



The University of Southern Queensland

## Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.

Please consult the web for updates that may occur during the year.

### Description: Foundations of Numeracy

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
EDX	1280	91398	2, 2009	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOEDU
<b>Academic org:</b>	FOE002
<b>Student contribution band:</b>	National Priority Teaching
<b>ASCED code:</b>	070100

### STAFFING

Examiner: Romina Jamieson-Proctor

Moderator: John Green

### RATIONALE

Numeracy is a core learning area of the curriculum and is considered to be one of the building blocks of education for work and life. Numeracy is closely linked to mathematics, and involves using "some mathematics to achieve some purpose in a particular context" (DEST, 2000, p.14). To be numerate is to use mathematics effectively to meet the general demands of life at home, in paid work, and for participation in community and civic life. In school education, numeracy is a fundamental component of learning, performance, discourse and critique across all areas of the curriculum. It involves the disposition to use, in context, a combination of underpinning mathematical concepts and skills from across the discipline (numerical, spatial, graphical, statistical and algebraic); mathematical thinking and strategies; general thinking skills; and grounded appreciation of context (AAMT, 1997, p.15). Mathematics education has grown to become a recognised and significant research area in education. Its theories are based on analysis of the structure of mathematical tasks, the psychology of teaching and learning, and an understanding of the effect of social context on learning. Research on expertise in teaching mathematics has shown that teachers of all year levels require general pedagogic knowledge, specific mathematics pedagogic-content knowledge, and mathematics subject-matter knowledge. All three of these knowledge areas are important in this course.

### SYNOPSIS

Foundations of Numeracy is a shared course for the specialisations of Early Childhood, Primary / Middle and Special Education and will focus on aspects of teaching, planning and assessing the number, patterns and algebra strands of the P-10 mathematics syllabus, underpinned by a clear understanding of relevant subject-matter knowledge and current theories of learning and teaching. An approach to teaching that is based on thinking strategies rather than rote procedures will be emphasised. Consequently, methods of doing and teaching mathematics experienced during the course are likely to be different to those experienced in the students' own schooling. Past and present practices will be critically examined in the light of research findings, curriculum documents and teaching practice. The course also serves to ensure that students themselves have an appropriate

level of mathematical understanding and proficiency to undertake their professional roles. NOTE: Minimum enrolment numbers apply to this offering. Should enrolments not reach the minimum number required for on-campus study, students may be transferred to the EXT or WEB offering and advised of this change before semester commences.

## OBJECTIVES

The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of this course students will be able to:

1. demonstrate competence in the use of materials, language, symbols, games, structured activities and teaching aids for the development of mathematical concepts, skills and strategies related to number and numeration, and patterns and algebra [Item 1];
2. demonstrate personal competence in mathematical content that is relevant to the teaching of the mathematics strands covered in this course [Item 2];
3. understand and be able to explain by example the conceptual base of mathematical processes and structures that underpin the number and patterns and algebra strands of the syllabus [Item 3 and 4];
4. demonstrate an awareness of the desirability of fostering favourable attitudes towards involvement in mathematics and of the intellectual, behavioural and social actions required by children and their teachers in the construction of mathematical concepts, skills and strategies [Item 1,3 and 4];
5. demonstrate a knowledge of good planning and implementation practices in primary mathematics and an ability to analyse and reflect upon activities and learning sequences [Item 1, 3 and 4];
6. be confident, competent and enthusiastic teachers of mathematics who are able to articulate and justify their personal philosophy upon which they will ground their teaching of primary mathematics [Items 1, 2, 3 and 4].
7. demonstrate competence in and appropriate use of language and literacy, including spelling, grammar, punctuation and bibliographic referencing. (All assessment items.)

## TOPICS

	Description	Weighting (%)
1.	Current theories of teaching and learning mathematics	20.00
2.	Mathematics and numeracy pedagogy	20.00
3.	Numeration for whole numbers and fraction ideas	20.00
4.	Computation with whole numbers and fractions, mental and written	20.00
5.	Patterns and algebra	20.00

## TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For

costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Van de Walle, J 2007, *Elementary and middle school mathematics: teaching developmentally*, 6th edn, Pearson, Sydney.

(International Edition)

## 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.

Whether you are on, or off campus, the USQ Library is an excellent source of information

<http://www.usq.edu.au/library>. The gateway to education resources is here ...

<http://www.usq.edu.au/library/faculties/education/default.htm>

Booker, G, Bond, D, Sparrow, L, & Swan, P 2004, *Teaching primary mathematics*, 3rd edn, Pearson, Sydney.

Burnett, J, Irons, C & Turton, A 2007, *The book of facts: addition*, Origo Education, Brisbane.

Burnett, J & Irons, C 1998, *Teaching number facts using a number sense approach: multiplication and division*, Prime Education, Brisbane.

De Klerk, J 1999, *Illustrated maths dictionary*, 3rd edn, Longman, Brisbane.

Department of Education, Queensland 2004, 'Years 1 to 10 mathematics syllabus' (Available:

[http://www.qsa.qld.edu.au/downloads/learning/kla\\_math\\_syll.pdf](http://www.qsa.qld.edu.au/downloads/learning/kla_math_syll.pdf)) [Accessed 14 05 2009]

(This new outcomes-based syllabus along with elaborations and interpretative Powerpoint presentations can be obtained from the course website or the Queensland Studies Authority website at [http://www.qsa.qld.edu.au/downloads/learning/kla\\_math\\_syll.pdf](http://www.qsa.qld.edu.au/downloads/learning/kla_math_syll.pdf))

Reys, RE, Lindquist, MM, Lambdin, DV, Smith, NL, & Suydam, MN 2006, *Helping children learn mathematics*, 8th edn, John Wiley & Sons, Brisbane.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Directed Study	70.00
Independent Study	70.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ITEM 2 NUMERACY BENCHMARK TEST	1.00	0.00	21 Aug 2009 (see note 1)
ITEM 1 FOLIO OF TEACH RESOURCE	50.00	50.00	19 Oct 2009 (see note 2)
ITEM 4 - EXAMINATION	50.00	50.00	END S2 (see note 3)

### NOTES

1. Students must achieve a minimum score of 75% in the Numeracy Benchmark Test. Students will have more than one opportunity to submit this item. Due in Week 5. Students will be notified in Week 1 about the details of when the test will be scheduled.
2. Group Assessment continuously submitted weeks 1-13.
3. Students will be advised of the examination date for this course when the official examination timetable for the semester has been finalised.

## IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:  
ONC: It is the students' responsibility to attend and participate appropriately in all activities scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration EXTERNAL AND WEB MODE: There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them including discussion fora scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To satisfactorily complete an individual assessment item a student must achieve at least 50% of the marks.
- 3 Penalties for late submission of required work:  
If students submit assignments after the due date without (prior) approval of the examiner then a penalty of 5% of the total marks gained by the student for the assignment may apply for each working day late up to ten working days at which time a mark of zero may be recorded. No assignments will be accepted after model answers have been posted.
- 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of receiving a passing grade a student must achieve at least 50% of the total weighted marks available for the course and achieve a minimum score of 75% in the Numeracy Benchmark Test
- 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the aggregate of the weighted marks obtained for each of the summative assessment items in the course.
- 6 Examination information:  
Closed Examination: Candidates are allowed to bring only writing and drawing instruments into the Closed examination.

- 7 Examination period when Deferred/Supplementary examinations will be held:  
Any Deferred or Supplementary examinations for this course will be held during the next examination period.
- 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm>

## **OTHER REQUIREMENTS**

- 1 Students will require access to e-mail and have Internet access to UConnect for this course.
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