

## EDUC90616 Mathematics: Improving Learning

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| <b>Credit Points:</b>                    | 12.50  |
| <b>Level:</b>                            | 9 (Graduate/Postgraduate)  |
| <b>Dates &amp; Locations:</b>            | 2012, Parkville<br>This subject commences in the following study period/s:<br>February, Parkville - Taught on campus.  |
| <b>Time Commitment:</b>                  | Contact Hours: 24 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.   |
| <b>Prerequisites:</b>                    | None   |
| <b>Corequisites:</b>                     | None   |
| <b>Recommended Background Knowledge:</b> | None   |
| <b>Non Allowed Subjects:</b>             | None   |
| <b>Core Participation Requirements:</b>  | 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  |
| <b>Contact:</b>                          | Education Student Centre   |
| <b>Subject Overview:</b>                 | This subject is concerned with improving the mathematics and numeracy outcomes for students in primary and secondary schools. It will be concerned with performance assessed by measures in many different ways: measures of conceptual growth in individual topics, state assessments of students and school performance (e.g. NAPLAN), and international studies of country achievement such as PISA. A detailed study of the conceptual growth along a developmental continuum that is required for making progress in some key areas of mathematics will be undertaken. Diagnostic assessments will be reviewed, created and critiqued. As a consequence, participants will be able to conduct 'assessment for learning' in a way that makes a difference to teaching, and student outcomes. Participants will be able to investigate topics relevant to the age group they teach. Teaching methods that promote conceptual growth will be reviewed, with relevant research. A detailed study will also be made of approaches to curriculum design that balance growth of conceptual understanding, procedural fluency, strategic competence, productive disposition, and ability to apply mathematics to everyday life. Approaches for revitalising the mathematics and numeracy programs at schools will be reviewed. All of these topics will be examined through the lens of current research and Australian and international educational policies. |
| <b>Objectives:</b>                       | Students completing this subject should be able to: <ul style="list-style-type: none"> <li># demonstrate practical and theoretical knowledge of the developmental continuum for learning some central topics of mathematics;</li> <li># analyse curriculum sequences and lessons to assess their potential for promoting conceptual growth and other key mathematical competencies;</li> <li># describe and analyse the policies and findings of major contemporary mathematics curriculum initiatives related to improving learning;</li> <li># provide leadership in an educational setting in improving the learning of mathematics and numeracy.</li> </ul>  |
| <b>Assessment:</b>                       | Oral presentation (15 minutes) on the mathematical understandings of a small number of students in a defined area of mathematics, with supporting documentation. 1000 words. (20 per cent) Due Mid-subject. Design and analysis of a lesson sequence that will improve school outcomes in a defined area of mathematics, with reference to research findings. 2000 words. (40 per cent) Due at the end of subject. Literature review on students' conceptual growth of one   |

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|                           | mathematical topic. 2000 words. (40 per cent) Due at the end of subject. Active participation in at least 80% of sessions. Hurdle requirement.  |
| <b>Prescribed Texts:</b>  | None  |
| <b>Breadth Options:</b>   | This subject is not available as a breadth subject.   |
| <b>Fees Information:</b>  | Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>   |
| <b>Generic Skills:</b>    | <p>Students completing this subject should be able to:</p> <ul style="list-style-type: none"> <li># demonstrate a superior knowledge and understanding of theory and practice relating to numeracy and mathematics learning;</li> <li># have an understanding of the theory and practice of educational research needed to evaluate research literature and carry out appropriate research activity;</li> <li># make effective use of the findings of educational writings and research in improving student mathematics and numeracy learning;</li> <li># have the depth of knowledge and understanding of student learning trajectories, appropriate teaching methodologies and professional development techniques that will enable them to be a resource for colleagues.</li> </ul> |
| <b>Related Course(s):</b> | <p>Master of Education (Stream 100B)Coursework<br/> Master of Education (Stream 150)</p>  |