



The University of Southern Queensland

## Course Specification

### Description: Exploring Science & Technology in Early Childh'd

Subject	Cat-Nbr	Class	Term	Mode	Units	Campus
ECE	2017	20790	1, 2003	ONC	1.00	WIBAY

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

### STAFFING

Examiner: Lyn Bower  
Moderator: Noel Geoghegan

### RATIONALE

Fleer and Hardy (1996) suggest that children's early experiences with science-related concepts and materials are vital for the development of values and attitudes in science and technology. Early science learning and exploration covers the areas of cognitive, conative and affective development. Therefore, educators and parents play an important part as role models by supporting and guiding the development of positive attitudes in the early years and creating imaginative and challenging environments for learning. With increasing technology and availability of information it is also essential for early childhood educators to have the necessary skills to make appropriate choices and informed decisions to develop children's thinking skills and abilities.

### SYNOPSIS

This course will examine the importance of developing children's creativity, curiosity, problem solving skills and sense of wonder and appreciation of the environment, in the exploration of science and technology. The course will focus on different approaches to teaching science and the development of positive attitudes for life long learning while taking into account children's cultural and diverse backgrounds. It aims to develop student's creativity, problem solving and analytical skills and their passion for science and technology.

### OBJECTIVES

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

- demonstrate creative and problem-solving skills in their approach to science and technology;
- discuss the value of hands-on experiences for children in science activities;
- explain a number of approaches to teaching science;

- demonstrate how to listen effectively and respond to children's questions;
- demonstrate essential questioning techniques to further extend children's knowledge of science and technology;
- select, organise and present suitable materials for science activities for young children;
- demonstrate the ability to develop children's appreciation of the natural environment;
- demonstrate some knowledge of science content and an ability to effectively access such knowledge through a variety of sources including web-based materials;
- develop an enthusiastic scientific attitude and an understanding of developing positive attitudes in young children;
- analyse curriculum documents and appropriate assessment methods;
- discuss the importance and impact of culture, values and diversity.

## TOPICS

Description	Weighting (%)
1. Learning and teaching styles	5.00
2. Creative problem solving	15.00
3. Listening and responding to young children's questions and effective questioning	10.00
4. Approaches to teaching science in ECE	15.00
5. Environmental science in early childhood - teaching appreciation and developing a sense of wonder	10.00
6. Technology in early childhood	15.00
7. Cultural and diverse backgrounds	5.00
8. Using web-based materials	10.00
9. Curriculum documents and other resources	5.00
10. Using resources - community and parents	10.00

## 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.

Book of readings

## 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.

, , *Every Child (Special Edition - Environment Australia) Summer 1998*, Vol 4, no.4.

2001, *Free-Choice Science Education: How we Learn Science Outside of School*, Teachers College Press, New York.

2002, *Developing Constructivist Early Childhood Curriculum: Practical Principles and Activities*, Teachers College Press, New York.

1996, *Discovery Science: Explorations for the Early Years, Grade Pre-kindergarten*, Innovative Learning Publications, Menlo Park CA.

Benson, C. 1999, *Teaching Science and Design and Technology in the Early Years*, David Fulton, London.

Bentley, D. & Watts, M. 1994, *Primary Science and Technology*, Open University Press, Buckingham, Philadelphia.

Bittinger, G. 1993, *1.2.3 Science: Science Activities for Working with Young Children*, Warren Publishing, Washington.

Bond, R. 1993, *Kitchen Science*, Ashton Scholastic, Sydney.

Chaille, C. 1997, *The Young Child as Scientist: A Constructivist Approach to Early Childhood Science Education*, 2nd edition, Longman, New York.

Christianson, C. 1995, *Magnets, Early Childhood*, Hawker Brownlow, Highett VIC.

Cliatt, M. & Shaw, J. 1992, *Helping Children Explore Science: A Source Book for Teachers*, Macmillan Publishing Company, New York.

Elliott, S. & Emmett, S. 1991, *Snails Live in Houses Too: Environmental Education for the Early Years*, Horwitz Grahame Pty Ltd, Cammeray.

Feely, J. 1994, *Take Home Science: Independent Activities for Science and Technology*, Eleanor Curtain Publishing, Armadale.

Files, B.F. & Horne, V.V. 1998, *Science, Mathematics and Technology Preschool/Early Childhood*, American Assoc for the Advancement of Science, Washington DC.

Fleer, M. 2001, *I Want to Know...?: Learning About Science*, Australian Early Childhood Association, Watson ACT.

Fleer, M. & Hardy, T. 2001, *Science for Children: Developing a Personal Approach to Teaching*, 2nd edition, Prentice Hall, Sydney.

Friedl, A.E. 1995, *Teaching Science to Children: An Integrated Approach*, McGraw-Hill, NY.

Frost, J. 1997, *Creativity in Primary Science*, Open University Press, Buckingham.

Goldberg, L. 1997, *Teaching Science to Children*, Dover Publications Inc, New York.

Harlan, J. & Rivkin, M. 2000, *Science Experiences for the Early Childhood Years: An Integrated Approach*, 7th edition, Prentice Hall, USA.

Haugland, S. W. 1997, *Young Children and Technology: A World of Discovery*, Allyn & Bacon, Boston.

Hooper, D. 1999, *Integrating Technology into the Science Curriculum*, Hawker Brownlow Education, Australia.

- Johnston, J 1999, *Enriching Early Scientific Learning*, Open University Press, Buckingham.
- Johnston, J. 1999, *Enriching Early Scientific Learning*, Open University Press, Buckingham.
- Koch, J. 1999, *Science Stories: Teachers and Children as Science Learners*, Houghton Mifflin Company, Boston.
- Lind, K. 1996, *Exploring Science in Early Childhood*, 2nd edition, Delmar, USA.
- Montague-Smith, A. 1998, *Supporting Science and Technology: A Handbook for Those Who Assist in Early Years Settings*, David Fulton Publishers, London.
- Rockwell, R., Williams, R. & Sherwood, E. 1992, *Everybody Has a Body: Science from Head to Toe*, Gryphon House, Mt Rainer.
- Siraj-Blatchford, J. 1996, *Learning Technology, Science and Social Justice: An Integrated Approach for 3-13 Year Olds*, Education Now Publishing Co-operative, Nottingham.
- Siraj-Blatchford, J. 1999, *Supporting Science, Design and Technology in the Early Years*, Open University Press, Buckingham Philadelphia.
- Siraj-Blatchford, J. 1999, *Supporting Science, Design and TEchnology in the Early Years*, Open University Press, Buckingham.
- Taylor, B. J. 1993, *Science Everywhere: Opportunities for Very Young Children*, Harcourt Brace Jovanovich College Publishers, Fort Worth.
- Van Tassel- Baska. 1997, *Guide to Teaching a Problem-based Science Curriculum*, Kendall/Hunt Publishing Company, USA.
- Winnett, D., Williams, R., Sherwood, E. & Rockwell. 1994, *Discovery Science: Explorations for the Early Years*, Innovative Learning Publications, California.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessment	50
Directed Study	10
Lectures	13
Private Study	65
Tutorial	26

## ASSESSMENT DETAILS

Description	Marks Out of	Wtg(%)	Required	Due Date
ASSIGNMENT 2	100.00	50.00	Y	04 Mar 2003 (see note )
ASSIGNMENT 1	100.00	50.00	Y	17 Apr 2003

### NOTES:

- . Assignment 2 is due in the last tutorial. Date will depend on student's Semester 1 timetable.

## **OTHER REQUIREMENTS**

- 1 Summative assessment items will be given a numerical score.
  - 2 Course Grades will be calculated by aggregating the weighted result or numerical score for each summative assessment item.
  - 3 All assessment items must be submitted and passed overall.
  - 4 If assignments are submitted after the due date without an approved extension of time, University penalties may be applied.
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