EDUC90391 Science and Mathematics in EC

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: February, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours Total Time Commitment: 170 hours
Prerequisites:	Admission to the Master of Teaching (Early Childhood) or Master of Teaching (Early Years)
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 Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry. It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability
Coordinator:	Dr Caroline Cohrssen
Contact:	**ccoh@unimelb.edu.au (mailto:ccoh@unimelb.edu.au)**
Subject Overview:	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. 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. Teacher candidates will design, implement, review and refine sequences of experiences for mathematics and science.
Learning Outcomes:	On completion of this subject teacher candidates will be able to: # 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; # 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. This subject has a minimum hurdle requirement of 80% attendance at all tutorials, seminars and workshops. Professional practice placements require 100% attendance.
Prescribed Texts:	The Britannica Pathways Science; an online resource accessible though the University library. Clements, D. & Sarama, J (2014). Learning and teaching early math: The math trajectories approach. New York: Routledge Collection of readings.
Recommended Texts:	Knaus, M. (2013). *Maths is all around you: Developing mathematical concepts in the early years*. 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:	On completion of this subject, teacher candidates will have the knowledge, skills and understanding to enable them to: # 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):	Master of Teaching (Early Childhood) Master of Teaching (Early Years)