

## Foundation Scholarship - Examination Requirements

Course of Study: Science

School/Discipline: TR063: Physical Sciences

Academic Year: 2024-25

Foundation Scholarship involves a searching examination, set and assessed so as to select students of outstanding ability. The objective of the Foundation Scholarship examination is to identify students who can consistently demonstrate exceptional knowledge and understanding of their subjects. The examination requires candidates to demonstrate: skill in synthesising and integrating knowledge across the full range of the set examination materials; rigorous and informed critical thought; and, in appropriate disciplines, a highly-developed ability to solve problems and apply knowledge.

Please include a brief statement below which explains how your examinations succeed in identifying the qualities associated with Scholarship.

TR063: Physical Sciences

Contact: Prof. Plamen Stamenov (stamenp@tcd.ie) and Prof. David McCloskey (mccloskd@tcd.ie) The Foundation Scholarship examination in Physics seeks to identify students who are able to take the taught material as a starting point for in-depth analyses of set problems.

Students sitting Foundation Scholarship examinations in the Physical Sciences (TR063) Degree must take Mathematics examinations in addition to Physics as their Scholarship subjects and will sit two papers in Mathematics, with a particular emphasis on problem solving. The Mathematics examinations are detailed later.

For the Physics papers, both Junior fresh and Michaelmas Term Senior fresh topics will be examined through questions of a higher standard than those to be found at the end-of- semester module Examinations. There are two papers in Physics for all students, each of duration two hours. Each paper will consist of 3 sections of 2 questions each. Each paper will be graded by taking the highest scored question from each section, plus the best mark from all remaining answered questions, for a total of 4 marked questions.

The first Physics paper will have one section on Thermodynamics, one section on Oscillations and one general Physics section. The second Physics paper will have one section on Electricity and Magnetism, one section on Materials and one general Physics section. The general Physics section of each paper will consist of questions drawn from all material in the Junior fresh year and the first semester of Senior fresh years.

MATHEMATICS for Physical Sciences (TR063), Chemical Sciences (TR061)

Contact: Ruth Britto (brittor@tcd.ie)

Mathematics examinations are available to students in Physical Sciences (TR063) and to students in Chemical Sciences (TR061). Two examination papers are set each of 2 hrs duration. Students in Physical Sciences take both papers, students in Chemical Sciences take one paper.

Paper 1 will be a general paper, testing the ability of candidates to solve unseen problems in mathematics and mathematical modelling, using in particular the skills developed in the modules MAU11S01 and MAU11S02 of the Junior fresh year. Paper 2 will consist of problems concerning the subject matter of the two Senior fresh modules offered in the Michaelmas term (MAU22S01 Multivariable calculus for science and MAU22S03 Fourier analysis for science). The material from the Junior fresh year (modules MAU11S01 and MAU11S02) is assumed as background to the Senior fresh modules, but the problems on Paper 2 will be targeted at material covered in MAU22S01 and MAU22S03.

Science Course Office

29/08/2023