

Foundation Scholarship - Examination Requirements

Course of Study: Science

School/Discipline: TR061: Chemical Sciences

Academic Year: 2024-2025

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.

TR061: Chemical Sciences

Contact: Prof. Valeria Nicolosi and Dr. Noelle Scully (sfchem@tcd.ie)

TR061 candidates presenting for scholarship examinations will sit three examination papers. Two in chemistry and a third paper chosen from one of the following: Biology Paper 2 (based on material covered in Senior Fresh module BYU22201: from Molecules to Cells, 3hrs in duration, students answer three questions from six.), Maths Paper 1, Maths Paper 2, Physics Paper 1, Physics Paper 2 (details below).

Both chemistry examinations will be three hours in duration. The subject examined will cover JF coursework and material covered in Semester 1 of Senior Fresh chemistry. Candidates will have to answer all five questions on each paper, two of which will be general questions, integrative in nature and not necessarily based on coursework. All questions will have equal weighting.

The Foundation Scholarship examination in Chemistry examines the subject as covered in Junior Fresh year and in semester 1 of the senior Fresh year. The questions examine the candidate's ability to problem solve and to synthesize and integrate knowledge across the fresh chemistry material.

Candidates must exhibit the ability to apply knowledge and informed critical thinking in all three disciplines of chemistry.

BIOLOGY for Chemical Sciences (TR061)

Chemical Sciences candidates will sit a paper covering the Senior fresh module BYU22C01

From Molecules to Cell II. The paper will be of three hours duration, six questions, answer three.

MATHEMATICS for Chemical Sciences (TR061)

Contact: Ruth Britto (brittor@tcd.ie)

Paper 1, 2 hrs in duration 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, 2 hrs in duration 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.

PHYSICS for Chemical Sciences (TR061)

Contact: Prof. D. McCloskey (mccloskd@tcd.ie) and Prof. C. McGuinness (cmcguin@tcd.ie)

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 two hours duration. 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.

Science Course Office. Note: The information provided in this leaflet is accurate at time of preparation. Any revisions will be notified to students via e-mail and the Science Course Office Website: <https://www.tcd.ie/Science/>

Science Course Office

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