them to be adaptable in diverse and changing environments.

This graduate capability is supported by:

#### Learning outcomes

- Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

#### Assessment task

- Test development

### Discipline Specific Knowledge and Skills

Our graduates will take with them the intellectual development, depth and breadth of knowledge, scholarly understanding, and specific subject content in their chosen fields to make them competent and confident in their subject or profession. They will be able to demonstrate, where relevant, professional technical competence and meet professional standards. They will be able to articulate the structure of knowledge of their discipline, be able to adapt discipline-specific knowledge to novel situations, and be able to contribute from their discipline to inter-disciplinary solutions to problems.

This graduate capability is supported by:

#### Learning outcomes

- Demonstrate knowledge and understanding of research into how students learn and the implications for teaching
- Demonstrate knowledge and understanding of the concepts, substance and structure of the content and strategies of Stage 6 of the mathematics syllabuses
- Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

## Assessment tasks

- Unit planning
- Test development
- Unit portfolio

## Critical, Analytical and Integrative Thinking

We want our graduates to be capable of reasoning, questioning and analysing, and to integrate and synthesise learning and knowledge from a range of sources and environments; to be able to critique constraints, assumptions and limitations; to be able to think independently and systemically in relation to scholarly activity, in the workplace, and in the world. We want them to have a level of scientific and information technology literacy.

This graduate capability is supported by:

## Learning outcomes

- Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

## Assessment tasks

- Unit planning
- Test development
- Unit portfolio

## Creative and Innovative

Our graduates will also be capable of creative thinking and of creating knowledge. They will be imaginative and open to experience and capable of innovation at work and in the community. We want them to be engaged in applying their critical, creative thinking.

This graduate capability is supported by:

## Learning outcome

- Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning

## Assessment tasks

- Unit planning
- Unit portfolio

## Effective Communication

We want to develop in our students the ability to communicate and convey their views in forms effective with different audiences. We want our graduates to take with them the capability to read, listen, question, gather and evaluate information resources in a variety of formats, assess, write clearly, speak effectively, and to use visual communication and communication technologies as appropriate.

This graduate capability is supported by:

### Learning outcomes

- Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
- Demonstrate understanding of assessment strategies, including formal and informal, diagnostic, formative and summative approaches to assess student learning

### Assessment tasks

- Unit planning
- Test development
- Unit portfolio