

MATH0004 Analysis 2

<i>Year:</i>	2021–2022
<i>Code:</i>	MATH0004
<i>Level:</i>	4 (UG)
<i>Normal student group(s):</i>	UG: Year 1 Mathematics degrees
<i>Value:</i>	15 credits (= 7.5 ECTS credits)
<i>Term:</i>	2
<i>Assessment:</i>	The final weighted mark for the module is given by: 85% examination, 15% coursework. In order to pass the module you must have at least 40% in both the examination and the final weighted mark.
<i>Normal Pre-requisites:</i>	MATH0003
<i>Lecturer:</i>	Prof D Vassiliev

Course Description and Objectives

MATH0004 continues the study of a function of a real variable initiated in MATH0003. The main aim of the course is to develop a rigorous theory of integration and develop further the theory of sequences and series.

Recommended Texts

The recommended book for this course is: M. H. Protter and C. B. Morrey, *A first course in real analysis*, Springer.

Detailed Syllabus

- Riemann integration in terms of upper and lower sums. The fundamental theorem of calculus.
- Improper integrals.
- Cauchy sequences, the general principle of convergence.
- Uniform continuity.
- L'Hôpital's Rule.
- Taylor's Theorem and its uses.
- Power series in the complex plane.