



The University of Southern Queensland

## Course Specification

### Description: Emerging Numeracy 0 to 6 Years

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
ECE	2008	10738	1, 2002	EXT	1.00	TWMBBA

<b>Academic Group:</b>	FOEDU
<b>Academic Org:</b>	FOE004
<b>HECS Band:</b>	1
<b>ASCED Code:</b>	070101

### STAFFING

Examiner: Noel Geoghegan

Moderator: Deborah Geoghegan

### RATIONALE

From infancy, children are actively engaged in developing concepts which allow the organisation and categorisation of information. Through interaction with the environment during everyday experiences, children construct and test their concepts which include mathematical thinking. It is important that adults (including parents and caregivers) who are influential in the early years of a child's life have an understanding of how young children develop mathematical knowledge so that appropriate experiences may be provided. Additionally, an awareness of the development of mathematical language, fundamental mathematical concepts and skills, and the sequence of the discipline knowledge of mathematics is necessary for teachers to plan effective learning opportunities for children.

### SYNOPSIS

This course examines the development of mathematical concepts and skills in young children. Emphasis is given to the types of learning experiences which encourage the young child's exploration and development of the fundamental concepts, attitudes, and skills involved in emerging numeracy.

### OBJECTIVES

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

- demonstrate an understanding of the teaching and learning theories associated with mathematical development in young children;
- apply such theories to the development of appropriate learning and assessment activities;
- explain the role of language in teaching and learning mathematics;
- utilise an appropriate mathematical language for teaching and learning mathematics;

- describe a range of learning environments and materials for young children which enhance mathematical learning;
- explain the importance of play in mathematical learning;
- describe mathematical learning opportunities which may be provided through structured and unstructured preschool activities;
- critically evaluate various mathematical materials to assess their usefulness;
- identify the mathematical concepts, skills and attitudes which young children usually develop from birth to eight years;
- describe problem-solving applications for young children which foster their mathematical learning;
- identify the number skills developed by young children during the preoperational period;
- list ways in which parents may encourage mathematical learning in young children at home.

## TOPICS

Description	Weighting (%)
1. The development of math concepts	15.00
2. The role of language in teaching and learning methods	15.00
3. The role of materials in developing mathematics thinking	10.00
4. Fundamental mathematical concepts, attitudes and skills	10.00
5. Applications of fundamental concepts and skills	10.00
6. Mathematical learning through play	10.00
7. Higher-level activities and concepts	10.00
8. Young children and problem solving	15.00
9. Parents and maths in the home	5.00

## 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.

Charlesworth, R. (2000). *Experiences in math for young children*, Delmar, New York.

## 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.

The National Council of Teachers of Mathematics, Inc. (1990). *Mathematics for the young child*. Reston, VA: National Council of Teachers of Mathematics.

Australian Early Childhood Association. (1990). *Australian Journal of Early Childhood*, Vol. 15, No. 1.

- Baker, D., Semple, C. & Stead, T. (1990). *How big is the moon. Whole maths in action*, Melbourne: Oxford University Press.
- Baratta-Lorton, M. (1979). *Workjobs II: Number activities for early childhood*, Menlo Park, CA: Addison-Wesley Publishing Co.
- Bickmore-Brand, J. (Ed.). (1990). *Language in mathematics.*, Carlton South, VIC: Australian Reading Association.
- Edwards, D. (1990). *Maths in Context: A Thematic Approach*, South Yarra: Eleanor Curtain.
- Elliott, A. (1990). Computer-based mathematical experiences in an early intervention program. *Australian Journal of Early Childhood*, 15 (3), 37-45.
- Elliott, A. (1996). *Learning with computers*, Watson, ACT: Australian Early Childhood Association.
- Fleer, M. (1989). *Jig saw puzzles*, Watson, ACT: Australian Early Childhood Association.
- Fry, I. (1992). *Rediscovering unit blocks*, Watson, ACT: Australian Early Childhood Association, Inc.
- Hawthorne, W. (1992). *Young children and mathematics*, Watson, ACT: Australian Early Childhood Association Inc.
- Mannigel, D. (1998). *Young children as mathematicians*, (2nd ed.). Wentworth Falls, NSW: Social Science Press.
- Martin, R. & Wilkinson, L. (1989). *The language of mathematics: A teacher resource book*, Martin International.
- Moomaw, S. & Hieronymus, B. (1995). *More than counting*, St Paul: Redleaf.
- Morrow, J. (1989). *Maths is child's play*, Essex: Longman Group UK Ltd.
- Perry, B. & Conroy, J. (1994). *Early childhood and primary mathematics*, Sydney, NSW: Harcourt Brace.
- Skinner, P. (1990). *What's your problem?: Posing and solving mathematical problems in junior classes*, South Melbourne, VIC: Thomas Nelson Australia.
- Sperry-Smith, S. (2001). *Early childhood mathematics*, (2nd ed.). Boston: Allyn & Bacon.
- Tertini, J. (1989). *Maths games to make and play*, (New ed.). Sydney: Martin Educational.
- Tertini, J. (1995). *Mathematics for the very young: A resource book.*, (New ed.). Sydney: Martin Educational.
- Thyer, D & Maggs, J. (1991). *Teaching mathematics to young children*, (3rd ed.). London: Cassell Educational Limited.
- Welchman-Tischler, R. (1992). *How to use children's literature to teach mathematics*, Reston, Virginia: The National Council of Teachers of Math.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	45
Directed Study	80
Private Study	40

## ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
DESIGN & EVAL OF MATH EQUIP	999.00	40.00	Y	04 Mar 2002 (see note 1)
DESIGN OF A NUMERACY PROGRAM	999.00	60.00	Y	04 Mar 2002 (see note 2)

### NOTES:

1. Further details about the due dates are detailed in the assessment section of the Course Specifications.
2. Further details about the due dates are detailed in the assessment section of the Course Specifications.

## OTHER REQUIREMENTS

- 1 Graduate Diploma of Education (Child Care) students may include the Numeracy practicum as part of their total practicum hours. Other students will require some visits to centres (or other contact with Early Childhood Services) to complete the assignments.
  - 2 When there is more than one marker for a single item of assessment, the distribution patterns and means for the different markers will be compared and marks adjusted if necessary.
  - 3 Marking criteria are provided in course material as mark sheets/guides or as part of assignment specifications.
  - 4 Assessment items will be given a numerical score.
  - 5 Course Grades will be calculated by aggregating the weighted result or numerical score for each assessment item.
  - 6 All assessment items must be submitted. Assessment items must be passed overall.
  - 7 If assignments are submitted after the due date without an approved extension of time, University penalties for the assessment item may apply.
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