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: Science and Technology Education

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ECE	4023	79071	2, 2008	EXT	1.00	Toowoomba

Academic group: FOEDU
Academic org: FOE004
Student contribution band: National Priority Teaching
ASCED code: 070103

STAFFING

Examiner: Leisa Holzheimer

OTHER REQUISITES

State law in Queensland (Australia) requires that all adults working/undertaking professional experience/researching with children under the age of 18, in the state of Queensland are required to possess a current suitability card (Blue Card). (See "Other Requirements" for further information.) Also see: http://www.childcomm.qld.gov.au/employment/bluecard/informationSheets.html.

RATIONALE

Scientific and technological literacy is increasingly important for citizens in twenty-first century societies. If educators are to be effective in assisting learners to become scientifically and technologically literate, there will be a need for learners to have confident and competent teachers. This will require educators to be able to match their knowledge and understanding of the content appropriate to the curriculum with pedagogical approaches that will assist children to develop knowledge of content and processes together with an appreciation of its important values underlying the curriculum.

SYNOPSIS

The aim of the course is to develop pre-service educators' understanding of content in science and technology, in parallel with their awareness of ways of transforming this understanding of the content so that what they know and the ways they have come to know it become accessible to the children they teach. Pre-service educators will have the opportunity to examine their own alternative misconceptions, and to understand how such misconceptions might be avoided. Problem-solving skills will be advocated together with an approach to learning that incorporates honesty, open-mindedness, creativity, problem solving and information sharing. Content will include selected topics from the Queensland Years 1 - 10 science and technology syllabus content strands. Application of the notion of pedagogical content knowledge to each content area, and the development of suitably transformed content which would be accessible to learners in the appropriate age groups.

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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 knowledge and understanding of the structure, content strands, core learning outcomes, and practices and dispositions of the Queensland years 1-10 science syllabus (Assignments 1 and 2)
2. demonstrate knowledge and understanding of how children (5-12 years) think and learn about science and technology (Assignment 2)
3. demonstrate awareness of potential applications of information and communications technologies for science teaching (Assignment 2)
4. portray how science and technology impacts on the lives of the students, the children they will teach and on the world around them (Assignment 1)
5. demonstrate an appreciation of the interrelationships between science and society through the language of science (Assignments 1 and 2)
6. promote an authentic pedagogical approach to science with children to 12 years (Assignments 1 and 2)
7. demonstrate how society uses scientific knowledge and how different people and groups of people may view things differently (Assignment 1)
8. demonstrate an ability to monitor students development in understanding scientific and technology understandings (Assignment 2)
9. demonstrate competence in and appropriate use of language and literacy, including spelling, grammar, punctuation and bibliographic referencing (Assignments 1 and 2).

TOPICS

	Description	Weighting (%)
1.	Introduction to science and technology education	5.00
2.	Science and technology content from syllabus strands	35.00
3.	Developmental and constructivist approaches	10.00
4.	Pedagogical content knowledge interpreting science and technology curriculum	10.00
5.	Selecting and creating resources for science and technology education	5.00
6.	Responsible science and technology education	5.00
7.	ICT in the classroom	20.00
8.	Innovative pedagogy and problem-solving in science and technology	10.00

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

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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).

Skamp, K (ed) 2008, *Teaching primary science constructively*, 3rd edn, Thomson Learning, South Melbourne.

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.

'Science Education Review' (Available: http://ezproxy.usq.edu.au/login?url=http://www.scienceeducationreview.com/latestnews/index.shtml) [Accessed 15 02 2006]

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

Chalufour, I & Worth, K 2003, *Discovering nature with young children*, Redleaf Press, St Paul, MN.

Fleer, M & Beverley, J 2004, *Technology for children: research based approach*, 2nd edn, Pearson Education, Frenchs Forest, NSW.

Fleer, M & Cahill, A 2001, *I want to know...? Learning about science*, Australian Early Childhood Association, Watson, ACT.

Lind, K 2005, *Exploring science in early childhood: a developmental approach*, 4th edn, Thomson Delmar Learning, Clifton Park, NY.

Worth, K & Grollman, S 2003, *Worms, shadows and whirlpools: science in the early childhood classroom*, Heinemann, Portsmouth, NH.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	30.00
Directed Study	25.00
Private Study	80.00
Tutorials	25.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	50.00	50.00	22 Aug 2008
ASSIGNMENT 2	50.00	50.00	12 Sep 2008

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:

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There are no attendance requirements for this course. However, it is the students' responsibility 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. (Depending upon the requirements in Statement 4 below, students may not have to satisfactorily complete each assessment item to receive a passing grade in this course.)

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

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:
There is no examination in this course.

7 Examination period when Deferred/Supplementary examinations will be held:
As there are no examinations in this course, there will be no deferred or supplementary examinations.

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 Students must retain a copy of each item submitted for assessment. This must be produced within 24 hours if required by the Examiner. This must be retained by the student until the grade for this course has been finalised.

2 The Examiner may grant an extension of the due date of an assignment in extenuating circumstances.

3 In the event that a due date for an assignment falls on a local public holiday in their area, the due date for the assignment will be the next working day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

4 Students, who have taken 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.

5 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

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to defer as 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).

6 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media, except for ONLINE courses.

7 Marking criteria are provided in course material as mark sheets/guides or as part of assignment specifications.

OTHER REQUIREMENTS

1 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.

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