

EDUC90391 Science and Mathematics in EC

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	This subject is not offered in 2014.
Time Commitment:	Contact Hours: 36 hours Total Time Commitment: 125 hours Attendance at all classes (tutorial/seminars/practical classes/lectures/labs) is obligatory. Failure to attend 80% of classes will normally result in failure in the subject. 100% attendance is mandatory in all practicum subjects.
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the HDisability Liaison Unit websiteH: Hhttp://www.services.unimelb.edu.au/disability/H
Contact:	Education Student Centre 234 Queensberry Street Call: 13 MELB (13 6352)
Subject Overview:	<p>The focus of this subject is how to develop children's awareness of science and mathematics concepts in the world around them. Topics are centred on children's everyday lives and the natural world, and draw on research on children's learning. This subject refines and extends, as appropriate, teacher candidates' content knowledge and understanding in science and mathematics, and introduces pedagogical knowledge for these two domains. This subject also explores the place of Science and Mathematics in an integrated curriculum and the use of ICT to support learning in science and mathematics. Science and Mathematics will be looked at in the context of the needs, interests and abilities of children from infants to eight years old, including an overview of the science standards in the Australian Curriculum (AusVELS) Foundation to Level Two.</p> <p>Topics in the science domain include living things and their diversity and properties of water, air, magnetism, light and sound. There will be a strong focus on sustainability and the environment and this strand will be integrated throughout the program. Toys and objects familiar to young children will be used to introduce appropriate aspects of technology. Topics for the mathematics domain will focus on the mathematics encountered by young children prior to school. In particular, they will focus on: the development of number concepts including counting; the early ideas of measurement attributes, space and location; and the development of mathematical language appropriate for young children.</p> <p>Teacher candidates will design, implement, review and refine sequences of experiences for mathematics and science.</p>
Learning Outcomes:	<p>On completion of this subject teacher candidates will be able to:</p> <ul style="list-style-type: none"> # Demonstrate an understanding of how children construct mathematical and scientific knowledge; # Demonstrate pedagogical content knowledge for developing mathematical and scientific understanding in children; # Interpret observations of children in terms of research findings about mathematical and scientific development; # Design experiences to develop mathematical and scientific understanding; # Design experiences to help children explore how simple technological objects work and are used in their everyday lives;

	<ul style="list-style-type: none"> # Assess children's mathematical and scientific understanding; # Respond to individual differences.
Assessment:	To pass the subject Teacher Candidates need to pass all 3 assessment tasks and, in addition, Teacher Candidates need to pass both the Science and the Mathematics components of the course. There are three assessment tasks: A written assessment of science learning experiences equivalent to 1,000 words. Due mid-semester, 25% A written assessment of mathematics learning experiences equivalent to 1,000 words. Due end of semester, 25% A two hour examination covering Mathematics and Science during the examination period, 50% Hurdle requirements: six science-related hurdle tasks in the practicum setting. Each task must be satisfactorily completed.
Prescribed Texts:	Clements, D. & Sarama, J (2009). Learning and teaching early math: The math trajectories approach. New York: Routledge Collection of readings. Aitken, J., Hunt, J, Roy, E,Sajfar, B. (2012). A Sense of Wonder. Science Education in Early Childhood Education. Albert Park Australia: Teaching Solutions.
Recommended Texts:	Knaus, M. (2013). <i>Maths is all around you: Developing mathematical concepts in the early years</i> . Albert Park, AUS: Teaching Solutions.
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of this subject, teacher candidates will have the knowledge, skills and understanding to enable them to:</p> <ul style="list-style-type: none"> # Be skilled communicators who can effectively articulate and justify their practices as knowledgeable agents of change; # Be flexible and able to adapt to change through knowing how to learn; # Use research evidence to continue to underpin and improve their practice in mathematics and science exploration with young children. # Have a conscious personal and social values base.
Related Course(s):	<p>Master of Teaching (Early Childhood) Master of Teaching (Early Years)</p>