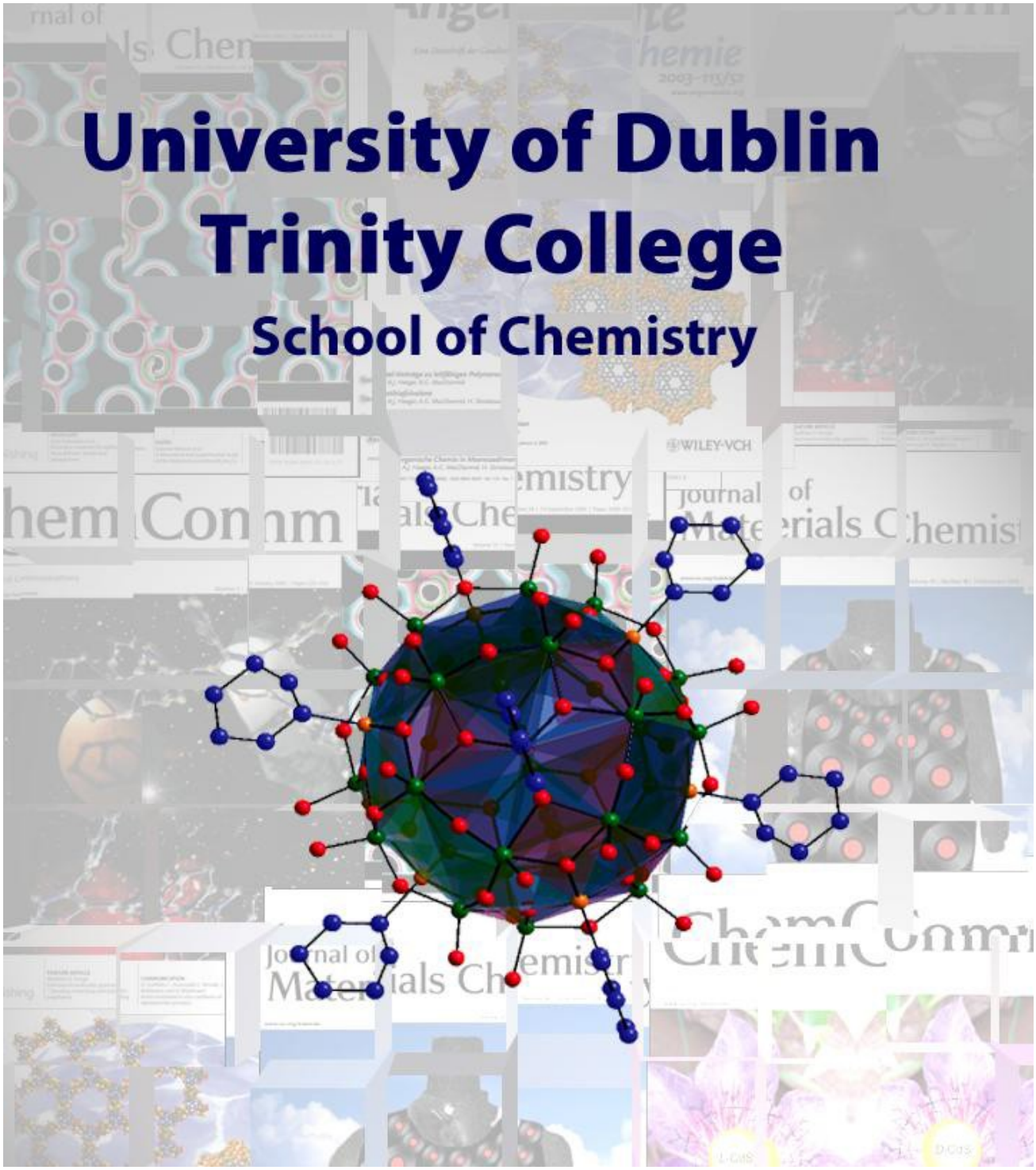

Senior Sophister Programme
2013/14

Contents

1. General

Welcome to your final year of study in Trinity. Prof. Thorri Gunnlaugsson (Senior Sophister Coordinator), Prof. Mike Southern (Coordinator of Medicinal Chemistry) and Prof. Stephen Connon (Director of Teaching and Learning (Undergraduate)) will liaise with you during the year and will be available to discuss any problems that may arise, and to give you all the advice and help 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.

2. Research Project

During Michaelmas term you will carry out a research project. For those working in the School of Chemistry, the research project will be carried out under the supervision of a member of staff and must be completed by the end of the semester. Project work will begin at Trinity College on 9 **September 2013**.

ERASMUS projects and other projects carried out abroad start approximately two weeks earlier (approx. 1st September). In an attempt to create a fair evaluation method and to keep in line with College guidelines on plagiarism, the software "TurnItIn" will be used for electronic report submission. Details and guidance on how to use this software will be sent to you later.

All students should submit their final project report electronically by **no later than 12.00 on Friday 29 November 2013**. Two hard copies of the identical report should be handed into the Chemistry Office by **no later than 5.00 p.m. on Monday 2 December 2013**.

Discuss the structure and content of your report with your supervisor. **It must be typed with**

font size 12, double-spaced, bound, and not longer than 30 pages in length. Your laboratory notebooks together with appendices of spectra *etc*., if appropriate, must also be handed in at this time. It is crucial that you allow sufficient time for the completion of your report. Your supervisor must receive a draft copy of your report **by Friday 15 November 2013**. Two meetings will be held with Senior Sophisters to discuss the writing of the report and the communication exercise (see below) during the first semester (dates to be set).

Project Assessment: The outlined assessment structure will apply to all students, both those doing projects in TCD and those doing external projects. Your project work will be assessed by three people (equal weighting), one of whom will be your supervisor. The supervisor will submit a written report on the work conducted during the project. The other two assessors will assess the project report and conduct a formal assessment involving a 10-minute presentation by the student followed by a question & answer session in which the work and underlying theoretical concepts will be discussed. These oral examinations will be scheduled between **Monday 9 December and Friday 13 December 2013.** Your supervisor will have no role in these oral examinations.

In the case of significant mark discrepancies amongst the project assessors, the Director of Teaching and Learning, Prof. Connon, may appoint adjudicative assessors to ensure a balanced and fair evaluation of the written report. Marks for your project contribute 30% to your SS year mark (18 credits for project), and will be allotted on the basis of quality of content, presentation, effort made, and performance during the oral examination.

For further queries about the research project contact Prof. Thorri Gunnlaugsson (gunnlaut@tcd.ie) or the School of Chemistry Office directly or by e-mail to **sschem@tcd.ie**.

In addition, you will have to complete one exercise during the first semester while you are working on your project. For the exercise you should write a short communication-style paper based on the subject of your project work. The submission deadline for this is Wednesday 22 January 2014.

Summary

Approx. 1 September	Projects abroad start
9 September	Projects start at TCD
29 November	Submission deadline for electronic copies of project reports
2 December	Submission deadline for hard copies of project reports
9–13 December	Project presentations and oral examinations
22 January 2014	Submission of Communication exercise

3. Lectures and Seminars

All formal lectures will be given during the first 8 teaching weeks of Semester 2. You must attend all those lectures listed as **core** modules together with **four** topics chosen from the list of **options** (marked O on timetable). 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 **2 December 2013** (this only applies to Moderatorships in Chemistry and Chemistry with Molecular Modelling). Medicinal Chemists have no choice (see section 7).

All students will be expected to attend the School Research Seminars that are held during the year, as well as any research lectures organized by the Werner Chemical Society.

4. Michaelmas Term Exercise

You will have to complete one exercise during the first semester while you are working on your project. For this exercise, you should write a communication style paper based on the subject of your project work. Communications are usually short accounts of original and most significant results that warrant rapid publication. A template based on a *J. Am. Chem. Soc.* (JACS) communication must be used. This communication should be a maximum of **3 pages in length,** inclusive of figures and literature references. For JACS communication guidelines consult the website: http://pubs.acs.org/page/jacsat/submission/authors.html. Similarly a template and a JACS sample paper can be downloaded from http://pubs.acs.org/page/jacsat/submission/jacsat_templates.html.

The manuscript, which should comply with the formal requirements of a JACS communication, should be submitted electronically to **sschem@tcd.ie** by **5.00 p.m. on 22 January 2014**.

5. Moderatorship Examinations

It is likely that Moderatorship Examinations will be held during the first two weeks of the examination period but the schedule of exams will be published online closer to the exam period:

All degree programmes will use the same set of external examiners. They review the exam questions and the structure of the exam papers before they are finalized. They also review the scripts following the examinations.

The external examiners will be in the School in early June 2014 (provisional dates: SS External Examiners Meeting 5/6 June 2014) 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 vivas and those being called for a viva will be announced at that meeting.

If you are called for a viva you cannot conclude anything from this about your performance in the examination papers.

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

6. Moderatorship – Chemistry

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

Project mark and term exercise:	20 credits	33%
Examinations:	40 credits	67%

The final degree mark will comprise 35% from your JS Mark and 65% from your SS mark. The Moderatorship examinations will consist of **five** written papers.
Paper 1 (2.5 hours' duration) contains questions on the option topics and is worth 8.3%.
Paper 2 (3 hours' duration) covers inorganic-chemistry modules and is worth 16.6%.
Paper 3 (3 hours' duration) covers physical-chemistry modules and is worth 16.6%.
Paper 4 (3 hours' duration) covers organic-chemistry modules and is worth 16.6%.
Paper 5 (3 hours' duration) is a chemistry problem-solving paper and is worth 8.3%.

Core Lecture Modules (all worth 5 ECTS)

Module Code Title

CH4104 **Advanced Inorganic Chemistry I**
- CH4005 Advanced organometallic chemistry
- CH4014 Main-group organometallics

CH4105 **Advanced Inorganic Chemistry II**
- CH4004 Heavy transition metals
- CH4011 Advanced coordination chemistry

CH4106 **Advanced Physical Chemistry I**
- CH4006 Photochemistry
- CH4008 Advanced physical chemistry

CH4107 **Advanced Physical Chemistry II**
- CH4007 Quantum chemistry
- CH4009 Solid state

CH4112 **Advanced Organic Transformations I**
- Retrosynthesis
- Asymmetric Synthesis

CH4113 **Advanced Organic Transformations II**
- Advanced Organic Transformations II

CH4108 **Option Lecture Module**

You must choose **four** topics (each credited as 1.25 units) from the list given below*, and **you must notify the School office by email to sschem@tcd.ie of your choice by 2 December 2013.** 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. Students interested in Medicinal Chemistry will find courses CH4031–CH4036 especially appropriate.

CH4021 **Molecular dynamics** (DMacD). An introduction to a simple yet powerful method for solving the many particle equations of motion for molecular systems; applications in chemistry.

CH4022 **Matter transport in solids** (JC). Ionic conductance and diffusion processes in solids considered from first principles; applications include solid state reactions, including corrosion of metals and alloys, and fast ion conductors and their uses in advanced battery systems and chemical sensors.

CH4023 **Quantum chemistry** (DAMB). Quantum operators; perturbation theory and applications (Stark effect); beyond the Hartree-Fock limit; vibrations in solids (phonons).

CH4024 **Heterogeneous catalysis** (GW). The course will examine the basic principles of catalyst and catalyst design, including measures of catalyst activity. Examples of real-world catalysts will be given, including the use of zeolites for acid-catalysed reactions within the petroleum industry, the design and performance of car-exhaust catalysts, and hydro-desulfurisation catalysts and their link to environmental legislation.

CH4025 **Supramolecular chemistry** (TG). Host–guest chemistry and molecular recognition, including relevance to biological processes and 'molecular engineering'. Self-assembly and anion sensing.

CH4027 **Topics in structural chemistry** (YG). A brief review of the preparation, structural chemistry and physico-chemical properties of (i) molecular crystals and (ii) copper oxide superconductors emphasising the interplay between composition, structure and properties.

CH4030 **Statistical thermodynamics** (MEB). Application of statistical mechanics to study molecular motion in various states of matter; Fermi-Dirac and Bose-Einstein statistics.

CH4031 **Organic synthetic methods II** (MS). This course is concerned with the mode of action and the synthesis of the microtubule active anti-cancer agents Taxol® and Epothilone.

CH4034 **DNA structure and drug—DNA complexes** (JMK). Spectroscopic tools for studying nucleic acids; structure of DNA (A, B and Z); covalent and non-covalent binding to DNA; relevance to drug design.

CH4036 **Bio-organic chemistry** (MS). Introduction; NADH stereoselective reductions in nature; amination – alkaloid biosynthesis; acetyl CoA (fatty acid biosynthesis); shikimic acid

pathway; steroid biosynthesis; biotransformations, an important tool in modern organic synthesis.

CH4037 **Electrochemical biosensors** (MEGL). The physical principles underlying electrochemical sensors. A survey of surface- immobilized redox enzyme-based biosensor devices using electrochemical transduction. Strategies for enzyme wiring. Self assembled monolayer-based biosensors.

CH4041 **Material synthesis using chemical vapour deposition** (GD). The aim of this module is to provide students with an introduction to the increasingly important technique of chemical vapour deposition (CVD). This method has extensive applications in both industrial processes and academic research, and is used to deposit thin films of various substances. Also, CVD has led to the synthesis of novel materials such as nanowires and nanotubes. The module will cover the basic principles of CVD, its use as the impetus for surface and gas phase reactions, and the various technological considerations relevant to the development of the technique.

CH4003 **Special topics in inorganic chemistry** (YG/AMcD*).* Bio-inorganic chemistry; structure and reactivity of metallo-enzymes. Alkalides and electrides: definitions, synthesis, structures and properties. Polyhedral silsesquioxanes and metallasilsesquioxanes and their applications.

CH4054 Case studies (EMS)

CHEMISTRY SEMINARS: 12 o'clock on Thursdays in CHSCLT; ALL SS STUDENTS HAVE TO ATTEND THESES

*Other or additional optional modules may be offered at a later date.

7. Moderatorship – Medicinal Chemistry

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

Project mark and Term exercise:	20 credits	33%
Examinations:	40 credits	67%

The Final degree mark will comprise 35% from your JS Mark and 65% from your SS mark. The Moderatorship examinations will consist of **five** written papers.
Paper 1 (2.5 hours' duration) contains questions on the four short topics and is worth 8.3%.
Paper 2 (3 hours' duration) covers inorganic-chemistry modules and is worth 16.6%.
Paper 3 (3 hours' duration) covers physical-chemistry modules and is worth 16.6%.
Paper 4 (3 hours' duration) covers organic-chemistry modules and is worth 16.6%.
Paper 5 (3 hours' duration) is a chemistry problem-solving paper and is worth 8.3%.

Core Lecture Modules (all 5 ECTS)

Module	**Title**	
CH4112	**Advanced Organic Transformations I**	
		Retrosynthesis
		Asymmetric Synthesis
CH4113	**Advanced Organic Transformations II**	
		Advanced Organic Transformations II
CH4401	**Advanced Medicinal Chemistry I**	
``	CH4050	The central nervous system
CH4402	**Advanced Medicinal Chemistry II**	
	CH4052	Computational medicinal chemistry
	CH4056	Analytical techniques
CH4403	**Advanced Medicinal Chemistry III**	
	CH4053	Site-Specific drug delivery
	CH4055	Combinatorial chemistry
CH4404	**Advanced Medicinal Chemistry IV**	
	CH4051	The cardiovascular system
	CH4054	Case studies

Short Topics Module
CH4405 Advanced Medicinal Chemistry V (5 ECTS)
Short Topics are courses appropriate to Medicinal Chemists selected from the option topics for TR071 students:

CH4025 **Supramolecular chemistry** (TG). Host-guest chemistry and molecular recognition, including relevance to biological processes and 'molecular engineering'. Self-assembly and anion sensing.

CH4031 **Organic synthetic methods II** (MS). This course is concerned with the mode of action and the synthesis of the microtubule active anti-cancer agents Taxol® and Epothilone.

CH4034 **DNA structure and drug—DNA complexes** (JMK). Spectroscopic tools for studying nucleic acids; structure of DNA (A, B and Z); covalent and non-covalent binding to DNA; relevance to drug design.

CH4036 **Bio-organic chemistry** (MS). Introduction; NADH stereoselective reductions in nature; amination – alkaloid biosynthesis; acetyl CoA (fatty acid biosynthesis); shikimic acid pathway; steroid biosynthesis; biotransformations, an important tool in modern organic synthesis.

CHEMISTRY SEMINARS 12 o'clock on Thursdays in CHSCLT; ALL SS STUDENTS HAVE TO ATTEND THESES

8. Moderatorship – Chemistry with Molecular Modelling

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

Project mark and Term exercise:	20 credits	33%
Examinations:	40 credits	67%

The Final degree mark will comprise 35% from your JS Mark and 65% from your SS mark. The Moderatorship examinations will consist of **five** written papers.
Paper 1 (2.5 hours' duration) contains questions on the option topics and is worth 8.3%.
Paper 2 (3 hours' duration) covers inorganic-chemistry and molecular modeling and is worth 16.6%.
Paper 3 (3 hours' duration) covers physical-chemistry modules and is worth 16.6%.
Paper 4 (3 hours' duration) covers organic-chemistry and molecular modeling and is worth 16.6%.
Paper 5 (3 hours' duration) is a chemistry problem-solving paper and is worth 8.3%.

Core Lecture Modules (5 ECTS)

Module	Title
CH4105	**Advanced Inorganic Chemistry II**
CH4004	Heavy transition metals
CH4011	Advanced coordination chemistry
CH4106	**Advanced Physical Chemistry I**
CH4006	Photochemistry
CH4008	Advanced physical chemistry
CH4107	**Advanced Physical Chemistry II**
CH4007	Quantum chemistry
CH4009	Solid state
CH4113	**Advanced Organic Transformations II**
	Advanced Organic Transformations II
CH4702	**Advanced Molecular Modelling II**
CH4072	Advanced molecular quantum chemistry
CH4074	Computational drug design
CH4703	**Advanced Molecular Modelling III**
CH4071	High performance computing
CH4073	Advanced molecular dynamics

CH4701 Advanced Molecular Modelling I
You must take two topics (CH4023, Quantum chemistry and CH4030, Statistical thermodynamics) and choose any **two** other courses (each credited as 1.25 units) from the list given below*, and **you must notify the School office by email to sschem@tcd.ie of your choice by 2 December 2013.** More information will be made available during the semester. Please note that option courses that have been requested by only a few students may not be offered. Students interested in Medicinal Chemistry will find courses CH4031-4036 especially appropriate.

CH4022 Matter transport in solids *(*JC*)* ionic conductance and diffusion processes in solids considered from first principles; applications include solid state reactions, including corrosion of metals and alloys, and fast ion conductors and their uses in advanced battery systems and chemical sensors.

CH4023 Quantum chemistry *(*DAMB*)* Quantum operators; perturbation theory and applications (Stark effect); beyond the Hartree-Fock limit; vibrations in solids (phonons).

CH4024 Heterogeneous catalysis *(*GW*)* This topic will examine the basic principles of catalyst and catalyst design including measures of catalyst activity. Examples of real-world catalysts will be given, including the use of zeolites for acid-catalysed reactions within the petroleum industry, the design and performance of car exhaust catalysts, and hydro-desulfurisation catalysts and their link to environmental legislation.

CH4025 Supramolecular chemistry *(*TG*)* host–guest chemistry and molecular recognition including relevance to biological processes and 'molecular engineering'. Self-assembly and anion sensing.

CH4027 Topics in structural chemistry *(*YG*)* A brief review of the preparation, structural chemistry and physico-chemical properties of (i) molecular crystals and (ii) copper oxide superconductors emphasising the interplay between composition, structure and properties.

CH4030 Statistical thermodynamics *(*MEB*)* application of statistical mechanics to the study of molecular motion in various states of matter; Fermi-Dirac and Bose-Einstein statistics.

CH4031 Organic synthetic methods II *(*MS) This topic is concerned with the mode of action and the synthesis of the microtubule active anti-cancer agents Taxol® and Epothilone.

CH4034 DNA structure and drug–DNA complexes *(*JMK*)* spectroscopic tools for studying nucleic acids; structure of DNA (A, B and Z); covalent and non-covalent binding to DNA; relevance to drug design.

CH4036 Bio-organic chemistry (MS) Introduction; NADH stereoselective reductions in nature; Reductive amination - alkaloid biosynthesis; Acetyl Co-Enzyme A (fatty acid biosynthesis); Shikimic acid pathway; Steroid biosynthesis; Biotransformations, an important tool in modern organic synthesis.

CH4037 Electrochemical biosensors *(*MEGL*)* The physical principles underlying electrochemical sensors. A survey of surface-immobilized redox-enzyme- based biosensor devices using electrochemical transduction. Strategies for enzyme wiring. Self assembled

monolayer-based biosensors.

CH4041 Material synthesis using chemical vapour deposition (GD) The aim of this topic is to provide students with an introduction to the increasingly important technique of chemical vapour deposition (CVD). This method has extensive applications in both industrial processes and academic research, and is used to deposit thin films of various substances. Also, CVD has led to the synthesis of novel materials such as nanowires and nanotubes. This topic will cover the basic principles of CVD, its use as the impetus for surface and gas phase reactions, and the various technological considerations relevant to the development of the technique.

CH4003 Special topics in inorganic chemistry (YG/CS*)* Bio-inorganic chemistry; structure and reactivity of metallo-enzymes. Alkalides and electrides: definitions, synthesis, structures and properties. Polyhedral silsesquioxanes and metallasilsesquioxanes and their applications.

CH4054 Case studies (EMS)

CH4080 Molecular informatics (DMacD)

CHEMISTRY SEMINARS 12 o'clock on Thursdays in CHSCLT; ALL SS STUDENTS HAVE TO ATTEND THESES

* Other or additional optional lecture topics may be offered at a later date.

Provisional Examination Structure 2012/2013 (based on 2010/2011)

	Paper 1	Paper 2	Paper 3	Paper 4	Paper 5
Chemistry	Options **Module CH4108** 3 questions (from 4 options topics)	Inorganic Chemistry **Module CH4104** – 4 Q in two sections; answer 1 Q from each section. **Module CH4105** – 4 Q in two sections; answer 1 Q from each section.	Physical Chemistry **Module CH4106** – 4 Q in two sections; answer 1 Q from each section. **Module CH4107** – 4 Q in two sections; answer 1 Q from each section.	Organic Chemistry **Module CH4102** – 4 Q in two sections; answer 1 Q from each section. **Module CH4103** – 4 Q in two sections; answer 1 Q from each section.	Problems **Module CH4109** Section A – answer 4 short problems from 9 (3 from each discipline). Section B – answer 2 long problems from 6 (2 from each discipline).
Medicinal Chemistry	Options **Module CH4405** 3 questions (from 4 options topics)	Adv. Med.Chem. 1/2 **Module CH4401**– 4 Q in two sections; answer 1 Q from each section **Module CH4402** – 4 Q in two sections; answer 1 Q from each section.	Adv. Med.Chem. 3/4 **Module CH4403** – 4 Q in two sections; answer 1 Q from each section **Module CH4404** – 4Q in two sections; answer 1 Q from each section	Organic Chemistry **Module 4102** – 4 Q in two sections; answer 1 Q from each section. **Module 4103** – 4 Q in two sections; answer 1 Q from each section	Problems **Module CH4406** Section A – answer 4 short problems from 9 (7 Organic/MedChem., 1 Inorg. and 1 PhysChem.) Section B – answer 2 long problems from 6 (5 Org./MedChem.,1 Inorg/Phys.)
Chemistry with Molecular Modelling	Options **Module CH4701** 3 questions from: **CH4023** (Quantum Chemistry) and **CH4030** (Statistical Therm) + 2 option topics	Inorg. and Modelling **Module 4105** – 4 Q in two sections; answer 1 Q from each section. **Module 4702** – 4 Q in two sections; answer 1 Q from each section.	Physical Chemistry **Module 4106** – 4 Q in two section answer 1 Q from each section **Module 4107** – 4 Q in two section answer 1 Q from each section	Org. and Modelling **Module 4703** – 4 Q in two sections; answer 1 Q from each section. **Module 4103** – 4 Q in two sections answer 1 Q from each section.	Problems **Module CH4704** Section A – answer 4 short problems from 9 (3 from PhysChem and 2 each from Inorganic, Organic and Mol. Model.) Section B – answer 2 long problems from 6 (2 from PhysChem and MM and 1 from Inorganic & Organic).

**The information within this booklet may be subject to change.
While every effort will be made to give due notice of major changes, the School of Chemistry reserves the right to suspend, alter or initiate courses, timetables, examinations and regulations at any time.

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EUROPEAN SOCIAL FUND

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HEA
Higher Education Authority
An tÚdarás um Ard-Oideachas

Investing in your Future

These courses are funded by the Irish government under the National Development Plan 2007-2013 and aided by the European Social Fund (ESF) under the Human Capital Investment Operational Programme 2007-2013.

Appendix 1: Description of the European Credit Transfer System (ECTS)

The European Credit Transfer and Accumulation System (ECTS) is an academic credit system based on the estimated student workload required to achieve the objectives of a module or programme of study. It is designed to enable academic recognition for periods of study, to facilitate student mobility and credit accumulation and transfer. The ECTS is the recommended credit system for higher education in Ireland and across the European Higher Education Area.

The ECTS weighting for a module is a **measure of the student input or workload** required for that module, based on factors such as the number of contact hours, the number and length of written or verbally presented assessment exercises, class preparation and private study time, laboratory classes, examinations, clinical attendance, professional training placements, and so on as appropriate. There is no intrinsic relationship between the credit volume of a module and its level of difficulty.

The European **norm for full-time study over one academic year is 60 credits**. The Trinity academic year is 40 weeks from the start of Michaelmas Term to the end of the annual examination period 1 ECTS credit represents 20-25 hours estimated student input, so a 10-credit module will be designed to require 200-250 hours of student input including class contact time and assessments.

ECTS credits are awarded to a student only upon successful completion of the course year. Progression from one year to the next is determined by the course regulations. Students who fail a year of their course will not obtain credit for that year even if they have passed certain component courses. Exceptions to this rule are one-year and part-year visiting students, who are awarded credit for individual modules successfully completed.

Appendix 2: College regulation regarding plagiarism – extract from the College Calendar 2014-15

Plagiarism

75 Plagiarism is interpreted by the University as the act of presenting the work of others as one's own work, without acknowledgement.
Plagiarism is considered as academically fraudulent, and an offence against University discipline. The University considers plagiarism to be a major offence, and subject to the disciplinary procedures of the University.

76 Plagiarism can arise from deliberate actions and also through careless thinking and/or methodology. The offence lies not in the attitude or intention of the perpetrator, but in the action and in its consequences.
Plagiarism can arise from actions such as:

(a) copying another student's work;

(b) enlisting another person or persons to complete an assignment on the student's behalf;

(c) quoting directly, without acknowledgement, from books, articles or other sources, either in printed, recorded or electronic format;

(d) paraphrasing, without acknowledgement, the writings of other authors.
Examples *(c)* and *(d)* in particular can arise through careless thinking and/or methodology where students:

(i) fail to distinguish between their own ideas and those of others;

(ii) fail to take proper notes during preliminary research and therefore lose track of the sources from which the notes were drawn;

(iii) fail to distinguish between information which needs no acknowledgement because it is firmly in the public domain, and information which might be widely known, but which nevertheless requires some sort of acknowledgement;

(iv) come across a distinctive methodology or idea and fail to record its source.

All the above serve only as examples and are not exhaustive.
Students should submit work done in co-operation with other students only when it is done with the full knowledge and permission of the lecturer concerned. Without this, work submitted which is the product of collusion with other students may be considered to be plagiarism.

77 It is clearly understood that all members of the academic community use and build on the work of others. It is commonly accepted also, however, that we build on the work of others in an open and explicit manner, and with due acknowledgement. Many cases of plagiarism that arise could be avoided by following some simple guidelines:

(i) Any material used in a piece of work, of any form, that is not the original thought of the author should be fully referenced in the work and attributed to its source. The material should either be quoted directly or paraphrased. Either way, an explicit citation of the work referred to should be provided, in the text, in a footnote, or both. Not to do so is to commit plagiarism.

(ii) When taking notes from any source it is very important to record the precise words or ideas that are being used and their precise sources.

(iii) While the Internet often offers a wider range of possibilities for researching particular themes, it also requires particular attention to be paid to the distinction between one's own work and the work of others. Particular care should be taken to keep track of the source of the electronic information

obtained from the Internet or other electronic sources and ensure that it is explicitly and correctly acknowledged.

78 It is the responsibility of the author of any work to ensure that he/she does not commit plagiarism.

79 Students should ensure the integrity of their work by seeking advice from their lecturers, tutor or supervisor on avoiding plagiarism. All schools and departments should include, in their handbooks or other literature given to students, advice on the appropriate methodology for the kind of work that students will be expected to undertake.

80 If plagiarism as referred to in §75 above is suspected, in the first instance, the head of school will write to the student, and the student's tutor advising them of the concerns raised and inviting them to attend an informal meeting with the head of school,[1] and the lecturer concerned, in order to put their suspicions to the student and give the student the opportunity to respond. The student will be requested to respond in writing stating his/her agreement to attend such a meeting and confirming on which of the suggested dates and times it will be possible for the student to attend. If the student does not in this manner agree to attend such a meeting, the head of school may refer the case directly to the Junior Dean, who will interview the student and may implement the procedures as referred to under CONDUCT AND COLLEGE REGULATIONS §2.

81 If the head of school forms the view that plagiarism has taken place, he/she must decide if the offence can be dealt with under the summary procedure set out below. In order for this summary procedure to be followed, all parties attending the informal meeting as noted in §81 above must state their agreement in writing to the head of school. If the facts of the case are in dispute, or if the head of school feels that the penalties provided for under the summary procedure below are inappropriate given the circumstances of the case, he/she will refer the case directly to the Junior Dean, who will interview the student and may implement the procedures as referred to under CONDUCT AND COLLEGE REGULATIONS §2.

82 If the offence can be dealt with under the summary procedure, the head of school will recommend to the Senior Lecturer one of the following penalties:

(a) that the piece of work in question receives a reduced mark, or a mark of zero; or

(b) if satisfactory completion of the piece of work is deemed essential for the student to rise with his/her year or to proceed to the award of a degree, the student may be required to re-submit the work. However the student may not receive more than the minimum pass mark applicable to the piece of work on satisfactory re-

(c) submission.

83 Provided that the appropriate procedure has been followed and all parties in §81 above are in agreement with the proposed penalty, the Senior Lecturer may approve the penalty and notify the Junior Dean accordingly. The Junior Dean may nevertheless implement the procedures as referred to under CONDUCT AND COLLEGE REGULATIONS §2.

(pp. H16-H18 Calendar 2013-2014).

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[1]The director of teaching and learning (undergraduate) may also attend the meeting as appropriate. As an alternative to their tutor, students may nominate a representative from the Students' Union to accompany them to the meeting.

Appendix 3: Scheme for marking of examination answers in Sophister years

Mark Range	Criteria
90-100	IDEAL ANSWER; showing insight and originality and wide knowledge. Logical, accurate and concise presentation. Evidence of reading and thought beyond course content. Contains particularly apt examples. Links materials from lectures, practicals and seminars where appropriate.
80-89	OUTSTANDING ANSWER; falls short of the 'ideal' answer either on aspects of presentation or on evidence of reading and thought beyond the course. Examples, layout and details are all sound.
70-79	MAINLY OUTSTANDING ANSWER; falls short on presentation and reading or thought beyond the course, but retains insight and originality typical of first class work.
65-69	VERY COMPREHENSIVE ANSWER; good understanding of concepts supported by broad knowledge of subject. Notable for synthesis of information rather than originality. Sometimes with evidence of outside reading. Mostly accurate and logical with appropriate examples. Occasionally a lapse in detail.
60-64	LESS COMPREHENSIVE ANSWER; mostly confined to good recall of coursework. Some synthesis of information or ideas. Accurate and logical within a limited scope. Some lapses in detail tolerated.
55-59	SOUND BUT INCOMPLETE ANSWER; based on coursework alone but suffers from a significant omission, error or misunderstanding. Usually lacks synthesis of information or ideas. Mainly logical and accurate within its limited scope and with lapses in detail.
50-54	INCOMPLETE ANSWER; suffers from significant omissions, errors and misunderstandings, but still with understanding of main concepts and showing sound knowledge. Several lapses in detail.
45-49	WEAK ANSWER; limited understanding and knowledge of subject. Serious omissions, errors and misunderstandings, so that answer is no more than adequate.
40-44	VERY WEAK ANSWER; a poor answer, lacking substance but giving some relevant information. Information given may not be in context or well explained, but will contain passages and words, which indicate a marginally adequate understanding.
35-39	MARGINAL FAIL; inadequate answer, with no substance or understanding, but with a vague knowledge relevant to the question.
30-34	CLEAR FAILURE; some attempt made to write something relevant to the question. Errors serious but not absurd. Could also be a sound answer to the misinterpretation of a question.
0-29	UTTER FAILURE; with little hint of knowledge. Errors serious and absurd. Could also be a trivial response to the misinterpretation of a question.

Appendix 4: Guidelines on Marking for Project/Dissertation Assessment

Mark Range	Criteria
85-100	Exceptional project report showing broad understanding of the project area and excellent knowledge of the relevant literature. Exemplary presentation and analysis of results, logical organisation and ability to critically evaluate and discuss results coupled with insight and originality.
70-84	A very good project report showing evidence of wide reading, with clear presentation and thorough analysis or results and an ability to critically evaluate and discuss research findings. Clear indication of some insight and originality. A very competent and well presented report overall but falling short of excellence in each and every aspect.
60-69	A good project report which shows a reasonably good understanding of the problem and some knowledge of the relevant literature. Mostly sound presentation and analysis of results but with occasional lapses. Some relevant interpretation and critical evaluation of results, though somewhat limited in scope. General standard of presentation
50-59	A moderately good project report which shows some understanding of the problem but limited knowledge and appreciation of the relevant literature. Presentation, analysis and interpretation of the results at a basic level and showing little or no originality or critical evaluation. Insufficient attention to organisation and presentation of the report.
40-49	A weak project report showing only limited understanding of the problem and superficial knowledge of the relevant literature. Results presented in a confused or inappropriate manner and incomplete or erroneous analysis. Discussion and interpretation of result severely limited, including some basic misapprehensions, and lacking any originality or
20-39	An unsatisfactory project containing substantial errors and omissions. Very limited understanding, or in some cases misunderstanding of the problem and very restricted and superficial appreciation of the relevant literature. Very poor, confused and, in some cases, incomplete presentation of the results and limited analysis of the results including some serious errors. Severely limited discussion and interpretation of the results revealing little or no ability to relate experimental results to the existing literature. Very poor overall standard of
0-19	A very poor project report containing every conceivable error and fault. Showing virtually no real understanding or appreciation of the problem and of the literature pertaining to it. Chaotic presentation of results, and in some cases incompletely presented and virtually non-existent or inappropriate or plainly wrong analysis. Discussion and interpretation seriously confused or wholly erroneous revealing basic misapprehensions.

Schedule of Grades	
I	=70%+
II-1	= 60-69%
II-2	= 50-59%
III	= 40-49%
F-1	= 30-39%
F-2	= 0-29%
U.G.	= Ungraded