



The University of Southern Queensland

Course Specification

Description: Mathematics for Teachers

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
MAC	1901	14403	2, 2002	ONC	1.00	TWMBBA

Academic Group:	FOSCI
Academic Org:	FOS003
HECS Band:	2
ASCED Code:	010101

STAFFING

Examiner: Leo Crameri
Moderator: Tim Passmore

RATIONALE

Prospective teachers of mathematics need a substantive and comprehensive knowledge of the content and discourse of mathematics if they are to develop in their students a mathematical power - the ability to explore, conjecture and reason logically and to use a variety of mathematical methods effectively to solve problems. They also need a level of understanding and appreciation of mathematics higher than that expected of students at primary and junior high schools. Consequently, a clearer perspective of the role and importance of mathematics will be gained. This course is designed to meet the needs of preservice teachers of Years 1 to 7 and will be of benefit also to preservice teachers of Years 8 and 9.

SYNOPSIS

Students will be able to develop and extend their knowledge and understanding of mathematics and school mathematics through a variety of experiences involving problem solving, mathematical communication, reasoning and connecting mathematics, its ideas and its applications in the world around us. By working collaboratively and independently, students will be encouraged to think mathematically, and through many success experiences, gain confidence in solving mathematical problems. The content of the course will include the following topics: problem solving; inductive and deductive reasoning; numeration systems; number systems and number sense; describing, analysing and graphing data; geometry and topology.

OBJECTIVES

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

- demonstrate a knowledge and understanding of various fundamental mathematical concepts and procedures and the connections among them;
- demonstrate a knowledge of problem solving strategies;
- reason mathematically and solve problems;
- communicate mathematical ideas effectively at different levels of formality;
- analyse real-world situations through the use of mathematical concepts and processes;
- use calculators and computers as tools to represent mathematical ideas, to construct different representations of mathematical concepts and to solve problems;
- show an appreciation of the dynamic nature of mathematics, the contributions of different cultures and individuals to the development of mathematics and the important role that mathematics plays in culture and society today;
- work collaboratively, independently and confidently in doing mathematics; and
- display a disposition to explore mathematical ideas and solve problems.

TOPICS

Description	Weighting (%)
1. Mathematical reasoning and problem solving	30.00
2. Numeration systems; Numbers and their properties	40.00
3. Working with data, geometry and topology	30.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at <http://bookshop.usq.edu.au> by entering the author or title of the text.

Text to be advised.

Bennett A B Jr & Nelson L T 2001, *Mathematics for Elementary Teachers A Conceptual Approach*, 5th edition, McGraw-Hill, Boston.

Bennett A B Jr & Nelson L T 2001, *Mathematics for Elementary Teachers An Activity Approach*, 5th edition, McGraw-Hill, Boston.

Study Book 2002, *Course MAC1901 Mathematics for Teachers*, USQ Distance Education Centre, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Australian Education Council 1991, *A National Statement on Mathematics for Australian Schools*, Curriculum Corporation, Carlton, Vic.

Bassarear, T 2001, *Mathematics for Elementary School Teachers*, 2nd edition, Houghton Mifflin, Boston.

Musser, G.L. & Burger, W.F 1997, *Mathematics for Elementary Teachers*, Prentice Hall, Upper Saddle River, NJ.

Sonnabend, T 1997, *Mathematics for Elementary Teachers: An Interactive Approach*, 2nd edition, Saunders College Publishing, Fort Worth.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	20
Directed Study	45
Examinations	3
Lectures	26
Private Study	45
Tutorial	26

ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
WORKSHOP PROBLEM-SOLVING	20.00	20.00	Y	22 Jul 2002 (see note 1)
ASSIGNMENT A	30.00	10.00	Y	22 Aug 2002
ASSIGNMENT B	30.00	10.00	Y	19 Sep 2002
PART A 3 HR RESTRICTED EXAM	20.00	15.00	Y	END S2 (see note 4)
PART B OF ABOVE 3HR RESTRICTED	70.00	45.00	Y	22 Jul 2002 (see note 5)

NOTES:

1. Refer to Examiner for information about assignment due dates.
4. Examination dates will be available during the Semester. Please refer to Examination timetable when published.
5. Examination dates will be available during the Semester. Please refer to Examination timetable when published.

OTHER REQUIREMENTS

- 1 Attendance Requirements: It is the student's responsibility to participate actively in all classes scheduled for them, and to study all material provided to them or required to be accessed by them to maximize their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

- 2 Requirements to Complete Each Assessment Item Satisfactorily : (a) To complete each of the assignments and workshops satisfactorily, students must obtain at least half of the marks available for each. (b) To complete the examinations satisfactorily; students must obtain at least half of the marks available for each examination.
- 3 Minimum Requirements to Pass the Course: To be assured of a pass in this course, students must (i) obtain an overall mark of at least 50%; (ii) obtain at least 50% of the marks available in the examination(s); and (iii) satisfactorily complete each assessment item.
- 4 Grading: Final grades for students will be determined by the addition of the marks obtained in each assessment item, weighted as in the Assessment Details. When the total, weighted score on the five items of assessment lies just below the cut off between two grade levels, the grade awarded for the course will be decided on the score attained in the major item of assessment, that is, the examination.
- 5 Assignments: The due date for an assignment is the date by which a student must despatch it to the University of Southern Queensland. The onus is on the student to provide proof of the despatch date, if requested by the examiner. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the examiner. In accordance with the University's Policy on Assignments (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances. This policy may be found in the USQ Handbook, the Distance Education Student Guide and the Faculty of Sciences' Orientation Handbook for new on-campus students. All students are advised to study and follow the guidelines associated with this policy. An assignment, submitted after the due date without an extension approved by the examiner, will attract a penalty of 20 percent of the assigned mark for each working day (or part thereof) that the assignment is late.
- 6 Supplementary and Deferred Examinations: Students who obtain an overall passing mark, but who do not perform satisfactorily in the examination, may, at the discretion of the examiner, be granted a supplementary examination. Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items. Any supplementary or deferred examinations for this course will be held during the examination period for the following semester 3.
- 7 Examinations: Candidates should be aware that the University has policies and regulations (Regulations 5.6.2.2) about the use of unfair means and electronic devices in an examination and they should refer to them to determine whether or not actions they intend to take are acceptable to the University. Restricted Examination: candidates will be allowed access only to specific materials in a restricted examination. The only materials that candidates may use in the restricted examination are (a) writing materials (non-electronic and free from material which could give the student an unfair advantage in the examination); (b) non-programmable calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination. With the approval of the examiner, candidates may take an appropriate non-electronic translation dictionary into the examination. This will be subject to perusal and may be removed from the candidate's possession until appropriate disciplinary action is completed if found to contain material that could give the candidate an unfair advantage. A list of the materials candidates

may access in the restricted examination will be on the frontispiece of the examination paper.
