The University of Southern Queensland

Course specification

Description: Learning and Teaching Mathematics: Early Childhood Years

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
</tr>
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<tbody>
<tr>
<td>ECE</td>
<td>2020</td>
<td>34716</td>
<td>2, 2004</td>
<td>ONC</td>
<td>1.00</td>
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Academic group: FOEDU
Academic org: FOE004
Student contribution band: 1
ASCED code: 070101

STAFFING
Examiner: Noel Geoghegan
Moderator: Shirley O'Neill

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 pre-service teachers 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 working as 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.
OBJECTIVES

On completion of this course students will be able to:

1. develop early childhood mathematics education programs based on state, national and international perspectives;
2. analyse and critically research 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

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. P-3 mathematics curriculum documents</td>
<td>5.00</td>
</tr>
<tr>
<td>2. Theories related to mathematics curriculum development in early childhood classrooms</td>
<td>10.00</td>
</tr>
<tr>
<td>3. Emerging trends and recent perspectives related to early childhood mathematics curricula</td>
<td>10.00</td>
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<td>4. Planning and designing multilevel mathematics programs in the early years</td>
<td>5.00</td>
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<td>5. Programming for the integration of mathematics with other subjects</td>
<td>5.00</td>
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<td>6. The role of the educator in facilitating mathematics learning</td>
<td>10.00</td>
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<td>7. Leadership and advocacy for equity in mathematics education</td>
<td>5.00</td>
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<td>8. The emergence of mathematical language</td>
<td>5.00</td>
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<td>9. The place of creativity in the emergence of mathematical thinking</td>
<td>10.00</td>
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<td>10. Problem-centred learning in early mathematical experiences</td>
<td>10.00</td>
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<tr>
<td>11. Appropriate resources for facilitating learning and teaching in the early years</td>
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<tr>
<td>12. Number, Measurement, Space and Data Handling: early conceptual development</td>
<td>10.00</td>
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<td>13. The use of information technology in the early years of mathematical development</td>
<td>5.00</td>
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<tr>
<td>14. The development of positive attitudes in thinking mathematically</td>
<td>5.00</td>
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TEXT and MATERIALS required to be PURCHASED or ACCESSSED:

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.

PLEASE NOTE: “Teaching Children Mathematics” from NCTM (called The Arithmetic Teacher prior to 1994) will be a useful journal as a reference for this course.


Richardson, K 1997, Math Time: The Learning Environment, Educational Enrichment, Norman, OK.

Shaw, J & Blake, S 1998, Mathematics for Young Children, Merrill, Upper Saddle River, NJ.

Yelland, N, Butler, D & Diezmann, C 1999, Early Mathematical Explorations, Pearson Publishing Solutions, Needham Heights, MA.
STUDENT WORKLOAD REQUIREMENTS:

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
</tr>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Directed Study</td>
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<tr>
<td>Private Study</td>
<td>80.00</td>
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ASSESSMENT DETAILS

<table>
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<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
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<tbody>
<tr>
<td>ESSAY ON MATHS IN EC</td>
<td>30.00</td>
<td>30.00</td>
<td>20 Jul 2004</td>
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<tr>
<td>IN-CLASS PRESENTATION</td>
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<td>20 Jul 2004</td>
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<tr>
<td>EXAMINATION</td>
<td>40.00</td>
<td>40.00</td>
<td>END S2</td>
</tr>
</tbody>
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NOTES:  
1. Dates to be notified in class.  
2. Dates to be notified in class.  
3. As per examination timetable.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:  
   (b) It is the students' 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.

2 Requirements for students to complete each assessment item satisfactorily:  
   (a) 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 may be applied.

4 Requirements for student to be awarded a passing grade in the course:  
   (a) To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by satisfactorily completing all summative assessment items (the examination and assignments).

5 Method used to combine assessment results to attain final grade:  
   (a) 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:
   (b) 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:
   (b) 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 (a) The due date for an assignment is the date by which a student must submit the
assignment to the USQ. The onus is on the student to provide proof of the
submission date, if requested by the Examiner. (b) If requested, students will be
required to provide a copy of assignments submitted for assessment purposes. Such
copies should be despatched to USQ within 24 hours of receipt of a request being
made. (c) The examiner may grant an extension of the due date of an assignment
in extenuating circumstances. (d) The Faculty will normally only accept assessments
that have been written, typed or printed on paper-based media. (e) The Faculty will
NOT accept submission of assignments by facsimile.