



The University of Southern Queensland

## Course specification

### Description: Mathematics in Early Childhood

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
TEA	3105	45104	2, 2005	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOEDU
<b>Academic org:</b>	FOE004
<b>Student contribution band:</b>	National Priority Teaching
<b>ASCED code:</b>	070101

### STAFFING

Examiner: Noel Geoghegan

Moderator: Shirley O'Neill

### REQUISITES

Pre-requisite: TEA1101 and TEA1102 and TEA2108 and TEA2109 and Students must be enrolled in Program: BECS

### RATIONALE

Children develop many sophisticated mathematical ideas long before they enter formal schooling. Appreciation of the early stages of mathematical thinking and awareness of ways to sustain the continuity of each child's developing mathematical ideas are foundational to teaching mathematics in the early years. Teachers' decisions about the content and character of educational experiences have important consequences on children's emerging mathematical thinking. A problem-centred approach to learning, and engagement of children in meaningful experiences are hallmarks of a program that supports developing mathematical thinking.

### SYNOPSIS

The course is based upon the study of children as they emerge as mathematical thinkers. While revisiting some of their own mathematical concepts early childhood educators will gain first-hand knowledge of the concepts and processes involved in working with a community of early mathematical learners. The content areas of Number, Operation, Pattern, Spatial Relationships, Measurement, and Data Analysis will be explored. Students will be challenged by working with mathematics at their own level yet at the same time relating the processes of learning and teaching to the young child's context. By exploring ways to become creative problem solvers students will develop their own mathematics as well as gain insight into the learning and teaching of mathematics in the early years. This course explores the characteristic developmental processes and range of mathematical ideas of young children for setting appropriate goals in mathematics education in the early childhood years. **IMPORTANT NOTE:** Working with Children: State law in Queensland requires that all adults (including university students, pre-service educators, trainers, vocational teachers, industry educators) working with children under the age of 18, in the State of Queensland\*, obtain approval before commencing such work. Many education

courses include a practical component (professional experience, project work, research, assessment etc.) that may require engagement with children under the age of 18. It is your responsibility to ensure that you possess a current suitability card (Blue Card) before commencing any practical components of this course. **DO NOT PARTICIPATE IN ANY PRACTICAL EXPERIENCE WITH CHILDREN UNDER 18 UNLESS YOU POSSESS A CURRENT 'BLUE CARD'**. For further information:

<http://www.childcomm.qld.gov.au/employment/bluecard/informationSheets.html> \*If you are undertaking practical experience outside the State of Queensland, Australia you should check local requirements.

## OBJECTIVES

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

1. develop early childhood mathematics education programs based on local, national and international perspectives
2. critically analyse research and curriculum development that relates to mathematics education in early education
3. enhance access and equity in early childhood mathematics
4. demonstrate ability to plan effectively for a problem-centered and creative mathematics learning environment
5. be familiar with the organisation required for effective mathematics learning environments in the early years
6. develop a repertoire of mathematics concepts and teaching strategies appropriate for facilitating early mathematical thinking.

## TOPICS

	Description	Weighting (%)
1.	Mathematics curriculum documents	5.00
2.	Theories related to mathematics curriculum development in early childhood classrooms	10.00
3.	Emerging trends and recent perspectives related to early childhood mathematics curricula	10.00
4.	Planning and designing multilevel mathematics programs in the early years	5.00
5.	Programming for the integration of mathematics with other subjects	5.00
6.	The role of the educator in facilitating mathematics learning	10.00
7.	Leadership and advocacy for equity in mathematics education	5.00
8.	The emergence of mathematical language	5.00
9.	The place of creativity in the emergence of mathematical thinking	10.00
10.	Problem-centred learning in early mathematical experiences	10.00
11.	Appropriate resources for facilitating learning and teaching in the early years	5.00
12.	Number, measurement, space and data handling; early conceptual development	10.00

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| 13. | The use of information technology in the early years of mathematical development | 5.00 |
| 14. | The development of positive attitudes in thinking mathematically                 | 5.00 |

### **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).

Sperry Smith, S 2001, *Early childhood mathematics*, 2nd edn, Allyn and Bacon, Boston, MA.

### **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.

Bobis, J, Mulligan, J, Lowrie, T & Taplin, M 1999, *Mathematics for children*, Prentice Hall, Sydney.

Griffiths, R 1994, *Mathematics and play, The excellence of play*, Open University Press, Philadelphia.

Kliman, M & Russel, SJ 1998, *Building number sense*, Dale Seymour, Cambridge, MA.

Mannigel, D 1998, *Young children as mathematicians*, 2nd edn, Social Science Press, Wentworth Falls.

Moomaw, S & Hieronymous, B 1995, *More than counting: whole math activities for preschool and kindergarten*, Redleaf Press, St Paul, MN.

National Council of Teachers of Mathematics 1998, *Curriculum and evaluation standards for school mathematics*, NCTM, Reston, VA.

National Council of Teachers of Mathematics 1994, , *Teaching Children Mathematics (1994-2002)*, Reston, VA.

(This journal was called The Arithmetic Teacher prior to 1994 and will be a useful journal as a reference for this course.)

Perry, B & Conroy, J 1994, *Early childhood and primary mathematics*, Harcourt Brace, Sydney.

Richardson, K 1997, *Math time: the learning environment*, Educational Enrichment, Norman, OK.

Shaw, J & Blake, S 1998, *Mathematics for young children*, Prentice Hall, Columbus, OH.

Yelland, N, Butler, D & Diezmann, C 1999, *Early mathematical explorations*, Pearson Publishing Solutions, Needham Heights, MA.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	45.00
Directed Study	60.00
Private Study	60.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
PAPER ON MATHEMATICS IN EC	40.00	40.00	19 Jul 2005 (see note 1)
PROFESSIONAL EXPERIENCE	1.00	0.00	19 Jul 2005 (see note 2)
PROFESSIONAL EXPERIENCE FOLDER	1.00	0.00	19 Jul 2005 (see note 3)
EXAMINATION	60.00	60.00	END S2 (see note 4)

### NOTES

1. The examiner will advise the due date for this assessment item.
2. Professional Experience dates as per Professional Experience timetable. A value of one (1) indicates you have passed the professional experience component. A value of zero (0) indicates you have not passed the professional experience component.
3. The examiner will advise the due date of the Professional Experience Folder.
4. Students will be advised of the examination date for this course when the official examination timetable for semester 2 2005 has been finalised.

## IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:  
It is the student's responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) 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. Students must complete the set number of days of Professional Experience as fulfilment of the Department of Families requirements. To ensure that students can satisfy the objectives of the Professional Experience component of the course, attendance and active participation in lectures and tutorials in this course prior to undertaking Professional Experience is highly recommended.
- 2 Requirements for students to complete each assessment item satisfactorily:  
To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.
- 3 Penalties for late submission of required work:  
If assignments are submitted after the due date without an approved extension of time, University penalties will be applied (refer to the University's assignment extension policy (Regulation 5.6.1)).
- 4 Requirements for student to be awarded a passing grade in the course:

To be assured of a passing grade, students must demonstrate that they have achieved the minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the Professional Experience; (ii) satisfactorily completing the Professional Experience folder; and (iii) obtaining at least 50% of the total weighted marks available for all summative assessment items.

- 5 Method used to combine assessment results to attain final grade:  
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.
- 6 Examination information:  
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the 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> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the examiner.
- 2 Students must retain a copy of each item submitted for assessment. This must be produced within twenty-four (24) hours of receipt of request being made by the examiner. The student must retain this copy until the grade for this course has been finalised.
- 3 In accordance with the University's assignment extension policy (Regulation 5.6.1), the examiner may grant an extension of the due date of an assignment in extenuating circumstances.
- 4 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media. The Faculty will NOT accept submission of assignments by facsimile. Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.
- 5 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded the temporary grade: IM (Incomplete - Make up). An IM grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non-directed personal study.
- 6 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination); IDM (Incomplete - Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

- 7 When there is more than one marker for a single item of assessment, the distributed patterns and means for the different markers will be compared and marks adjusted if necessary.
- 8 Marking criteria are provided in course material as mark sheets/guides or as part of assignment specifications.
- 9 All summative assessment items must be submitted. Professional Experience and the Professional Experience Folder must be successfully completed and students must achieve at least 50% of the available weighted marks for the summative assessment items.
- 10 Summative assessment items will receive a numerical score. Any ungraded assessment requirement will receive a Pass, Fail or Incomplete.

### **OTHER REQUIREMENTS**

- 1 Students will require access to e-mail and Internet access to USQConnect for this course.
  - 2 Students are to use a recognised referencing system as specified by the examiner.
  - 3 **IMPORTANT NOTE: Working with Children: State law in Queensland requires that all adults (including university students, pre-service educators, trainers, vocational teachers, industry educators) working with children under the age of 18, in the State of Queensland\*, obtain approval before commencing such work. Many education courses include a practical component (professional experience, project work, research, assessment etc.) that may require engagement with children under the age of 18. It is your responsibility to ensure that you possess a current suitability card (Blue Card) before commencing any practical components of this course. DO NOT PARTICIPATE IN ANY PRACTICAL EXPERIENCE WITH CHILDREN UNDER 18 UNLESS YOU POSSESS A CURRENT 'BLUE CARD'. For further information:**  
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