Stage 1 Consultation Phase 2: Foundation Mathematics

Foundation Mathematics Units 1 and 2 were originally developed in response to a recommendation from the [*Enhancing Their Futures Review Report*](https://digitised-collections.unimelb.edu.au/bitstream/handle/11343/115550/scpp-01179-vic-1997.pdf?sequence=1) (December 1997). A pilot study was run in 1999 with around 100 students in four schools, and a fully accredited study made available from 2000.

They were developed to provide students not well catered for in the set of offerings available at that time, and who did not intend to undertake further mathematical studies at the Units 3 and 4 level, with access to a Year 11 standard VCE Mathematics study suitable for their needs and interests, that had a practical applications focus. The study was based on national and international benchmarking of a range of vocational and like programs over the previous decade, including adult qualifications such as the Certificate in General Education for Adults Numeracy. Enrolment data from 2000 shows that in its first year of implementation Foundation Mathematics had an initial enrolment of around 4200 students, of which around 2000 would likely have come from the prospective General Mathematics with 2200 additional new mathematics student enrolments. Since then enrolments have been relatively stable at around 5000 students annually. A consideration for the original decision to develop Foundation Mathematics as a Unit 1 and 2 study *only* was to encourage students who would not otherwise undertaken study of *any* mathematics in the VCE to do so through a study that was accessible and directly applicable.

Following the introduction of VCAL, Foundation Mathematics was, and continues to be, the VCE Mathematics study most used by students who elect to satisfy the VCAL numeracy requirements by completing units of a VCE study. For example, in 2017, just over 1700 students met their VCAL Intermediate Numeracy requirement via Foundation Mathematics.

As it had only been implemented for a couple of years prior to the 2002-3 VCE Mathematics review, the 2006 – 2015 version of the Foundation Mathematics study incorporated only very minor modifications from this review. Following on from the Australian Curriculum senior secondary curriculum work in 2012 (which included the development of Essential Mathematics Units 1 – 4) and further national and international benchmarking, Foundation Mathematics Units 1 and 2 were more substantially revised as part of the 2013-14 VCE Mathematics major review process. The VCAA discussion paper: [*Proposed directions: Review of VCE English, History, Mathematics and Science studies*](http://pandora.nla.gov.au/pan/141845/20130724-1729/www.vcaa.vic.edu.au/Documents/vce/vceconsult/Proposed-directions-Review-of-English-History-Maths-and-Science-discussion-paper.pdf)(June 2013) noted the Australian Curriculum developmental work, and proposed that VCE Foundation Mathematics remain a Units 1 and 2 study pending further investigation.

**The current VCE Mathematics major review**

Following on from the work of an Expert Panel in 2018, the VCAA published three background papers and undertook consultation on structures and models for senior secondary mathematics. This further part of the consultation follows on from analysis of responses to the initial consultation in 2019 which showed support for the development of Foundation Mathematics Units 1 and 2 to a full Units 1 – 4 sequence.

Key reasons supporting the development of a Foundation Mathematics Units 1 – 4 are:

* enhanced general numeracy development in society by catering for the full range of students in the cohort
* the inclusion of a continuing sequence for the around 5 000 students who study Foundation Mathematics Units 1 and 2 but currently have no option for continuing with a like mathematics study at the Units 3 and 4 level
* the inclusion of a Units 3 and 4 level practically oriented mathematics study for other students in the cohort, including some who currently undertake Further Mathematics but do not obtain a study score or achieve a relatively low study score, or students who do General Mathematics Units 1 and 2 but do not proceed to Further Mathematics Units 3 and 4

Around 95% of VCE students enrol in a VCE Mathematics at the Units 1 and 2 level, and around 85% of students enrol in a VCE Mathematics at the Units 3 and 4 level. That is, each year around 15% of the cohort, or some 7 000 – 8000 students do not currently undertake a Units 3 and 4 level VCE Mathematics and could form part of a prospective natural cohort for a Foundation Mathematics Units 3 and 4.

Foundation Mathematics Units 1 and 2 cater for a cohort of students looking for a focus on practical applications of mathematics and further development of numeracy in relevant personal, every-day, societal, work and study contexts. Development of a full Units 1 – 4 sequence would need to be consistent with this approach, and differentiate from Further Mathematics Units 3 and 4, with suitable nature, scope and purpose of corresponding school-based and examination assessment.

Further Mathematics Units 3 and 4 is a rigorous non calculus-based course with a strong emphasis on business applications of mathematics involving data analysis, recursion and financial modelling, and other modelling and problem-solving applications of discrete and continuous mathematics. It has strong enrolments of more than 32 000 student annually. Over the past several years around 50 students, who have done well in Foundation Mathematics Units 1 and 2, have, with some additional study, proceeded from Foundation Mathematics Units 1 and 2 to Further Mathematics Units 3   
and 4.There are, however, some students who enrol in Further Mathematics Units 3 and 4 who might well be better served by a Foundation Mathematics Units 3 and 4 study.

The introduction of a Foundation Mathematics Units 3 and 4 for the reasons indicated would be intended to provide an alternative to Further Mathematics Units 3 and 4 as a mathematics pathway for students who are currently not catered for at the Units 3 and 4 level. This would extend from Foundation Mathematics Units 1 and 2 with a continued focus on the use of mathematics and the development of numeracy skills in practical contexts encountered in everyday life in the home, the community, at work and in further training or study.

The initial consultation responses also noted several issues and concerns with respect to: capacity and capability for provision of a new study; having students select mathematics studies aligned to their interests, dispositions and capabilities; and avoiding unintended consequences such as students selecting the study for real or perceived ATAR benefits. There are a range of issues and considerations for which the VCAA is undertaking further consultation and seeking your feedback to ensure that any introduction of a proposed Foundation Mathematics Units 1 – 4 study would effectively meet its intentions while minimising the impact of any unintended consequences.