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 Curriculum and Pedagogy

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
EDX	3160	91613	2, 2009	WEB	1.00	Toowoomba

Academic group: FOEDU
Academic org: FOE002
Student contribution band: National Priority Teaching
ASCED code: 070100

STAFFING

Examiner: Karen Spence
Moderator: Andy Yeh

RATIONALE

Science educators need to be confident and competent teachers of science to be effective in assisting learners to become scientifically literate; there will be a need for them to have. Educators require not merely knowledge of curriculum content, but also pedagogical content knowledge. This quality blends content and pedagogy seamlessly into an understanding of how particular topics, problems, or issues are organized, represented, and presented. In particular, pedagogical content knowledge is of fundamental importance in a teacher's approach to catering for the diverse interests and abilities of learners, and in the ways in which topics, problems or issues are presented in the classroom. An understanding of pedagogy related to specific content knowledge in science, and how this might be interpreted to meet the needs of particular pupils, provides a sound base for effective teaching in these areas. While this course has a strong pedagogical component, the approach taken in the design of this unit is to treat content and pedagogy together.

SYNOPSIS

The aim of the course is to develop students' understanding of pedagogical strategies to address content in science, 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. Sessions which involve the presentation of relevant scientific ideas, together with the identification of ways in which these ideas might be transformed so that they are accessible to children and young adolescents, will act as the stimulus for a series of laboratory sessions and workshops. Problem-solving skills will be advocated together with an approach to science that incorporates honesty, open-mindedness and information sharing.

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:

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1. demonstrate knowledge of the structure of the Queensland 1-10 Science syllabus (assignment 1,2 and 3)
2. show knowledge of the core essential learning of the five content strands of the syllabus (assignment 2)
3. demonstrate understanding of the practices and dispositions of science appropriate to the syllabus (assignment 1 & 2)
4. display an appreciation of how children think and learn about science (assignment 2)
5. interpret and apply the notion of pedagogical content knowledge (assignment 2 and 3)
6. identify strategies for transforming specific content so that it would accessible to children (assignment 2)
7. identify a range of misconceptions and develop strategies for avoiding these in subsequent teaching. (assignment 1)
8. develop and implement learning experiences and assessment methods appropriate to primary science teaching (assignment 1 and 2)
9. demonstrate an ability to establish student understanding of science concepts and to identify and deliver appropriate strategies to address these concepts (assignment 2 and 3)
10. display awareness of potential applications of information and communications technologies for science teaching (assignment 2 and 3)
11. demonstrate an understanding of the principles of risk management in teaching science safely and effectively (assignment 2)
12. show a recognition of the social and ethical dimensions of science education (assignment 1 & 2)
13. demonstrate competence in written language and scholarly writing including correct spelling, grammar, and bibliographic referencing. (all assignment items)

TOPICS

	Description	Weighting (%)
1.	Science content from syllabus strands: earth and beyond; energy and change; life and living; natural and processed material; science and society	35.00
2.	Theoretical foundations of science education: historical perspective; nature of science; philosophy of science; developmental and constructivist approaches	10.00
3.	Pedagogical content knowledge: transformation of content	30.00
4.	Interpreting science curriculum	10.00
5.	Selecting and creating resources for science education	10.00
6.	Responsible science education: safety, social and ethical dimensions	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).

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Fleer, M, Jane, B & Hardy 2007, *Science for children: developing a personal approach*, 3rd edn, Pearson, Sydney.

Skamp, R 2007, *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.

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

Martin, DJ 2006, *Elementary science methods*, 4th edn, Wadsworth, Belmont.

Osborne, R & Freyberg, P 1985, *Learning in science: the implications of children's science*, Heinemann, Auckland.

Peters, JM & Gega PC 2006, *Science in elementary education*, Merrill, Upper Saddle River.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Directed Study	70.00
Independent Study	70.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	50.00	50.00	28 Aug 2009
ASSIGNMENT 2	50.00	50.00	16 Oct 2009

IMPORTANT ASSESSMENT INFORMATION

1. Attendance requirements:
   It is the students' responsibility to attend and participate appropriately in all activities 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:
   To satisfactorily complete an individual assessment item a student must achieve at least 50% of the marks.
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:

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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:
There will be no deferred or supplementary examination for this course

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

OTHER REQUIREMENTS

1 Students will require access to e-mail and have Internet access to UConnect for this course.

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