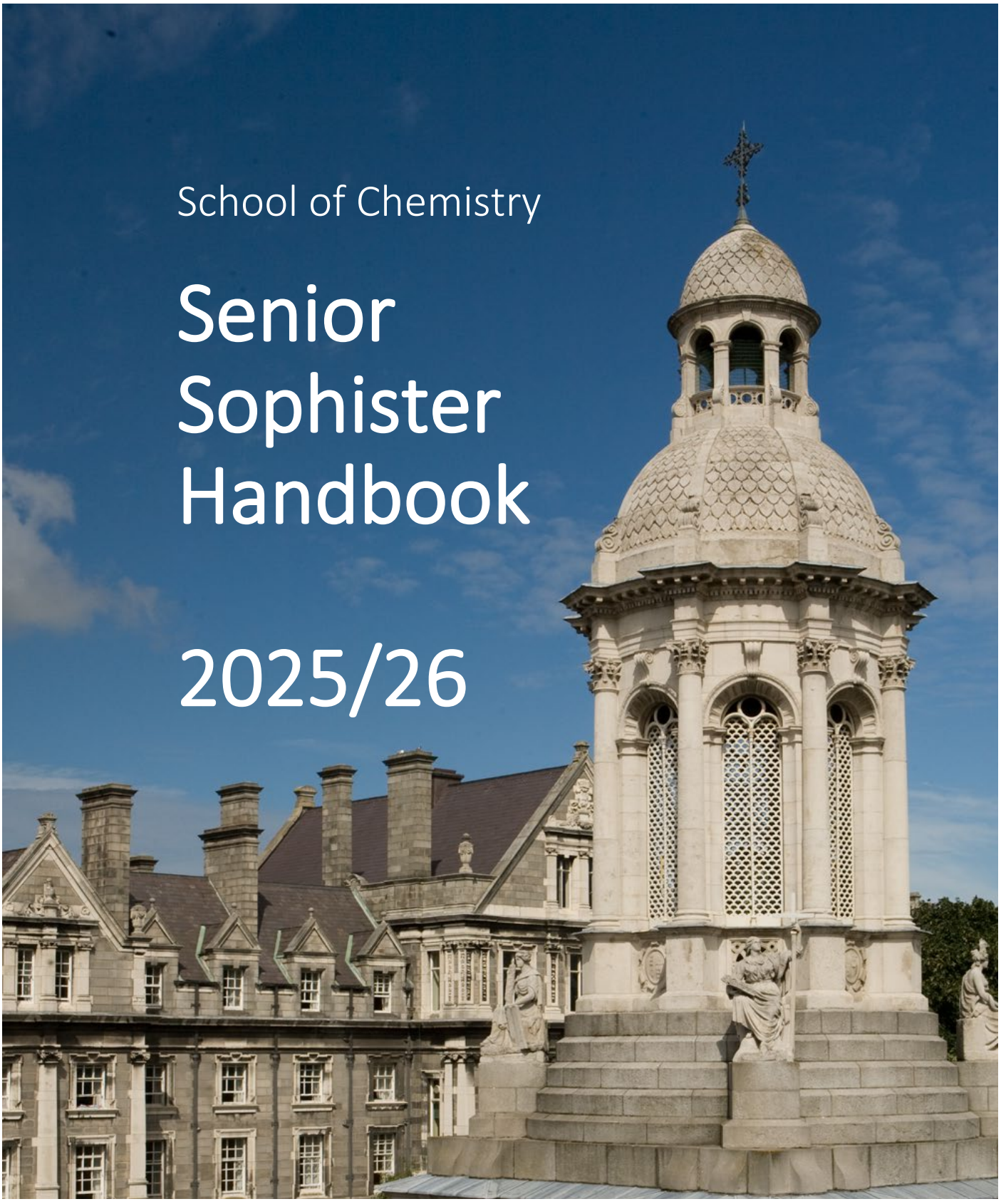
Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



School of Chemistry

Senior Sophister Handbook

2025/26

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Alternative formats of the Handbook can be made on request.

1. General Course Information

1.1 Introduction

Prof. Robert Baker (Senior Sophister Coordinator), and Profs. Mike Southern and Richard Hobbs (Director and Associate Director of Teaching and Learning (Undergraduate), respectively) will liaise with you during the year, will be available to discuss any problems that may arise, and to give you all the advice and help that they can. Other members of staff, of course, will also be happy to talk with you and to discuss any problems that may arise. The details of your course for the year are set out in this booklet, together with information about your final examinations.

1.2 Contact Details

Staff Name	Role/Title	E-mail	Phone
Prof. Graeme Watson	Head of School	graeme.w.watson@tcd.ie	896 1357/1423
Prof. Mike Southern	Director of Teaching and Learning (DTLUG)	southerj@tcd.ie	896 3411
Prof. Richard Hobbs	Associate DTLUG	hobbsr@tcd.ie	896 3035
Prof. Robert Baker	SS Year Coordinator	bakerrj@tcd.ie	896 3501
Prof. Mike Southern	MedChem Director	southerj@tcd.ie	896 3411
Prof. Graeme Watson	CMM Director	graeme.w.watson@tcd.ie	896 1357/1423

Prof. Matthias Möbius	Nanoscience Director	mobiusm@tcd.ie	896 1055
Prof Joanna McGouran	Chemistry with Biosciences Director	jmcgoura@tcd.ie	896 1422
Dr. Sinéad Boyce	School Manager	sboyce@tcd.ie	896 4587
Ms. AnneMarie Farrell	School Office	farrea25@tcd.ie	896 1726
Mr. Ben Power	School Office	powerbe@tcd.ie	896 2040

1.3 Emergency Procedure

In the event of an emergency, dial Security Services on extension **1999**.

Security Services provide a 24-hour service to the college community, 365 days a year. They are the liaison to the Fire, Garda and Ambulance services and all staff and students are advised to always telephone extension 1999 (+353 1 896 1999) in case of an emergency.

Should you require any emergency or rescue services on campus, you must contact Security Services. This includes chemical spills, personal injury or first-aid assistance. It is recommended that all students save at least one ICE (in case of emergency) phone number in their mobile phones.

1.3 Key Locations

Chemistry holds a key position among the sciences. It involves the study of matter, i.e., the composition, structure and properties of substances and the changes they undergo. Life on earth owes its origin to a series of these chemical changes. Formal chemistry teaching in TCD commenced in August 1711 as part of the new School of Medicine. The Cocker laboratories

provide facilities for the teaching of preparative inorganic and organic chemistry. The Sami Nasr Institute for Advanced Materials (SNIAM) building provides ca. 1500 m^2 of accommodation for the School of Chemistry. This includes a Physical Chemistry teaching laboratory and six research laboratories that house ca. 40 researchers. This institute also houses the School of Physics. Computational Chemistry research is housed in the Lloyd Institute on a multidisciplinary computational-science floor comprising researchers from Mathematics, Physics, Chemistry and High Performance Computing. In addition, chemists play an important role in interdisciplinary research taking place in two of TCD's newer research institutes: (i) The Centre for Research on Adaptive Nanostructures and Nanodevices (CRANN) and (ii) the Trinity Biomedical Sciences Institute (TBSI).

References/Sources:

Interactive College Map

Blackboard

Academic Registry

1.4 Key Dates

Academic Year Structure

Key Dates:

Date(s)	Activity
Approx. 15th Sept	Projects abroad start
15th-Sept	Projects start at TCD
16th-Sept	Safety workshop
Friday 21st-Nov	Submission deadline for electronic submission of solutions to the 6 problems
Friday 5th Dec	Submission deadline for Capstone project reports
15th-19th Dec	Capstone Project presentations and oral Problem-Solving examinations (if use of contingency days is necessary we will let you know ASAP)

1.5 Timetable

Your timetable is available through MyTCD.

Reference/Source:

My TCD

2. SCHOLARSHIPS AND PRIZES

2.1 Prizes, Medals and Other Scholarships

COCKER PRIZE IN CHEMISTRY

This prize was founded in 1949 by a gift from Sir William W. Cocker, O.B.E., LL.D. (h.c.). Provided sufficient merit is shown, the prize is awarded annually by the Board on the recommendation of the Head of the School of Chemistry to the chemical sciences student who shows the greatest practical ability in a chemistry-based Senior Sophister capstone project, who is not in receipt of another prize. Value, €760

MARY CARSON BOOK PRIZE IN CHEMISTRY

This prize was established in 2023 in memory of Dr Mary Carson, who was one of the first female academics in the School of Chemistry and had a life-long involvement with the Trinity second-hand booksale. The prize is awarded annually on the recommendation of the Head of the School of Chemistry to the Senior Sophister student with the highest moderatorship mark in chemistry, medicinal chemistry, chemistry with molecular modelling, or chemistry with biosciences. Value, €500

3. ACADEMIC WRITING

3.1 Academic Integrity and Referencing Guide

In Trinity College Dublin, we commit ourselves as staff and students to acting responsibly and ethically, embracing integrity in all our actions and interactions as members of the College community. Understanding that integrity requires honesty, transparency and accountability, we agree to:

- Strive to do what we say we will, ensuring that we are aware of our commitments and responsibilities in order to fulfil them, and abiding by College and other relevant policies and the highest standards of conduct.
- Give credit where credit is due, recognizing and acknowledging the contributions and achievements of others in scholarship, teaching, research and service.
- Tell the truth, as a community and as individuals, speaking out and listening even when it is difficult, naming problems and honestly acknowledging mistakes.
- Hold ourselves and others to account for the things for which we are each responsible.
- Use resources for the purposes for which they are intended and be above reproach in financial dealings.
- Deal fairly, consistently and transparently with others.

It is clearly understood that all members of the academic community use and build on the work and ideas of others. However, it is essential that we do so with integrity, in an open and explicit manner, and with due acknowledgement.

Any action or attempted action that undermines academic integrity and may result in an unfair academic advantage or disadvantage for any member of the academic community or wider society may be considered as academic misconduct. Examples of academic misconduct include, but are not limited to:

(i) plagiarism - presenting work/ideas taken from other sources without proper acknowledgement. Submitting work as one's own for assessment or examination, which has been done in whole or in part by someone else, or submitting work which has been created using artificial intelligence tools, where this has not been expressly permitted;

(ii) self-plagiarism - recycling or borrowing content from the author's own previous work without citation and submitting it either for an assignment or an examination;

(iii) collusion - undisclosed collaboration of two or more people on an assignment or task, or examination, which is supposed to be completed individually;

(iv) falsification/fabrication;

(v) exam cheating - action or behaviour that violates examination rules in an attempt to give one learner an unfair advantage over another;

(vi) fraud/impersonation - actions that are intended to deceive for unfair advantage by violating academic regulations. Using intentional deception to gain academic credit;

(vii) contract cheating - form of academic misconduct in which a person uses an undeclared and/or unauthorised third party to assist them to produce work for academic credit or progression, whether or not payment or other favour is involved. Contract cheating is any behaviour whereby a learner arranges to have another person or entity ('the provider') complete (in whole or in part) any assessment (e.g. exam, test, quiz, assignment, paper, project, problems) for the learner. If the provider is also a student, both students are in violation.

Further examples of the above available at www.tcd.ie/teaching-learning/academic-integrity.

TCD Guidelines on Academic Integrity can be found at this link:

general-regulations-and-information.pdf (tcd.ie)

TCD Guidelines on Use of AI

College Statement on Artificial Intelligence and Generative AI in Teaching, Learning, Assessment & Research

Library of TCD - Generative AI – Information:

Introduction - Generative AI - Library Guides at Trinity College Dublin

Reference/Source

Calendar Part II, B: General Regulations & Information, 'Academic Integrity'

Statement of Principles on Integrity

Library Guides - Academic Integrity

Coversheet Declaration

3.2 Research Ethics

It is essential that all of our research is conducted with integrity and that it adheres to the highest standards of ethical oversight. Research excellence in College is guided by the principles described in the Policy on Good Research Practice document (2002; updated in 2009) and these principles apply to all research conducted by staff and students under the auspices of Trinity College. In order to ensure that we continue to operate at the highest levels of excellence all policies in this area are continuously reviewed by the Research Ethics Policy Committee (REPC).

All research with impact has an ethical dimension and all researchers should reflect on the implications of their work, not just in terms of human (and animal) welfare and dignity, but also the social and cultural impact of their research. Funding agencies are placing increasing importance on ethics approval procedures and the scope of research areas requiring ethical review is growing.

In order to ensure that all researchers in College have access to efficient and transparent procedures for ethical review, current research ethics procedures have been reviewed and new research ethics policies are currently being implemented.

Reference/Source

Research Ethics

Policy on Good Research Practice

Ethics Policy

4. TEACHING AND LEARNING

<table>
<tr><td colspan="3">Senior Sophister TR061 – Chem/CMM/MedChem/</td></tr>
<tr><td colspan="3">40 ECTS Core</td></tr>
<tr><td>Semester 1</td><td colspan="2">Semester 2</td></tr>
<tr><td rowspan="2">CHU44120/CHU44420/CHU44720/CHU44520
Capstone Project
(20 ECTS)</td><td>CHU44304 (5 ECTS)
Physical Chemistry</td><td>CHU44204 (5 ECTS)
Organic Chemistry</td></tr>
<tr><td>CHU44004 (5 ECTS)
Inorganic Chemistry</td><td></td></tr>
<tr><td colspan="3">CHU44123 Problems Module (5 ECTS)</td></tr>
<tr><td colspan="3">20 ECTS Options</td></tr>
<tr><td></td><td colspan="2">Option Modules (10 ECTS each)</td></tr>
<tr><td></td><td colspan="2">CHU44205(OChem*)
CHU44005(IChem)
CHU44167(Pchem)
CHU44705(CMM**)
CHU44405(MedChem Option (only available for MedChem Moderatorship; compulsory)
*OChem option is compulsory for MedChem
**CMM option is compulsory for CMM</td></tr>
</table>

<table>
<tr><td colspan="4">Senior Sophister TR063 – Nanoscience</td></tr>
<tr><td colspan="4">45 Credits Core modules + 15 Credits Open modules (AY 21/22)</td></tr>
<tr><td rowspan="5">Core Modules (45 credits)</td><td colspan="2">Semester 1: Core</td><td>Semester 2 Core</td></tr>
<tr><td colspan="2">PYU44NP2: Project (20 credits) – Assessment in Semester 2</td><td></td></tr>
<tr><td rowspan="3">Project in first 9 - 12 weeks of semester 1</td><td>PYU44NP5: Problem solving (5 credits)</td><td>CHU44304: Physical Chemistry (5 credits)</td></tr>
<tr><td colspan="2">PYU44N02: Nanoscience, complex fluids and polymers (10 credits)</td></tr>
<tr><td></td><td>CHU44004: Inorganic chemistry (5 credits)</td></tr>
<tr><td rowspan="8">Open Modules (10 credits)</td><td colspan="2">Semester 1: Open modules</td><td>Semester 2: Open modules</td></tr>
<tr><td colspan="2" rowspan="7">Take 2 or 3 Open modules which total 15 credits</td><td>PYU44P13: Magnetism & Superconductivity (5 credits)</td></tr>
<tr><td>PYU44P06: Modern Optics (5 credits)</td></tr>
<tr><td>PYU44P05: Electromagnetic Interactions II (5 credits)</td></tr>
<tr><td>PYU44P17: Energy Science (5 credits)</td></tr>
<tr><td>CHU44167: Advanced Physical Chemistry (10 credits)</td></tr>
<tr><td>CHU44005: Advanced Inorganic Chemistry (10 credits)</td></tr>
<tr><td>CHU44705: Advanced Computational Chemistry (10 credits)</td></tr>
</table>

Programme Architecture

The Senior Sophister course structure is diagrammatically illustrated below:

<table>
<tr><td colspan="3">Senior Sophister TR061 – Chemistry with Biosciences</td></tr>
<tr><td colspan="3">60 ECTS Total</td></tr>
<tr><td>Semester 1</td><td colspan="2">Semester 2</td></tr>
<tr><td>Capstone Project
CHU44520</td><td>CHU44004 Inorganic Chemistry</td><td>CHU44204 Organic Chemistry</td></tr>
<tr><td>BIU3350 Molecular Basis of Disease*
(Planned online)</td><td>CHU44304 Physical Chemistry</td><td>BIU33250 Introduction to Immuno/metabolism (planned online)*</td></tr>
<tr><td colspan="3">CHU44123 Synoptic Problem Solving</td></tr>
<tr><td></td><td colspan="2">BIU44610-Nucleic acids 10 credits. Lect & Labs*</td></tr>
</table>

Details for each moderatorship and a brief descriptor for each module are outlined in the next section.

4.1 Capstone Research Project

During semester 1 students will focus on self-directed learning for the development of their problem-solving skills and on research work towards completion of their capstone project. Activities in semester 1 will be assessed via viva-voce examination during the TCD scheduled assessment week. For those working in the School of Chemistry, the research project will be carried out under the supervision of a member of staff. **Chemistry, Medicinal Chemistry, Chemistry with Molecular Modelling and Chemistry with Biosciences project work will begin in Trinity College on Monday 15th September 2025 for 12 weeks.** Nanoscience project work will follow all Physics timelines and guidelines.

A compulsory safety workshop has been organized for 16th September 2025 from 9-11 am in the Large Lecture Theatre and from 2-3pm in the Science Lecture Theatre.

All students should submit their final project report electronically by **no later than 16:30 on the 5th of December 2025**. In an attempt to create a fair evaluation method and to keep in line with College guidelines on plagiarism, the Blackboard plagiarism software "SafeAssign"" will be used for electronic report submission.
For convenience for both staff and students, both the Problems Assignment and the Capstone Projects should be submitted to the appropriate links in the CHU44123 module on Blackboard.

Unauthorized late submissions will result in a 10% reduction in marks for the first 24-hour delay and a 5% reduction per day thereafter.

Discuss the structure and content of your report with your supervisor. **It must be typed using a font size of 12, and be double- spaced, and no more than 30 pages in length.** In addition to this page limit, you can include limited numbers of spectra *etc*. as an appendix. Your laboratory notebooks, together with appendices of spectra *etc*. must also be handed in at this time. It is crucial that you allow sufficient time for the completion of your report. A formal meeting will be

held with Senior Sophisters to discuss work progress and the writing of the report during the first semester (dates to be set). Those of you opting to carry out your project abroad will receive this information from your home mentor/SS Coordinator. The presentation slides will be uploaded on Blackboard for the whole class.

Project Assessment: The outlined assessment structure will apply to all except Nanoscience students, both those doing projects in TCD and those doing projects abroad. Your project work will be assessed by three people, one of whom will be your supervisor. The supervisor will submit a written report on the work conducted during the project and will contribute to 20% of the project marks. The other two assessors will assess the project report and conduct a formal assessment that will each contribute to 40% of your overall mark. The assessment will involve a 10-minute presentation by the student followed by a question-and-answer session in which the work and underlying theoretical concepts will be discussed. In addition to discussing the project, the assessment will also include a question related to the problem-solving element of the option and problem-solving module CHU44123 that will contribute to 30% of the module mark. These oral examinations will be scheduled between **Monday 15th December and Friday 19th December 2025.** Your supervisor will have no role in these oral examinations.

If there are significant mark discrepancies between the project assessors, the Director of Teaching and Learning (Undergraduate), Prof. Southern may appoint adjudicative assessors to ensure a balanced and fair evaluation of the written report.

Marks for your project contribute 33% to your SS year mark and will be allotted based on quality of content, presentation, effort made and performance during the oral examination.

For further queries about the research project, contact Prof. Robert Baker (bakerrj@tcd.ie) or the School of Chemistry Office, either in person or by e-mail.

4.2 Semester 1 – Problem Solving

Module code: CHU44123 (C), (MC), (CMM), (CB).

Credit bearing: 5 ECTS (30% assessed in S1 *viva* assessment, 70% assessed by in-class test on **Monday of Week 25 (9th February from 9-11am)**

Development of problem-solving skills is an essential component of student development and is one of the critical skills identified by the RSC as necessary for chemistry graduates. A mixture of "seen" and "unseen" problem assignments will be used to facilitate development of such skills. A blend of self-directed learning and guided problem solving will be used to support the acquisition of such skills.

In semester 1 students will be given **one assignment with a total of 6 problems**, of difficulty similar to that of traditional long problems. All four moderatorships will be given the same assignment, hence all 6 problems must be solvable by students in all four moderatorships. The solution to the problems might require self-directed learning, in which case the problem will contain a reading list for the students.

The students will solve the problems independently; students are encouraged to consult textbooks and scientific literature to work on their solutions but are not allowed to copy solutions from fellow students. After submission of their solutions, students are free to discuss the problems with others in their SS class.

Students will submit their solutions to all 6 problems electronically, on **Friday November 21st 2025**. All students (including those doing projects abroad) will submit their solutions via the relevant link in the CHU44123 module on Blackboard. You may type or handwrite your answers, but they must be scanned and submitted as one single PDF document for submission.

A copy of the solution script will be made available to each of the viva assessors, together with the capstone report for evaluation at the time of the viva.

Unauthorized late submissions will result in a 10% reduction in marks for the first 24-hour delay and a 5% reduction per working day thereafter.

Viva-voce examination for problem-solving component. This section of the viva will be 10 minutes long and will take place after the discussion of the project has closed. The assessors will select one of the 6 problems in the assignment and will ask the student to solve either the problem or a section of it during the examination and discuss/articulate the approach taken. Students will be encouraged to identify and correct any mistakes made in their original submissions. A separate assessment form will be completed by the two viva assessors and it will be submitted together with the capstone assessment and by the same deadline.
The formal weighting for the problem-solving component is: 20% for submitting on time a fair attempt at answering all questions, 30% for any corrections needed, and 50% for the viva examination.

4.3 Lectures and Seminars

All formal lectures will be given during the teaching weeks of Semester 2. You must attend all of those lectures listed as **core** modules together with **two topics** chosen from the list of options (if a Chemistry student) or **one topic** (if a CMM student, as CHU44705 is compulsory). There is no choice for MedChem or ChemBio students, MedChem students must take CHU44205 and CHU44405; ChemBio students must take BIU33250 and BIU44610.
A provisional list of all modules is included in this booklet. A full list of available option topics will be circulated later in the year and you must notify the School Office electronically of the topics you will take by **Monday 6th October 2025.**

All students are required to attend the School Research Seminars that are held during the year (Thursdays at 12 noon) and should also attend any research lectures organized by the Werner Chemical Society.

4.4 Moderatorship Examinations

It is likely that Moderatorship Examinations will be held in the week of April 21 to May 1, 2026 inclusive (*Note: it may be necessary to hold some examinations/assessments in the preceding week). Your examination timetable will be available through your student portal closer to the exam period.

All degree programmes except Nanoscience will use the same set of external examiners. External examiners will review the exam questions and the structure of the exam papers before they are finalized. They will also review exam scripts and project theses.

The external examiners will be in the School for two days after semester 2 examinations and they may request a viva voce with any candidate. It is likely that all Senior Sophisters will be asked to attend on the morning of the interviews and those being called for a viva will be notified the afternoon before if possible..

You must ensure that you are available if you are called for an interview by the External Examiners.

IMPORTANT: From this academic year, ANY reassessment or resit attempt will be capped at **40%.** (This is an RSC Accreditation requirement). Deferred exams are not subject to capping. This was approved by the Senior Lecturer subject to the following conditions:

(i) to carry out a review of the performance of the derogation from an academic, logistic and student perspectives after two years so as to understand expected & unexpected consequences of the derogation. This means that any continuance of the derogation is contingent on the satisfactory performance of the derogation

(ii) that all affected students are fully informed of the change in (re)assessment (i.e. the derogation) at the beginning of term and the reasons for the change in (re)assessment rules derogation.

4.5 Moderatorships Details – Core and Option Modules

The SS year has a total of 60 ECTS, broken down as follows:

Project mark:	20 credits	33%
Examinations:	40 credits	67%

The final degree mark will comprise 30% from your JS mark and 70% from your SS mark. There will be a 1.5 hour moderatorship examination for each 5 ECT module that is assessed by examination, and 3 hours for each 10 ECT module that is assessed by examination. There will also be a 2-hour chemistry problem-solving paper (comprising 70% of the CHU44123 module) which will take the form of an in-class test on Monday 9th February (9am-11am). You must answer 4 out of 6 questions, attempting at least one question from each of the Pchem, Inorganic and Organic sections.

Core Lecture Modules for Chem/CMM/MedChem are all worth 5 ECTS and all are in Semester 2. For ChemBio module BIU33350 Molecular Basis of Disease is in S1, but is planned to be delivered online.

For Nano module PYU44N02 Nanoscience, Complex Fluids and Polymers runs across S1&S2 and is worth 10 credits

Core Modules

CHU44204 Organic Chemistry **5 ECTS**

Core for Chem, CMM, MedChem, ChemBio

This module is aimed at achieving an understanding of advanced aspects of organic chemistry including retrosynthesis, reactive intermediates, including synthetic radical and carbene chemistry, and planning of total synthesis.

CHU44004 Inorganic Chemistry **5 ECTS**

Core for Chem, CMM, MedChem, ChemBio, Nano

The student will be introduced to advanced synthetic methods in materials chemistry. The module focuses on an understanding of the fundamental concepts of structure-property relationships to design materials for specific applications (*e.g.,* alloys, ceramics, glasses, inorganic polymers and various composite materials). The second part of the module will introduce the student to the molecular chemistry of the f-block elements (lanthanides and actinides).

CHU44304 Physical Chemistry **5 ECTS**

Core for Chem, CMM, MedChem, ChemBio, Nano

The student will be introduced to statistical thermodynamics and its applications in chemistry, integrating this topic with the kinetics, classical thermodynamics and quantum chemistry covered in previous years. The second part of the module will cover elements of soft matter and macromolecular and colloid chemistry.

(BIU33350) Molecular Basis of Disease (S1) **5 ECTS**

Core only for ChemBio

This module is to provide students with the grounding in cell signalling and disease biology and how modern therapeutics are designed, developed and deployed for the treatment of human

diseases. The topics covered will include cell signalling, drug design and delivery, and will focus on the molecular basis of cancer, pro-inflammatory disease, and metabolic disorders.

PYU44N02 Nanoscience, Complex Fluids and Polymers (S1&S2) **10 credits**

Core for Nano

This module covers nanoscience and the modified properties of nanoscale matter, its fabrication and potential applications together with the rheology and behaviour of liquids as applied to microfluidic systems and a detailed overview of polymer physics.

Option Topics

Chem will need to select 2 x 10 ECT options.

CMMs must complete CHU44705, therefore only have a choice of 1 x 10 ECT option.

MedChem have no choice (must do CHU44405 and CHU4205).

ChemBio have no option modules to chose.

You will be sent a MS Form to submit your option choices early in the first semester. More information will be made available during the semester. Please note that option topics that have been requested by only a few students may not be offered.

(CHU44205) Advanced Organic Chemistry (S2) **10 credits**

Option for Chem, CMM

Compulsory for MedChem

This module is aimed at achieving an understanding of advanced aspects of organic chemistry including photochemistry, supramolecular chemistry, chemical biology, asymmetric synthesis and advanced topics in organic synthesis.

(CHU44005) Advanced Inorganic Chemistry (S2) **10 credits**

Option for Chem, CMM, Nano

This module covers aspects of advanced coordination, organometallic and bioinorganic chemistry. It focuses on structure-property relationships and outlines characterisation techniques for bioinorganic systems. In addition, the module will cover aspects of crystal growth, emphasising the interplay between composition, structure, morphology and properties.

(CHU44167) Advanced Physical Chemistry (S2) 10 credits

Option for Chem, CMM, Nano

The student will be introduced to advanced topics in physical chemistry that integrate and build on the core concepts of kinetics, thermodynamics and quantum chemistry covered in core physical-chemistry modules. Topics will include: (a) electrochemistry and its applications to energy devices for sustainability, (b) photochemistry and spectroscopy, and (c) surface and interfacial chemistry, including catalysis for the environment.

(CHU44705) Advanced Computational Chemistry (S2) 10 credits

Option for Chem, Nano

Compulsory for CMM

This module will cover the main computational quantum chemistry methods and computational techniques, including optimisation and molecular dynamics, used in the modelling of structure, chemical reactivity and electronic properties of molecular systems and solid crystals. The performance and suitability of these methods for different applications will also be analysed and discussed. In addition, lectures will be complemented with computational practicals so that students can see a direct application of these methods.

(CHU44205) Advanced Organic Chemistry (S2) 10 credits

Compulsory for MedChem

This module is aimed at achieving an understanding of advanced aspects of organic chemistry including photochemistry, supramolecular chemistry, chemical biology, asymmetric synthesis and advanced topics in organic synthesis.

(CHU44405) Advanced Medicinal Chemistry (S2) 10 credits

Compulsory for MedChem

This module is aimed at achieving an understanding of advanced aspects of medicinal chemistry including concepts and targets in medicinal chemistry, the cardiovascular system, the central nervous system, computational medicinal chemistry, drug discovery and combinatorial chemistry.

(BIU33250) Introduction to Immunology & Immunometabolism (S2) 5 credits

Compulsory for ChemBio

This module introduces the basic components and function of the immune system – the molecules, cells, tissues and organs that make up the immune system. It will illustrate the immune responses to infection. Additionally, it will introduce students to the importance of central energy and intermediary metabolic pathways or bioenergetics before considering how they are dysregulated in diseases like cancer and also how we can harness this knowledge for new immunotherapies.

(BIU44610) Nucleic Acids (SS Chemistry with Biosciences)

equivalent to BIU33390 (S2) 10 credits

Compulsory for ChemBio

This module covers the structure and function of nucleic acids in a eukaryotic context. The basis of gene transcriptional regulation and mRNA translation are described at a mechanistic and structural level in addition to the processes involved in DNA replication and repair. The lectures of this module are accompanied by a set of practical sessions (15 contact hours) that include:

(i) analysis of plasmid DNA, digestion and cloning, transformation and selection of bacteria; laboratory and tutorial sessions.

(ii) PCR and qRT-PCR, analysis and tutorial.

PYU44P13 Magnetism and Superconductivity (S2) 5 credits

Option for Nano

This module covers magnetism, magnetic materials, and introduces superconductivity.

PYU44P06 Modern Optics (S2) 5 credits

Option for Nano

This module covers optical communications and nonlinear optics involving lasers.

PYU44P05 Electromagnetic Interactions II (S2) 5 credits

Option for Nano

This module covers electromagnetic wave phenomena together with the optical properties of materials.

PYU44P17 Energy Science (S2) 5 credits

Option for Nano

This module consists of the physics behind key technologies for energy generation.

CHEMISTRY SEMINARS: 12 o'clock on Thursdays in

the CHLLT (Sem 1) or CHSCLT (Sem 2)

ALL SS STUDENTS HAVE TO ATTEND THESE

4.6 Examination Structure 2025/2026

Semester 2 - Paper structures:

1. All 5 ECTS modules, 1.5 hr papers: these will contain only compulsory questions worth equal marks, but there will be a minimum of 25% choice within each question. Each question should be timed for 40-45 min total time.

2. Module CHU44123 – 5 ECTS

Problem-Solving paper weight: 70% of the 5 ECTS (30% of the 5 ECTS is assessed in S1 assignment)

One identical paper for Chem, Med, ChemBio and CMM. Students answer 4 out of 6 questions (2 x organic, 2 x inorganic and 2 x PhysChem) but they must answer at least 1 from each section. Each problem should be timed for 22 mins approx. The problems should only draw on core material covered by students from years 1-3. This paper will be assessed as an in-class closed-book assessment of 2h duration (students with LENS reports will have the extra time/conditions as set out in their LENS reports).

3. 10 ECTS modules, 3h papers (T): these will contain only compulsory questions worth equal marks, but there will be a minimum of 25% choice within each question. Each question should be timed for 40-45 min total time.

4.7 Attendance Requirements

Laboratory practical work is assessed in-course. **Attendance** at chemistry practical classes is compulsory for students. **You may be deemed non-satisfactory if you fail to attend and/or submit more than a third of the required coursework for any module**.

In order to reinforce and extend a student's laboratory skills in Chemistry, **are required** to attend a 3-hour workshop on Safety on Tuesday 16th Sept 2025. Attendance at all workshops **is compulsory**.

Unauthorized late submissions of all coursework will result in a 10% reduction in marks for the first 24-hour delay and a 5% reduction per working day thereafter.

Reference/Source:

Calendar Part II, B: General Regulations and Information, 'Attendance'

4.8 Absence from Examinations

(taken from Calendar general regulations and information)

44 Students who may be prevented from sitting an examination or examinations (or any part thereof) due to illness should seek, through their tutor, permission from the Senior Lecturer in advance of the examination session to defer the examination/s to the reassessment session. Students who have commenced the examination session, and are prevented from completing the session due to illness should seek, through their tutor, permission from the Senior Lecturer to defer the outstanding examination/s to the reassessment session.
45 Where such permission is sought, it must be appropriately evidenced:

(a) For illness: medical certificates must state that the student is unfit to sit examinations/ complete assessment and specify the date(s) of the illness and the dates on which the student is not fit to sit examinations/complete assessment. Medical certificates must be submitted to the student's tutor within three days of the beginning of the period of absence from the assessment/examination.

(b) For other grave cause: appropriate evidence must be submitted to the student's tutor within

three days of the beginning of the period of absence from the assessment/examination.

46 Where illness occurs during the writing of an examination paper, it should be reported immediately to the chief invigilator. The student will then be escorted to the College Health Centre. Every effort will be made to assist the student to complete the writing of the examination paper.

47 Where an examination/assessment has been completed, retrospective withdrawal will not be

granted by the Senior Lecturer nor will medical certificates be accepted in explanation for poor performance.

Reference/Source:

Calendar Part II, B: General Regulations and Information, 'Absence'

Academic Policies

4.9 External Examiners

Our external examiners for the undergraduate degree programmes have a wide range of functions. In approximately chronological order within the academic year, these include:

1. review of the style, content and presentation of our examination questions at Senior Sophister and Junior Sophister levels
2. an overall review of the content and level of the examinations as a whole
3. suggesting appropriate amendments to questions and to papers arising from (1) and (2)

4. reviewing the marking of all components of the degree examination to ensure that standards are appropriate (and generally match those of expected at this level of student attainment) and to ensure that students are treated equally and fairly. This may include the interview of students at borderlines

5. to comment and make recommendations for the conduct of future examinations, including how the school examiners might better develop the role of, and relationship with, the externs

6. based on this experience, meetings with the different disciplines within the school and meetings with the students, to consider the overall content of the courses, matters of presentation of the courses and to advise us on aspirations for future development of our courses (including the structure of our examinations)

4.10 Student Feedback and Evaluation

The courses offered by the School benefit from student feedback. Rather than waiting until the end of a module to request online feedback, the School of Chemistry has instituted a Sophister Liaison Committee (SLC). Committee members comprise the DTLUG/Associate DTLUG, the School Convenor, JS and SS class reps, and Heads of Discipline or their representatives and the meetings are minuted. Class reps should collate feedback from their fellow students to bring to the meeting, which takes place at least once per semester.