



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 for Schools 1

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
EDU	1431	79072	2, 2008	ONC	1.00	Toowoomba

Academic group:	FOEDU
Academic org:	FOE002
Student contribution band:	National Priority Teaching
ASCED code:	070301

STAFFING

Moderator: 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 literacy will be increasingly important for citizens in twenty-first century societies. If primary schools are to be effective in assisting learners to become scientifically literate, there will be a need for them to have confident and competent teachers of science. This will require teachers to be able to match their knowledge and understanding of the scientific content appropriate to the primary school curriculum with pedagogical approaches that will assist students to develop knowledge of the content and processes of science together with an appreciation of its important values such as honesty and open-mindedness. Teachers require not merely knowledge of curriculum content, but pedagogical content knowledge which represents the blending of content and pedagogy into an understanding of how particular topics, problems, or issues are organised, 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. Hence the approach taken in the design of this unit is to treat content and pedagogy together. Moreover, consistent with the guiding principles of the Bachelor of Education degree, students will be encouraged to draw upon their practicum experiences to inform their study within the unit and, wherever possible, to apply what they learn in this subject during concurrent and subsequent practicum experiences. This process will be facilitated by promoting cooperation among teaching staff in this subject and those in subjects with associated practicum experiences.

SYNOPSIS

The aim of the course is to develop students' understanding of 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. Students will have the opportunity to examine their own misconceptions, and to understand how such misconceptions might be avoided. Problem-solving skills will be advocated together with an approach to science that incorporates honesty, open-mindedness and information sharing. Content will include: 1. Selected topics from the Queensland years 1-10 science syllabus content strands (earth and beyond, energy and change, life and living, and natural and processed materials). It will have to be a particular focus on food, human body and movement. 2. Application of the notion of pedagogical content knowledge to each content area encountered in #1, and the development of suitably transformed content which would be accessible to learners in the appropriate age groups.

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 of the structure of the Queensland 1-10 Science syllabus (assignment 1,2 and 3)
2. demonstrate knowledge and understanding of the core learning outcomes of the five content strands of the syllabus (assignment 2)
3. demonstrate knowledge and understanding of the practices and dispositions of science appropriate to the syllabus (assignment 1)
4. demonstrate knowledge and understanding of how children think and learn about science (assignment 2)
5. interpret and apply the notion of pedagogical content knowledge (assignment 1 and 3)
6. identify strategies for transforming specific content so that it would accessible to children (assignment 1)
7. identify a range of misconceptions and develop strategies for avoiding these in subsequent teaching. (assignment1)
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.demonstrate 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.demonstrate a recognition of the social and ethical dimensions of science education (assignment 3)
- 13.demonstrate competence in written language and scholarly writing including correct spelling, grammar, and bibliographic referencing. (all assignment itmes)

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	40.00
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	5.00
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).

No Text requirements.

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>

Fleer, M & Hardy, R 2001, *Science for children*, Prentice Hall, Sydney.

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 2002, *Science in elementary education*, Merrill, Upper Saddle River.

Skamp, R 2007, *Teaching primary science constructively*, 3rd edn, Thomson Learning, South Melbourne.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Directed Study	22.00
Laboratory or Practical Classes	11.00
Lectures	22.00
Private Study	100.00
Tutorials	11.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	30.00	30.00	29 Aug 2008 (see note 1)
ASSIGNMENT 2	30.00	30.00	26 Sep 2008 (see note 2)
EXAMINATION	40.00	40.00	END S2 (see note 3)

NOTES

1. The examiner will advise the due dates for this assessment item.
2. The examiner will advise the due dates for this assessment item.
3. Students will be advised of the examination date for this course when the official timetable for semester 2 2008 has been finalised.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
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:
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:
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:
Candidates are allowed to bring only writing and drawing instruments into the Closed examination.
- 7 Examination period when Deferred/Supplementary examinations will be held:
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 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the examiner.
- 2 Students must retain a copy of each item submitted for assessment. This must be produced within twenty-four (24) hours of receipt of request being made by the examiner. The student must retain this copy until the grade for this course has been finalised.
- 3 In accordance with the University's assignment extension policy (Regulation 5.6.1), the examiner may grant an extension of the due date of an assignment in extenuating circumstances.
- 4 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media. The Faculty will NOT accept submission of assignments by facsimile. Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.
- 5 Students who have undertaken 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.
- 6 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 to defer an 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).
- 7 When there is more than one marker for a single item of assessment, the distributed patterns and means for the different markers will be compared and marks adjusted if necessary.
- 8 Marking criteria are provided in course material as mark sheets/guides or as part of assignment specifications.
- 9 Summative assessment items will receive a numerical score. Any ungraded assessment requirement will receive a Pass, Fail or Incomplete.

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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