

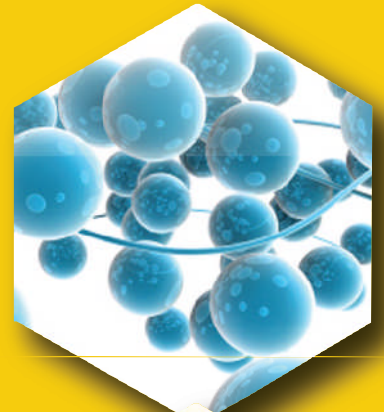
University of Dublin  
Trinity College



Faculty of Engineering,  
Mathematics & Science

Science TR071  
Junior Freshman  
Programme  
2011/2012

Science Course Office  
<http://www.tcd.ie/science>



This handbook applies to all students taking TR071Science . It provides a guide to what is expected of you on this programme, and the academic and personal support available to you. This booklet is available in an alternative format upon request. Please retain for future reference.

**The information provided in this handbook is accurate at time of preparation. Any necessary revisions will be notified to students via email and the Science Course Office website (<http://www.tcd.ie/Science>). Please note that, in the event of any conflict or inconsistency between the General Regulations published in the University Calendar and information contained in course handbooks, the provisions of the General Regulations will prevail.**

Produced by: The Science Course Office  
Trinity College  
Dublin 2  
Tel: +353 1 896 1970/896 2022  
Web Address: <http://www.tcd.ie/Science/>  
Edited by: Anne O'Reilly and Agnes Gogan

<b>Index</b>	
Introduction	1
Contact Details	2
Science TRO71 Subject/Module Registration	3
European Credit Transfer System	5
Junior Freshman Subject/Modules	6
Junior Freshman Module Choice Form	7
Moderatorship Subject Prerequisites	9
Biology	10
Chemistry	12
Geography	16
Geology	19
Mathematics	21
Mathematical Methods	23
Physics	25
Foundation Physics	27
Dates to Note	29
Academic Year Structure 2009/10	30
Useful Information	31
Junior Freshman Timetable – Semester 1	36
Junior Freshman Timetable – Semester 2	37
Key to Lecture and Laboratories	38
Map of Trinity College Campus	39



## Welcome to Science at Trinity College!

Encapsulated in the one short word 'Science' is the whole spectrum and sum of human knowledge about the natural world. So where do you begin? The starting point is to choose the subjects you wish to study in your first year, which to some extent will determine your future direction. It may be that you have already decided which subjects you want to pursue, or it may be that you are not at all sure of what is on offer or where your real interests lie. Further information is available on the science course website: <http://www.tcd.ie/Science> and in this handbook.

Do not be put off by the prospect of studying subjects you have not encountered at school - in the long run you are more likely to do well in a subject which you enjoy and in which you have a genuine interest than in one you choose only because you have studied it at school, or for 'career' reasons. You will find many new doors opening for you at University so keep an open mind and consider all your options! The Science degree course at Trinity is structured so as to equip you with knowledge of the fundamental sciences in the first two years before you come to decide upon the area in which you will specialise in the final two years.

During Freshers' Week – 19<sup>th</sup> to 23<sup>rd</sup> September 2011 - you will have an opportunity to discuss your subject choices on an individual basis with a member of staff. Meanwhile, if you have queries, please do not hesitate to call into the Science Course Office (located in East End – Panoz Institute opposite the Biology Laboratories).

We look forward to meeting you then!



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Professor G. Watson (Science Course Director)

## Science Course Office Contact Details:

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**Address:** Science Course Office  
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Dublin 2

**Website Address:** <http://www.tcd.ie/Science/>

**Course Office hours:** **Monday to Friday:**  
10:00 - 12:45 pm (mornings)  
14:00 - 16:00 pm (afternoons)

**HELP!** If you need assistance outside of office hours the website always has up to date information available: <http://www.tcd.ie/Science/>

## Science TR071 Subject/Module Registration

The Science course is a common entry two year Freshman programme, from which students have a choice of specialising in the Sophister (third and fourth) years across a wide variety of scientific topics. At the end of four years students will obtain an honors degree in one of the specialised moderatorship subjects.

The Science Course Director will address the TR071 Science new entrants in the **MAC NEIL lecture theatre, Hamilton Building at 10.00am on Monday 19<sup>th</sup> September 2011**. This session will be followed by the TR071 module registration in the Student Concourse outside the Science Course Office (**Surnames A-L 11.00-12.30** and **M-Z 14.00-16.00**) when you will discuss your course choice with a member of the academic staff who is there to offer help and advice and together you will choose the right combination for you.

You are always welcome to call into the Science Course Office for information before or after the subject /module registration on Monday 19<sup>th</sup> September 2011.

Further information is available on the Science Course website

<http://www.tcd.ie/Science/undergraduate/>

Small group tutorials are scheduled throughout the academic year so if you feel you are not confident in a particular area you can attend one or more of these groups which are intended to help raise your knowledge and understanding of the subject(s).

On the day of the Science Course registration you will follow these procedures:

1. You will be given:
  - Junior Freshman (First Year) Module Choice form
  - Health & Safety Guidance Manual and forms
2. Please fill out the Junior Freshman Choice of Module form with the following information:
  - NAME (Block Capitals) and your STUDENT NUMBER (**same as CAO NUMBER i.e. 8 digit number beginning 11**)
  - LEAVING CERTIFICATE/A LEVEL results for the subjects listed in Section B.
3. On completion of the Junior Freshman Choice of Module form, please queue to see an academic adviser to discuss your module choice and complete Section C of the form.
4. Go to the Science Course Office desk
  - Hand in your completed Junior Freshman Choice of Module form and the completed Health and Safety Declaration forms.

You will be given a PINK Junior Freshman Module Registration form. You **must** take this form with you to **COLLEGE REGISTRATION** on **Friday 23<sup>rd</sup> September**  
Please keep it **safely**, as you will **not** be allowed to register without it.

## **CHANGE OF MODULES**

If, after a couple of weeks, you feel that you have perhaps made the wrong choice of module, please seek advice immediately. It may be possible for you to change from one module to another within Science, subject to permission from the Science Course Director. You should discuss the matter with your tutor. If you do decide to change modules, then do it **quickly** - it can be difficult to try to catch up with work in a new module if you have missed more than two or three weeks of lectures. You should call into the Science Course Office if you wish to change modules.

## **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.

## Junior Freshman Subject/Modules

Students choose modules in the subject area from the following to a total of 60 credits (30 from each semester) as appropriate:

Subject	Module Codes	Module Titles	Semester	Credits
Biology	BY1101	Molecular and Cellular Biology	1	10
	BY1102	Evolution, Biodiversity & Environment	2	10
Chemistry	CH1101	General & Physical Chemistry	1	10
	*CH1102	Introduction to Systematic, Inorganic and Organic Chemistry	2	10
Geography	GG1021	Introduction to Geography I: Physical	1	10
	GG1022	Introduction to Geography II: Human Environment	2	10
Geology	GL1101	Geology	2	10
Mathematics	**MA1S11	Mathematics	1	10
	*MA1S12	Mathematics	2	10
	MA1M01	Mathematical Methods	1	10
Physics	PY1P10	Physics	1	10
	*PY1P20	Physics	2	10
	PY1F01	Foundation Physics for Earth and Life Sciences	2	10

\*Prerequisites for modules with asterisk see relevant section in handbook.

\*\*MA1S11 & MA1S12 Co-requisites for PY1P10 & PY1P20.

SEMESTER 1 (S1) (26/09/11 – 16/12/11)	SEMESTER 2 (S2) (16/01/11 – 06/04/11)
BY1101 (10 credits)	BY1102 (10 credits)
CH1101 (10 credits)	CH1102 (10 credits)
GG1021 (10 credits)	GG1022 (10 credits)
MA1S11 (10 credits)	GL1101 (10 credits)
MA1M01 (10 credits)	MA1S12 (10 credits)
PY1P10 (10 credits)	PY1F01 (10 credits)
	PY1P20 (10 credits)

**University of Dublin  
Trinity College**

**Faculty of Engineering Mathematics and Science**

**SCIENCE TR071**

**Junior Freshman Module Choice Form – September 2011**

Please complete Sections **A** and **B** on this form, then take it to one of the Subject Choice Advisers who will complete Section C. After your subject/module choice has been approved, please take this form to the Science Course Office desk, where you will be given another form which must be taken to Registration on Friday 23<sup>rd</sup> September 2011.

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**SECTION A:** BLOCK CAPITALS PLEASE

Name: \_\_\_\_\_ Student/CAO No: \_\_\_\_\_

Date: \_\_\_\_\_

**SECTION B:** Leaving Certificate/ A Level

Please enter below the grades obtained for subjects taken

SUBJECT	LC (H)	LC (O)	A Level
Biology			
Chemistry			
Physics			
Physics/Chemistry			
Mathematics			
Applied Maths			
Geography			
Geology			
Agricultural Sc.			

P.T.O.

**SECTION C: JUNIOR FRESHMAN MODULES FOR 2011/12****(To be completed with help of Adviser)**

Please tick appropriate box to the left.

<b>Module Code</b>	<b>Module Title</b>	<b>Semester</b>	<b>Credits</b>	<b>Tick Box</b>
BY1101	Molecular & Cellular Biology	1	10	
BY1102	Evolution, Biodiversity & Environment	2	10	
CH1101	General & Physical Chemistry	1	10	
*CH1102	Introduction to Systematic Inorganic and Organic Chemistry	2	10	
GG1021	Introduction to Geography I: Physical	1	10	
GG1022	Introduction to Geography II: Human Environment	2	10	
GL1101	Geology	2	10	
**MA1S11	Mathematics	1	10	
*MA1S12	Mathematics	2	10	
MA1M01	Mathematical Methods	1	10	
PY1P10	Physics	1	10	
*PY1P20	Physics	2	10	
PY1F01	Foundation Physics for the Life and Earth Sciences	2	10	
Total Credits	(Students must sign up for 30 credits each semester to a total of 60 credits for the year)		60	

**\*Prerequisites for modules with asterisk see relevant section in handbook.****\*\*MA1S11 & MA1S12 are co-requisites for PY1P10 & PY1P20.****Signature of Subject Course Advisor/ Tutor:** \_\_\_\_\_**Date:** \_\_\_\_\_

**Table of Prerequisites for Moderatorship 2011-12**

<b>Moderatorship (3<sup>RD</sup> and 4<sup>th</sup> years)</b>	<b>Senior Freshman (2<sup>nd</sup> year)</b>	<b>Junior Freshman (1<sup>st</sup> year)</b>
Biochemistry <sup>1</sup>	BY2201, BY2203, BY2205, BY2208	CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Chemistry	CH2201, CH2202	CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Environmental Sciences	Four of the following: BY2201, BY2202, BY2203, BY2204, BY2205, BY2206, BY2207, BY2208, BY2209, BY2010	BY1101, BY1102
Functional Biology	BY2201, BY2202, BY2203, BY2208	BY1101, BY1102, MA1S11 <b>OR</b> MA1M01
Genetics	BY2201, BY2203, BY2205, BY2208	BY1101, CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Geography	GG2021, GG2022	GG1021 or GG1022
Geology	GL2201, GL2202, GL2203, GL2204	GL1101
Immunology <sup>1</sup>	BY2201, BY2203, BY2205, BY2208	CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Microbiology	BY2201, BY2203, BY2205, BY2208	BY1101, CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Molecular medicine <sup>1</sup>	BY2201, BY2203, BY2205, BY2208	CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Neuroscience <sup>1</sup>	BY2201, BY2202, BY2203, BY2208	CH1101, CH1102, MA1S11 <b>OR</b> MA1M01
Physics	PY2P10, PY2P20, MA22S1, MA22S2, MA22S3, MA22S4	PY1P10, PY1P20, MA1S11, MA1S12
Physics and astrophysics	PY2P10, PY2P20, MA22S1, MA22S2, MA22S3, MA22S4	PY1P10, PY1P20, MA1S11, MA1S12
Physiology <sup>2</sup>	BY2201, BY2202, BY2203, BY2208	MA1S11 <b>OR</b> MA1M01
Plant Sciences	<b>Four of the following:</b> BY2201, BY2202, BY2203, BY2204, BY2205, BY2206, BY2207, BY2208, BY2209, BY2010	BY1101, BY1102
Zoology	BY2201, BY2202, BY2203, BY2208	BY1101, BY1102, MA1S11 <b>OR</b> MA1M01

<sup>1</sup>Junior Freshman Biology BY1101 is advisable

<sup>2</sup>Junior Freshman Biology BY1101 and BY1102 are advisable

## BIOLOGY

Biology is the Study of Life - a broad and fascinating study that covers topics as diverse as population ecology, the control of metabolism, mechanisms of evolution and biological diversity. It deals with all living organisms from microbes to man. At Trinity College there is no single School of Biology; rather the subject is divided up into a number of overlapping disciplines or areas, dealt with by the Schools of Biochemistry and Immunology, Genetics and Microbiology, Natural Sciences (Botany and Zoology) and Medicine (Physiology), all of whom come together, through the Biology Teaching Centre, to provide an integrated Biology programme for first and second year students.

Many of you will have studied Biology at school - perhaps even taking Higher Level Biology at the Leaving Cert - and many of you will take Biology as one of the first year modules, even if your ultimate goal is not in the biological area. In first year there are two, ten-credit Biology modules available, both building on the Leaving Certificate curriculum but with a strong emphasis on critical thinking and the development of practical skills.

### **BY1101 Molecular and Cellular Biology** (*Semester 1 - 10 Credits*)

On successful completion of the module, students will be able to:

- Describe fundamental principles of biology, including the structure and function of biologically important molecules; cell structure, function and reproduction; genetics and heredity; developmental biology; and the role and function of microorganisms
- Apply the scientific method as a fundamental mechanisms for critical analysis and problem solving
- Use general texts, reference books and a range of other resources to further develop knowledge of biological issues through continued independent learning,
- Employ a range of laboratory techniques, demonstrating the development of practical scientific skills and the interpretation of results.

### **Learning Outcomes:**

On successful completion of this module, students will be able to:

- describe the properties and functions of the major groups of biochemical's,
- give an account of the origin of life, from the abiotic world to multicellular organisms, including an account of endosymbiosis.
- give an account of the structure and functions of the plasma membrane and the major organelles that occur in eukaryotic cells.
- describe the major steps involved in how a complex animal is formed.
- relate the morphological changes that occur to the molecular and cellular changes that underlie and drive embryo development.
- describe the structure and properties of prokaryotic and eukaryotic microorganisms and the structure and replication of viruses.
- describe the mechanisms of action of and resistance to antibiotics, how pathogens cause infection and host innate and induced immunity.
- use general texts, reference books and a range of other resources to further develop knowledge of biological issues through continued independent learning,
- carry out a range of laboratory exercises, demonstrating the development of practical scientific skills.

## **BY1102 Evolution, Biodiversity and the Environment** (*Semester 2 - 10 Credits*)

On successful completion of the module, students will be able to:

- Define the evolutionary relationships of major plant and animal groups
- Identify mechanisms for survival in plants and animals in relation to their environment
- Examine the ecological relationships between individuals, populations, communities and ecosystems
- Show practical, numerical and analytical skills
- Collate, synthesise, organise and present information in written reports

### **Learning Outcomes:**

On successful completion of this module, students will be able to:

- define the evolutionary relationships of major plant and animal groups.
- identify mechanisms for survival in plants and animals in relation to their environment.
- examine the ecological relationships between individuals, populations, communities and ecosystems.
- show practical, numerical and analytical skills.
- collate, synthesise, organise and present information in written reports.

In the second year, students, whether or not they intend to specialise in a biological discipline may select one or more of the advanced, five-credit modules covering topics such as Behaviour, Cell Structure and Function, Ecosystem Biology and Global Change, Evolution, Genetics, Infection and Immunity, Metabolism, Microbiology, Plant and Animal Bioresources, and Vertebrate Form and Function.

After four years in College, each biology graduate will have had the benefit of a broad and versatile course, resulting in a unique qualification to pursue his/her chosen career.

### **Contact Details:**

#### **Director of Biology Teaching Centre:**

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#### **Address:**

Biology Teaching Centre  
Trinity College  
28 Westland Row  
Dublin 2

#### **Web Address:**

[http://www.tcd.ie/Biology\\_Teaching\\_Centre/](http://www.tcd.ie/Biology_Teaching_Centre/)

## **CHEMISTRY**

**CH1101 General and Physical Chemistry (Semester 1 - 10 credits)**

**CH1102 Introduction to systematic Inorganic and Organic Chemistry  
(Semester 2 - 10 credits)**

Chemistry is a fundamental science the influence of which is spread throughout other sciences, and is dominant in modern life. If a material is needed, chemists can make it, be it polythene for a washing bowl, the detergent to put in it, the different silicon-based materials for contact lenses or computer chips or the liquid crystals used in electronic displays. Knowledge of chemistry lies behind the production of the fertilisers that assist the growth of the food we need, as well as the drugs and antiseptics, which have transformed medicine. Behind these obvious contributions to our daily lives, there is a substantial body of chemical ideas.

The JF Chemistry course provides a general introduction to the fundamentals of modern chemistry, and forms the basis for further studies, both in chemistry and in other sciences. It consists of two modules, Chemistry 1101: General and Physical Chemistry (10 Credits), and Chemistry 1102: Introduction to systematic Inorganic and Organic Chemistry (10 Credits). Chemistry 1101 is a prerequisite for Chemistry 1102.

### **Chemistry 1101 (CH1101)**

General and Physical Chemistry is a one semester course taken by Junior Freshman Science, Chemistry with Molecular Modelling, Medicinal Chemistry, Nanoscience, Physics and Chemistry of Advanced Materials, Human Genetics and Earth Sciences students. It covers a general introduction to chemistry and physical chemistry and equips the student with the knowledge to understand the basic concepts in chemistry, understanding of the building principles of matter, chemical bonding and molecular structure, an introduction to thermodynamics, kinetics, electrochemistry, acid/base reactions and to the chemistry of liquids, solids and solutions.

## Learning Outcomes

On successful completion of this module, students will be able to:

1. Explain, using appropriate terminology and physical units, basic concepts in Chemistry including precipitation and redox reactions.
2. Analyse bonding and molecular structure and identify the main types of intermolecular forces.
3. Identify and explain the principal features of the phase diagrams of pure compounds including pressure dependence of melting and boiling points, triple point and critical point, variation of vapour pressure with temperature.
4. Calculate chemical equilibrium and illustrate the key concepts including variation with concentration of components, temperature and pressure.
5. Discuss simple acid/base chemistry, and apply to solution equilibria.
6. Illustrate the basic concepts of an electrochemical cell, including half-cell reactions, cell potential and reaction free energy and determination of these properties including concentration dependence.
7. Describe the main classes of the solid state structure; cubic - and hexagonal close packing; body centred and face-centred cubic structures: NaCl and CsCl. Octahedral and tetrahedral holes, coordination numbers, the Born-Haber cycle, lattice energy.
8. Identify, describe and analyse the factors affecting solubility of liquids.
9. Define and explain colligative properties including Raoult's Law and the calculation of molecular weights.
10. Understand and apply in numerical problems the concepts underlying the First and Second Laws of Thermodynamics.

## **Chemistry 1102 (CH1102)**

Introduction to Systematic Inorganic and Organic Chemistry is a one semester course taken by Junior Freshman Science, Chemistry with Molecular Modelling, Medicinal Chemistry, Nanoscience, Physics and Chemistry of Advanced Materials, Human Genetics and Earth Sciences students. The first part of this module deals with the structure, bonding and reactivity of simple functional groups in organic chemistry. The emphasis is on understanding reaction mechanisms, in terms of the inherent reactivity and polarisation of the two reaction components, which allows the mechanism to be understood, and also facilitates the student to spot patterns and similarities between different reaction mechanisms which makes learning easier. The second part of this module covers inorganic chemistry, when the emphasis is on understanding and explaining the similarities and difference that arise in the properties of the elements in the periodic table.

### **Learning Outcomes**

On successful completion of this module, students will be able to:

1. Identify and explain bonding, hybridisation and mechanisms.
2. Describe and explain the chemistry of functional groups (alkanes, alkenes and alkynes, aromatics, alkylhalides, alcohol, aldehydes, ketones and amines) and their application.
3. Analyse and discriminate between mechanisms in terms of the inherent reactivity/polarisation etc of the two reaction components.
4. Identify and classify chiral centres in organic molecules.
5. Describe the chemical and physical properties of elements as a function of their position in the Periodic Table.
6. Determine and explain the origin of the trends within groups and across periods of the properties of elements in the Periodic Table.
7. Describe the typical structures of some common compounds of the main group elements.
8. Classify elements as metallic/metalloid/non-metallic and contrast their characteristic properties.
9. Explain the practical and industrial uses of key elements and compounds and relate these to their properties.

We hope that you will find the freshman years of Chemistry sufficiently interesting and stimulating to convince you to take an honours degree in the subject. In the third and fourth (Sophister) years, in addition to intensive course work, you will also have the opportunity, through a short research project in the final year, to do some new chemistry yourself. The School has many links with other Universities in Europe and North America and many students elect to do this project work at a University outside Ireland.

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## **GEOGRAPHY**

**GG1021 Introduction to Physical Geography (Semester 1 - 10 Credits)**

**GG1022 Introduction to Environmental Geography (Semester 2 - 10 Credits)**

Geography is one of the most intellectually challenging and relevant disciplines for understanding the nature of the world today and the processes of change that are affecting landscapes and societies. It is concerned with the distribution of physical and human features over the earth's surface, with the interrelationships between people and their environments and with the nature of landscapes and places. Thus, Geography has a unique integrating role in linking the natural and social sciences. In addition to the inherent interest of its subject matter, Geography has practical and educational value in that it deals with many aspects of the real world, it encourages the development of broad and balanced perspectives and it involves the acquisition of useful skills. Because of these attributes, modern Geography is increasingly being recognised as a desirable training by a wide range of employers throughout the private and public sectors.

In the first year there are two Geography modules available for students following the Science programme. The first module, GG1021 Introduction to Physical Geography (10 Credits), provides a basic introduction to the processes that influence the landscape of earth and modulate the conditions that support life on our planet. This includes topical and contentious issues such as global warming, climate change and associated environmental impacts. Topics covered include: global geotectonics; atmosphere and ocean systems; climate change; earth surface processes and landforms; geocology.

### **GG1021:**

Learning Outcomes: On successful completion of this module students will be able to:

- Demonstrate the importance of plate tectonics to the Earth sciences, and be able to explain how the distribution of continents and oceans has varied through time;
- Outline the physical evolution of Ireland and be able to place the geography of rock types in Ireland within their geotectonic setting;
- Describe the geography and character of major categories of rock types, and of volcanic and seismic events;
- Illustrate the structure and composition of the earth's atmosphere and oceans;
- Explain the heat budget of the earth and the ways in which heat imbalances are addressed;
- Describe the main atmospheric and oceanic circulation systems and linkages between the atmosphere and oceans;
- Discuss the role of atmosphere and oceans in weather and climate;
- Describe geographic variations in rock weathering regimes;
- Explain the processes that have created the various major types of landforms and the controls on landform evolution;
- Identify the different categories of soil, their properties and processes of formation;
- Describe the characteristics and extent of the major biogeographical units;

The second module, GG1022 Introduction to Environmental Geography (10 Credits), introduces key concepts relating to nature, culture and the environment. It focuses

on interactions between humans and their environment using case studies from the fields of nature conservation, sustainable development, environmental degradation and environmental hazards.

**GG1022:**

Learning Outcomes: On successful completion of this module students will be able to:

- Define environmental geography and describe key areas of concern for environmental geographers;
- Explain the meaning of environmental resources and outline examples of resource exploitation;
- Critically examine environmental management approaches;
- Explain select cases of environmental degradation derived from human-environment interactions;
- Identify and evaluate human-environmental relations within select cases of environmental hazards.

Students taking either or both of these modules will be able to take Geography in their second year

In the second year students who wish to take Geography as their sophomore specialization must take two 10 Credit modules which build on the knowledge and understanding gained in the first year, whilst introducing new material that can lead to further study at sophomore level. The Changing Worlds module integrates both physical and human geography to examine processes of change past, present and future. In addition to revisiting subjects such as climate and environmental change, biodiversity and conservation, it also provides a human context by considering development issues and associated impacts. This is complemented by a second module that focuses on the collection and analysis of geographical data. In a mixture of lectures and practicals, students are introduced to key geographical methods and techniques including: GIS; remote sensing and image processing; fieldwork and data collection; research design and data analysis.

In the sophomore years, students can select from a range of modules to supplement their core curriculum. Topics covered include: coastal processes and management; economy, the state and spatial development; environmental change; environmental governance; environmental history and culture; globalisation; historical geography; and Quaternary geomorphology. As part of the core curriculum, all students undertake fieldwork in their third year, and a research dissertation in their final year. Further opportunities for field study are associated with some of the optional modules.

**Contact Details:**

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Dublin 2

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## **GEOLOGY**

### **GL1101 (Semester 2 - 10 Credits)**

Geology is the science of the Earth. It is concerned with the minerals and rocks, which are the materials of the Earth, the internal and external processes which affect these, and the evolution of the Earth and of the living organisms which have inhabited it for more than three thousand million years.

No previous knowledge of geology is assumed and the course is suitable for science students from all backgrounds. The geology lecture course covers a wide range of topics designed to give a flavour of the diversity of problems encountered in geology, including the origin of the solar system, the beginnings and evolution of life on Earth, the deep structure of the Earth, its dynamic internal and external processes, and the hazards posed by Earth processes such as earthquakes and volcanic eruptions. The accompanying practically based tutorial course deals with minerals, rocks and fossils and with some aspects of geology relevant to all such as earthquakes. This part of the course is done via small group teaching. Two half-day field excursions are held during the year to illustrate the geology of the Dublin area.

Junior Freshman Geology is a requirement for reading Geology as a Senior Freshman subject. Senior Freshmen can study geology in combination with a wide range of other subjects. Geology may be read as a single subject in the Junior Sophister and Senior Sophister years, leading to the degree of B.A. (Mod.) in Geology. Within the geology moderatorship students study both academic and applied aspects of the subject. There is a strong field programme in the Sophister years.

There is a global deficit of quality geoscientists that is predicted to last for several decades at least. Geologists find employment worldwide in the hydrocarbons and mining industries and also in environmental and hydrogeological companies and consultancies. Many are also employed in government surveys, civil engineering firms, third level educational institutions and the teaching profession. Geology graduates are also highly valued in the general graduate market, especially for their problem solving and team working skills developed during the field programme.

### **Learning outcomes:**

On successful completion of this module students should be able to explain the basics of the origin of planet Earth and outline its basic dynamics. They should be able to outline the major phases of the evolution of life and review the relationship between Earth resources, natural processes and humans.

**Contact Details:**

**Head of Discipline:** Prof Balz Kamber

**Executive Officer:** Dr Mags Duncan  
Tel: 01-896 1074  
E-mail: [earth@tcd.ie](mailto:earth@tcd.ie)

**Address:** Geology  
Museum Building  
Trinity College  
Dublin 2

**Web Address:** <http://www.tcd.ie/Geology>

# MATHEMATICS

## MA1S11 & MA1S12 (Semester 1 & 2 - 20 Credits)

The aim of the JF Mathematics subject is to give all students a good working knowledge of basic mathematics, including an introduction to computing. Although you may find that you have already met some parts of the syllabus at school, you will find the approach at University level somewhat different. There is an emphasis on understanding and reasoning which is not only important in helping you to use mathematics in your chosen science, but promotes logical thinking which will be of use to you whatever your final career. This is one subject where you should not have to do a lot of learning-by-heart!

For administrative reasons, the subject is divided in two modules MA1S11 (in the Michaelmas term) and MA1S12 (Hilary term). Apart from a significant contribution of continuous assessment, the modules are examined in Trinity term (at the end of the academic year). The principal topics are related to calculus and linear algebra, including their applicability to science, but there are several other topics which take a shorter part of the time.

### Module MA1S11

Co-ordinator: Prof. Timoney.

- Calculus with applications for Scientists

Chapter headings from the textbook are

- ◆ Functions;
- ◆ Limits and continuity;
- ◆ The derivative;
- ◆ The derivative in graphing and applications;
- ◆ Integration;
- ◆ Exponential, logarithmic and inverse trigonometric functions.
- Discrete mathematics
  - Linear algebra
    - Vectors, geometric, norm, vector addition, dot product
    - Systems of linear equations and Gauss-Jordan elimination;
    - Matrices, inverses, diagonal, triangular, symmetric, trace;
    - Selected application in different branches of science.
  - Practical topics related to computers
    - Mathematics: Introduction to the computer algebra (symbolic mathematics) system. Includes use for calculus and linear algebra.
    - Spreadsheets: a brief overview of what spreadsheets do.
    - Numbers: binary, octal and hexadecimal numbers and algorithms for converting between them.

## Module MA1S12

Co-ordinator: Prof. Timoney.

- Calculus with applications for Scientists

Chapter headings from the textbook are

- **Applications of the definite integral in geometry, science, and engineering;**
- **Principles of integral evaluation;**
- **Mathematical modelling with differential equations;**
- **Infinite series;**
- **Analytic geometry in calculus.**
- Discrete mathematics
  - Linear algebra
    - Determinants, evaluation by row operations and Laplace expansion, properties, vector cross products, eigenvalues and eigenvectors
    - Introduction to vector spaces and linear transformations. Least squares fit via linear algebra
    - Differential equations, system of first order linear equations, linear second order equations;
    - Selected application in different branches of science.
  - Probability
    - Basic concepts of probability; Sample means;
    - Expectation and standard deviation for discrete random variables; Continuous random variables;
    - Examples of common probability distributions (binomial, Poisson, normal)

## **MATHEMATICAL METHODS**

### **MA1M01 (Semester 1 - 10 Credits)**

Mathematical Methods is a short foundation in mathematics and computing for Junior Freshman students who are not taking mathematics as a full subject. In brief, the mathematical methods course is a refresher course and more.

The module runs in the Michaelmas term and includes continuous assessment and practical work, while the examination is in Trinity term.

#### **Description:**

**Co-ordinators: Prof. R. Timoney/Dr. S. Ryan**

- **Calculus for Life Scientists**
  - Functions and graphs. Lines, polynomials, rational functions, trigonometric functions and the unit circle.
  - Differentiation: Limits, continuity, average rate of change, first principles definition, basic rules for differentiation.
  - Graphical interpretation of derivatives, max/min.
  - Exponential and log functions. Growth and decay applications.
  - Integration (definite and indefinite). Techniques of substitution and integration by parts. Applications.
  - Differential equations and initial value problems, solving first order linear equations.
  - Some application in biology or ecology.
  
- **Discrete Mathematics for Life Scientists**
  - Linear algebra. Matrices, solving systems of linear equations, inverse matrices, determinants, eigenvalues and eigenvectors, solving difference equations. Population growth.
  - Spreadsheets. Basic concept of programming formulae in a spreadsheet such as Excel (absolute and relative cell references, some typical built in functions like sum, count, if). Formula for least squares fit of a line to points in the plane. Graphs. Use of log scales.
  - Data. Scientific notation, number of significant digits, relative error. Sample mean, median, sample variance.
  - Probability. Basic concepts of probability. The binomial distribution, expectation and standard deviation for discrete random variables.

**Contact Details:  
Head of School:**

Dr Donal O'Donovan  
E-mail: [don@maths.tcd.ie](mailto:don@maths.tcd.ie)

**Administrative Officer:**

Ms Karen O'Doherty  
Tel: 01-896 1889  
E-mail: [kod@maths.tcd.ie](mailto:kod@maths.tcd.ie)  
Fax: 01 896 2282

**Address:**

School of Mathematics  
Westland Row  
Trinity College  
Dublin 2.

**Web address:**

<http://www.maths.tcd.ie>

**Departmental E-mail:**

[mathdep@maths.tcd.ie](mailto:mathdep@maths.tcd.ie)

## PHYSICS

### PY1P10 & PY1P20 (Semester 1 & 2 – 20 Credits)

Physics is the study of the fundamental nature of our universe in all its diversity, from particles to planets, from crystals to chaos, from quanta to quasars and from semiconductors to superstrings. In addition, a modern physics degree offers a way into technologies, such as advanced materials, energy and telecommunications. The School of Physics is an extremely active research centre, where exciting developments are being made in the physics of electronic and magnetic materials, foams, non-linear optics and lasers, and in computational physics, astrophysics, nanoscience including nanobiotechnology.

The School offers Moderatorships in Science (honours degree) in Physics, Physics and Astrophysics, Physics and Computer Simulation. The School also offers Moderatorships in Theoretical Physics (jointly with the School of Mathematics) and in Physics and Chemistry of Advanced Materials (jointly with the School of Chemistry). Science students may apply to transfer to the Physics and Chemistry of Advanced Materials course and *vice versa* at any time up to the end of the Senior Freshman year provided that their chosen subjects in both Freshman years are: Physics, Chemistry and Mathematics.

Junior Freshman Physics provides a balanced experimental and theoretical training in core subjects. It includes lectures on what physics is, the physics of motion, hearing and seeing, the material world, electromagnetic interactions, modern physics and the universe. Students also attend weekly laboratory classes, small group tutorials and complete online problem solving. In addition, students will receive a free copy of a university physics textbook for their personal study. Those intending to specialise in physics in their Sophister years **must** take Physics (20 credits) and the full Mathematics for Science (20 credits) course in both their Freshman years.

Each of these physics degrees is a general preparation for a wide range of careers in high technology companies, industrial research and development, telecommunications, as well as management, financial services and other careers such as meteorology and school and university teaching. Physics graduates are highly sought after since they are versatile, flexible, numerate and capable of applying themselves to very diverse fields.

Note: students taking the Junior Freshman Mathematical Methods (10 credits) module cannot proceed to any of the Physics Moderatorships. However, in this case, Foundation Physics for the Life and Earth Sciences (10 credits) is a Junior Freshman option. Such students should consult the Junior and Senior Freshman prerequisites for their intended Moderatorship

### **Learning Outcomes PY1P10:**

On successful completion of this module, the students will be able to:

- Express in mathematical language the motion of a body under the action of forces
- Describe wave motion and relate it to basic phenomena in light and sound
- Sketch how astronomy provides a basic description of the universe.
- Prepare a brief report, which includes an error analysis, of a simple physical experiment

### **Learning Outcomes PY1P20:**

On successful completion of this module, the students will be able to:

- Describe key experimental observations underpinning electricity and magnetism.
- Demonstrate how the properties of matter can be described in terms of state variables, such as pressure and temperature.
- Describe the important paradigm shifts that occurred within physics at the end of the 19<sup>th</sup> century and that still carry on through to 21<sup>st</sup> century physics
- Interpret the data obtained in a simple physical experiment by applying a numerical data analysis.

## FOUNDATION PHYSICS

### PY1F01 Foundation Physics for the Life and Earth Sciences (Semester 2 - 10 Credits)

Foundation Physics for Life and Earth Sciences is a foundation module (10 credits) in physics for Junior Freshman students and is available to those who are taking Mathematic Methods (10 credits).

Physics is a fundamental science and so physical principles underlie practically all the processes that occur in biological and geological/environmental systems. Life and earth scientists need therefore to understand and appreciate some basic physics. This foundation module treats some areas of basic physics topics and their applications in biology, medicine and earth sciences

This foundation module comprises lectures, practical work and tutorials in topics including the following topics: physics of motion, biomechanics, physics of hearing and seeing, electricity and magnetism and bioelectricity, radioactivity, nuclear physics and related medical applications, heat, pressure and fluids and their biological, geological and medical applications.

Note: students who intend to specialise in Physics in their Sophister years should not take this course but **must** take Physics (20 credits) and the full Mathematics (20 Credits) course in both their Freshman years.

#### Learning Outcomes PY1 F01:

On successful completion of this module, the students will be able to:

- Demonstrate the application of Classical Physics within the biomedical and earth sciences.
- Connect the study of wave phenomena and electromagnetism with ultrasound diagnostics and vision.
- Relate basic knowledge of atomic and nuclear physics to radiation diagnostics and therapy and geological applications.
- Prepare a brief report, which includes an error analysis, of a simple physical experiment.
- Employ web-based research techniques within a small group project.

**Contact Details:**

**Head of School:** Professor John Donegan  
Tel: 01-896 1987  
E-mail: [headphys@tcd.ie](mailto:headphys@tcd.ie)

**School Administrator:** Dr Colm Stephens  
Tel: 01-896 2024  
E-mail: [stephec@tcd.ie](mailto:stephec@tcd.ie)

**Address:** School of Physics  
Trinity College  
Dublin 2.  
Fax No: 01-671 1759

**Web address:** <http://www.physics.tcd.ie>

**School e-mail:** [physics@tcd.ie](mailto:physics@tcd.ie)

## **Dates to Note:**

**Freshman Orientation Week:** 19<sup>th</sup> September 2011 – 23<sup>rd</sup> September 2011

TR071 Module Registration: Monday 19<sup>th</sup> September 2011

TR071 Module Re-registration: Monday 28<sup>th</sup> November 2011 (on-line)

## **College Registration:**

Junior Freshman Students	Friday 13 <sup>rd</sup> September 2011
	11:00 – 12:30 Surnames A-L
	14:00 – 15:30 Surnames M-Z

## **Closing Dates for Transfer**

If you decide to transfer out of Science altogether, you must submit an application for **transfer of course** to the Admissions office, following discussion with your tutor. Decisions are based on **a)** the availability of places, and **b)** the entry qualifications of the transfer applicant. It may not be possible to permit transfers to subjects, which already have a full complement of students. Further details are available on the following link <http://www.tcd.ie/Admissions/undergraduate/apply/transferred/within-trinity/>.

## **Transfer out of Science**

First tier - Friday 7<sup>th</sup> October 2011

Second tier - Friday 18<sup>th</sup> November 2011

**Students may not register or attend a course until their application to transfer has been formally approved by the Senior Lecturer.**

## **Teaching Terms 2011-2012**

Semester 1 (Michaelmas Term) Monday 26<sup>th</sup> September 2011 – Friday 16<sup>th</sup> December 2011

Semester 2 (Hilary Term) Monday 16<sup>th</sup> January 2011 – Friday 6<sup>th</sup> April 2011

**Please note that Lectures start on these dates so you are required to be in attendance.**

## Academic Year Structure 2011/2012

Cal. Wk	Dates 2011/12 (week beginning)	Outline Structure of Academic Year 2011/12	Notes	
1	29-Aug-11	Supplemental Examinations	Statutory Term (Michaelmas) begins	
2	05-Sep-11			
3	12-Sep-11	PG Registration		
4	19-Sep-11	UG New Entrant Registration/Freshers' Week		
5	26-Sep-11	Teaching Week 1 Registration continuing students	Michaelmas Lecture term begins	
6	03-Oct-11	Teaching Week 2 Registration continuing students		
7	10-Oct-11	Teaching Week 3 Registration continuing students		
8	17-Oct-11	Teaching Week 4		
9	24-Oct-11	Teaching Week 5		
10	31-Oct-11	Teaching Week 6 (Monday, Public Holiday)		
11	07-Nov-11	Teaching Week 7 - Study Week		
12	14-Nov-11	Teaching Week 8		
13	21-Nov-11	Teaching Week 9		
14	28-Nov-11	Teaching Week 10		
15	05-Dec-11	Teaching Week 11		
16	12-Dec-11	Teaching Week 12		← Michaelmas term ends Friday 16 December 2011
17	19 Dec 11	Christmas Period (College closed from 23 December 2011 to 3 January 2012)		
18	26-Dec-11			
19	02-Jan-12			
20	09-Jan-12	Foundation Scholarship Examinations		Note: it may be necessary to hold some exams in the preceding week.
21	16-Jan-12	Teaching Week 1	Hilary Term begins	
22	23-Jan-12	Teaching Week 2		
23	30-Jan-12	Teaching Week 3		
24	06-Feb-12	Teaching Week 4		
25	13-Feb-12	Teaching Week 5		
26	20-Feb-12	Teaching Week 6		
27	27-Feb-12	Teaching Week 7 - Study Week		
28	05-Mar-12	Teaching Week 8		
29	12-Mar-12	Teaching Week 9 (Saturday, St Patrick's Day)		
30	19-Mar-12	Teaching Week 10 (Monday, Public Holiday)		
31	26-Mar-12	Teaching Week 11		
32	02-Apr-12	Teaching Week 12 (Friday, Good Friday)		← Hilary Term ends Friday 6 April 2012. Good Friday
33	09-Apr-12	Revision (Monday, Easter Monday)	Trinity Term begins. Easter Monday 9 April 2012	
34	16-Apr-12	Revision Trinity Week (Monday, Trinity Monday)		
35	23-Apr-12	Revision		
36	30-Apr-12	Annual Examinations 1	Annual Examination period: 4 weeks at present followed by 4 weeks for marking, examiners' meetings, publication of results, Courts of First Appeal and Academic Appeals.	
37	07-May-12	Annual Examinations 2 (Monday, Public Holiday)		
38	14-May-12	Annual Examinations 3		
39	21-May-12	Annual Examinations 4		
40	28-May-12	Marking/Courts of Examiners/Results		
41	04-Jun-12	Marking/Courts of Examiners/Results (Monday, Public Holiday)		
42	11-Jun-12	Marking/Courts of Examiners/Results		
43	18-Jun-12	Marking/Courts of Examiners/Results/Courts of First Appeal		
44	25-Jun-12	Courts of First Appeal/Academic Appeals		← Statutory (Trinity) Term ends Friday 29 June 2012
45 to 52	02-Jul-12 to 20-Aug-12	Postgraduate dissertations/theses /Research 1-8		Eight weeks between end of statutory (Trinity) term and commencement of statutory (Michaelmas) term. This period is also used for writing up Masters dissertations and research theses due for submission in September. ← Ends Friday 24 August 2012

## Useful Information

### Non-Satisfactory Attendance and Course Work

All students must fulfil the requirements of the modules they take, with regard to attendance and prescribed course work.

Students will be deemed non-satisfactory in each module in which they fail to comply with more than a third of the requirements. Students reported as non-satisfactory may be refused permission to take their annual examinations and may be required by the Senior Lecturer to repeat their year.

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### Request for Academic Transcript:

A request for a transcript may be made by calling to the Science Course Office, or via the web <http://www.tcd.ie/Science/academic-transcript-request/>.

Due to the large volume of requests for transcripts, you are advised that transcripts take a minimum of ten working days to complete and during busy periods it may take up to three weeks.

### Course timetables 2011-2012:

Copies of the course timetables for all Junior Freshman Students and will be available from the Science Course Office by the end of Orientation week. Timetables will also be published on the Science Course Office notice-boards. Draft timetables are available on pages 36 & 37.

Once you have **registered**, you can access your timetable via the web through the following link:

[https://tcdlocalportal.tcd.ie/pls/webapps/sis\\_app.sis\\_cmis\\_time\\_table\\_lect.call\\_lecturer\\_timetable\\_brf](https://tcdlocalportal.tcd.ie/pls/webapps/sis_app.sis_cmis_time_table_lect.call_lecturer_timetable_brf)

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### Laboratories:

Multiple laboratory sessions are associated with a number of modules such as Biology BY1101, Chemistry CH1101, etc. Students taking these modules WILL BE ASSIGNED to specific sessions by the Science Course Office, based on their other timetable commitments, availability of places, etc. Students MUST attend the sessions to which they have been assigned.

In very exceptional circumstances it may be possible to reassign a student to a different session. Students wishing to change their laboratory sessions should apply to the Science Course Office (using the form available at <https://www.tcd.ie/Science/local/undergraduate-students/forms/>), as early as possible in the term, providing valid reasons and any supporting documentation to justify their request.

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### NOTE:

While every effort will be made to give due notice of major changes, the Science Course Office reserves the right to suspend, alter or initiate courses, timetables, examinations and regulations at any time.

## Plagiarism

Plagiarism is interpreted by the University as the act of presenting the work of others as one's own work without acknowledgement, and as such, is considered to be academically fraudulent. The University considers plagiarism to be a major offence, and it is subject to the disciplinary procedures of the University. The University's full statement on plagiarism is set out in the University *Calendar*, 'General Regulations and Information', Academic progress.

College has a university wide subscription to a software service called "Turnitin". Turnitin automatically compares the submitted documents with a data bank of web accessible resources. Queries regarding the use of this software can be made to the Centre for Academic Practice and Student Learning (CAPSL) email: [capsl@tcd.ie](mailto:capsl@tcd.ie).

## Anonymous marking

All undergraduate students, including visiting students, will have their annual and supplemental examinations anonymously marked.

## Science TR071 Grading Schedule:

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

## Examinations

All information pertaining to examinations is available on the Examinations office website, including examination regulations and timetables:

<http://www.tcd.ie/vp-cao/teo/vpteoproc.php>

Examination regulations for the Science Course can be accessed at –  
<http://www.tcd.ie/Science/local/undergraduate-students/>

## Information Systems (IS) Services Guide to Services for undergraduate students:

This is a guide to all services provided by IS services and is well worth a look. Further information can be found at: <http://isservices.tcd.ie/student/index.php>

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## EXAMINATION REGULATIONS 2011-2012

**UNIVERSITY OF DUBLIN**  
TRINITY COLLEGE

*Faculty of Engineering, Mathematics and Science*

### EXAMINATION REGULATIONS

#### JUNIOR FRESHMAN STUDENTS:

**SCIENCE (TR071),  
HUMAN GENETICS (TR073),  
CHEMISTRY WITH MOLECULAR MODELLING (TR074),  
MEDICINAL CHEMISTRY (TR075)  
NANOSCIENCE, PHYSICS AND CHEMISTRY OF ADVANCED  
MATERIALS (TR076)  
EARTH SCIENCES (TR077)**

#### 1. GENERAL COLLEGE REGULATIONS

General College regulations with regard to examinations shall apply to all examinations in Science as set out in Section H (Page H1) of the University Calendar 2010/11

<http://www.tcd.ie/calendar/assets/pdf/tcd-calendar-h-regulations.pdf>

#### 2. EXAMINATION REGULATIONS – JUNIOR FRESHMAN

2.1 Timetables for all Freshman examinations are published in advance of the dates of the examinations, and available on-line on the College website. The onus lies on each student to find out the dates of examinations by consulting these timetables. No timetables or reminders will be sent to any individual student.

2.2 Junior Freshman students must, in the first instance, sit the annual examination for their course.

Students obtaining 40% or higher in each of their modules, or passing by compensation (see below) are qualified to rise to the Senior Freshman year. To gain a pass in the Junior Freshman examination, students must either pass in each module or, in the case of the annual examination only, compensate for marks of 35-39% in module/s not exceeding a total of 20 credits by their level of performance in the others.

2.3 To compensate at the Annual examinations, students must

- (i) obtain an overall mark of 40% or higher AND

- (ii) obtain individual marks of 40% or higher in modules to the value of 40 credits  
AND
- (iii) obtain marks of 35% or higher in each of the remaining modules.

Individual student cases will be considered for compensation by the Court of Examiners.

2.4 Students who are unsuccessful in the annual examinations may re-sit examinations in the failed modules at the supplemental examination. (There is no fee for the Supplemental Examination).

2.5 To compensate at the Supplemental examinations, students must

- (i) obtain an overall mark of 40% or higher AND
- (ii) obtain individual marks of 40% or higher in modules to the value of 50 credits  
AND
- (iii) obtain marks of 35% or higher in each of the remaining modules.

2.6 Students who are not qualified to rise to the Senior Freshman year, but whose overall mark is 35% or higher in either the annual or supplemental examination, may be permitted to repeat the Junior Freshman year in order to improve their performance.

2.7 Students whose overall mark is 34% or lower in the annual examinations and supplemental examinations are not permitted to repeat their year and must withdraw from the course.

Students failing to take the Annual Examination are not permitted to take the Supplemental Examination or repeat the year, except with the permission of the Senior Lecturer. Students permitted to defer their first sitting until the Supplemental Examination will be permitted to compensate as in 2.3 above.

2.8 If a student's examination result indicates the remark 'See tutor', the student must contact their tutor immediately. If appropriate, an appeal can be lodged by the tutor to the Court of First Appeal.

A student may not repeat the Junior Freshman year more than once, except by special permission of the University Council.

Science Course Office

2011/12

**Student Disability Services:**

The Disability Service is located in Room 2054, beside the Lecky Library, Arts Building, Trinity College, Dublin 2.

**Making an Appointment:**

The Disability Service operates an appointment system to ensure that student queries and assessment interviews are handled in an efficient and effective manner. Appointments are on the hour and in the office. Please note that the office is now open between 1-2pm.

**Contact details as follows:**

- By Phone: (01) 896 3111
- By Text / SMS (for Deaf Students): 086 3442322
- By [Email](mailto:disab@tcd.ie): disab@tcd.ie
- By Fax: (01) 896 3672
- Via the web at: <http://www.tcd.ie/disability/contact/>

**Student Counselling Service:**

Student Counselling Service is here to help you to manage any difficulties you are experiencing so you can enjoy and fully participate in your time here at College.

**Call in:**

You can call in to 199 - 200 Pearse Street, entrance via College.

**By telephone:**

Ph: +353 1 896 1407

Fax: +353 1 896 3464

E-Mail: student-counselling@tcd.ie

Web: [http://www.tcd.ie/Student\\_Counselling/](http://www.tcd.ie/Student_Counselling/)

A full list of all student services can be found at <http://www.tcd.ie/students/>.

**Tutorial Service:**

The Tutorial Service is unique, confidential and available to all undergraduate students offering student support in all aspects of College life.

**Frequently Asked Questions:**

[http://www.tcd.ie/Senior\\_Tutor/faq/](http://www.tcd.ie/Senior_Tutor/faq/).

The Tutorial Service is supported and co-ordinated by the [Senior Tutor's Office](#) which is located on the ground floor in [House 27](#).

**Opening Hours**

We are open Monday - Friday from 9.15am - 5pm and close for lunch each of these days from 1pm - 2pm.

**Appointments**

If you require specific advice or would like a confidential meeting with the Student Support Officer, you can make an appointment by telephoning +353 1 896 2551 or by emailing [stosec@tcd.ie](mailto:stosec@tcd.ie)

<http://www.tcd.ie/Science/>

UNIVERSITY OF DUBLIN  
SCIENCE COURSE OFFICE (TR071)

Semester 1:  
26 September 2011-12 December 2011  
(Weeks 5-16)  
Week 10 (October) Bank Holiday,  
Week 11 Reading Week

**JUNIOR FRESHMAN SCIENCE**

**SEMESTER 1 2011/2012**

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
MON	GG1021 (Geography) JOLY 4 Weeks 5-9, 12-16	BY1101 (Biology) GOLDHALL Weeks 5-9, 12-16	CH1101 (Chemistry) GOLDHALL Weeks 5-9, 12-16	MA1S11 (Maths) MACNEIL3 Weeks 5-9, 12-16		PY1P10 (Physics) PHYLLT Weeks 5-9,12-16	GG1021 (Geography) MACNEIL3 Weeks 5-9, 12-16	MA1S11 (Maths) JOLY 4 Weeks 5-9, 12-16  MA1M01 (Maths Methods) GOLDHALL Weeks 5-9,12-16	CH1101 (Chemistry) GOLDHALL Weeks 5-9, 12-16
TUES	PY1P10 (Physics) PHYLLT Weeks 5-10, 12-16	BY1101 (Biology) GOLDHALL Weeks 5-10, 12-16	CH1101 (Chemistry) GOLDHALL Weeks 5-10, 12-16	MA1S11 (Maths) JOLY 4 Weeks 5-10, 12-16  MA1M01 (Maths Methods) MACNEIL3 Weeks 5-10, 12-16		PY1P10 (Physics) PHYLLT Weeks 5-10, 12-16	PY1P10 (Physics) PHYLLT Weeks 5-10, 12-16	BY1101 (Biology) GOLDHALL Weeks 5-10, 12-16	MA1M01 (Maths Methods) MACNEIL3 Weeks 5-10, 12-16
WED	GG1021 (Geography) Weeks 5-10, 12-16	BY1101 (Biology) GOLDHALL Weeks 5-10, 12-16	CH1101 (Chemistry) GOLDHALL Weeks 5-10, 12-16	MA1S11 (Maths) JOLY 4 Weeks 5-10, 12-16  MA1M01 (Maths Methods) MACNEIL3 Weeks 5-10, 12-16		GG1021 (Geography) MACNEIL3 Weeks 5-10, 12-16	CH1101 (Chemistry) Lab A TEACH LAB SNIAM BLDG Weeks 5-10, 12-16		PY1P10 (Physics) PHYLLT Weeks 12-16
THURS	MA1S11 (Maths) JOLY 4 Weeks 5-10, 12-16	PY1P10 (Physics) Lab SNIAM LAB 1 SNIAM BLDG Weeks 5-10, 12-16			BY1101 (Biology) GOLDHALL Weeks 5-10, 12-16	CH1101 (Chemistry) Lab C TEACH LAB SNIAM BLDG Weeks 5-10, 12-16			
	MA1M01 (Maths Methods) ARTS 1008 Weeks 5-10, 12-16	CH1101 (Chemistry) Lab B TEACH LAB SNIAM BLDG Weeks 5-10, 12-16				BY1101 (Biology) Lab A BIOLAB EAST END 5 Weeks 5-10, 12-16			
FRI	MA1S11 Maths GOLDHALL Weeks 5-10, 12-16	CH1101 (Chemistry) Lab D TEACH LAB SNIAM BLDG Weeks 5-10, 12-16	BY1101 (Biology) Lab B BIOLAB EAST END 5 Weeks 5-10, 12-16			CH1101 (Chemistry) Lab E TEACH LAB SNIAM BLDG Weeks 5-10, 12-16	BY1101 (Biology) Lab C BIOLAB EAST END 5 Weeks 5-10, 12-16		

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UNIVERSITY OF DUBLIN  
SCIENCE COURSE OFFICE (TRO71)

JUNIOR FRESHMAN SCIENCE

SEMESTER 2:  
16 Jan 2011 – 2 Apr 2012 (Weeks 21-32)  
Week 30 (Monday Bank Holiday for St Patrick's Day)  
Week 27 Reading Week.

SEMESTER 2 2011/2012

	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00
MON	GG1022 (Geography) JULY 4 Weeks 21-26, 28-29, 31-32	BY1102 (Biology) GOLDHALL Weeks 22-26, 28-29, 31-32	CH1102 (Chemistry) GOLDHALL Weeks 21-26, 28-29, 31-32	MA1S12 (Maths) MACCHEIL3 Weeks 21-26, 28-29, 31-32		PY1P20 (Physics) PHYLLT Weeks 21-26, 28-29, 31-32 PY1F01 (Foundation Physics) SNIAMBLD Weeks 21-26, 28-29, 31-32	GL1101 (Geology) MACCHEIL3 Weeks 21-26, 28-29, 31-32	MA1S12 (Maths) JULY 4 Weeks 21-26, 28-29, 31-32	CH1102 (Chemistry) GOLDHALL Weeks 21-26, 28-29, 31-32
TUES	PY1P20 (Physics) PHYLLT Weeks 21-26, 28-32 PY1F01 (Foundation Physics) SNIAMBLD Weeks 21-26, 28-32	BY1102 (Biology) GOLDHALL Weeks 22-26, 28-32	CH1102 (Chemistry) GOLDHALL Weeks 21-26, 28-32	MA1S12 (Maths) MACCHEIL3 Weeks 21-26, 28-32		PY1P20 (Physics) PHYLLT Weeks 21-26, 28-32 PY1F01 (Foundation Physics) SNIAMBLD Weeks 21-26, 28-32	PY1P20 (Physics) PHYLLT Weeks 21-26, 28-32 PY1F01 (Foundation Physics) SNIAMBLD Weeks 21-26, 28-32	BY1102 (Biology) GOLDHALL Weeks 22-26, 28-32	MA1S12 (Maths) ARTS 1008 Weeks 21-26, 28-32
WED	GL1101 (Geology) JULY 4 Weeks 21-26, 28-32	BY1102 (Biology) GOLDHALL Weeks 22-26, 28-32	CH1102 (Chemistry) GOLDHALL Weeks 21-26, 28-32	MA1S12 (Maths) JULY 4 Weeks 21-26, 28-32		GL1101 (Geology) MACCHEIL3 Weeks 21-26, 28-32	CH1102 (Chemistry) Lab A FRESH LAB EAST END 4 Weeks 21-26, 28-30	GL1101 (Geology) Lab A MUSEUM BLDG Weeks 21-26, 28-32	PY1P20 (Physics) PHYLLT Weeks 21-26
THURS	MA1S12 (Maths) JULY 4 Weeks 21-26, 28-32	PY1P20 (Physics) Lab SNIAMLAB 1 SNIAMBLD Weeks 21-26, 28-32				BY1102 (Biology) GOLDHALL Weeks 22-26, 28-32	CH1102 (Chemistry) Lab C FRESH LAB EAST END 4 Weeks 21-26, 28-30	BY1102 (Biology) Lab A BIOLAB EAST END 5 Weeks 22-26, 28-32	GG1022 (Geography) JULY 4 Weeks 21-26, 28-32
FR	GG1022 (Geography) JULY 4 Weeks 21-26, 28-31	PY1F01 (Foundation Physics) Lab B SNIAMLAB 1 SNIAMBLD Weeks 21-26, 28-30	CH1102 (Chemistry) Lab B FRESH LAB EAST END 4 Weeks 21-26, 28-30	PY1F01 (Foundation Physics) Lab B SNIAMLAB 1 SNIAMBLD Weeks 22-26, 28, 30-31			PY1F01 (Foundation Physics) Lab A SNIAMLAB 1 SNIAMBLD Weeks 21-26, 28-32	GL1101 (Geology) Lab B MUSEUM BLDG Weeks 21-26, 28-32	GG1022 (Geography) JULY 4 Weeks 21-26, 28-31

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## Science Key to Lecture Theatres and Laboratories

Lecture Room Name	Location
Macneil3	Hamilton Building
July 4	Hamilton Building
Maxwell5	Hamilton Building
Salmon Theatre	Hamilton Building
Synge Theatre	Hamilton Building
LTEE1	Lecture Theatre 1, EE4/5 Science Building
LTEE2	Lecture Theatre 2, EE4/5 Science Building
LTEE3	Lecture Theatre 3, EE4/5 Science Building
EE.Mac Lab	East End Science Building
EE.PC1	East End Science Building
EE.PC2	East End Science Building
EE.PC3	East End Science Building
Biology Laboratory	East End Science Building
Chemistry Laboratory	East End Science Building
CHLLT	Chemistry Large Lecture Theatre, Chemistry Building
CHSCLT	Chemistry Science Lecture Theatre, Chemistry Building
LB11	Lloyd Building
MOYNLT	Moyne Lecture Theatre, Moyne Institute Building
Moyne Seminar Room	Moyne Seminar Room, Moyne Institute Building
Goldsmith Hall	Goldsmith Building, Pearse Street
Room 1A	Goldsmith Building, Pearse Street
Room 2A	Goldsmith Building, Pearse Street
PHYLLT	Physics Large Lecture Theatre, Physics Building
Physics Labs	Physics Building
SNIAMS	Sami Nasr Institute of Materials Science Building
SNIAM LT	SNIAM Lecture Theatre, SNIAM Building
SNIAM LR	SNIAM Lecture Room, SNIAM Building
SNIAM CR	SNIAM Conference Room, SNIAM Building
SNIAM CPL	SNIAM Computational Physics Laboratory, SNIAM Building
SNIAM LAB 4	JS Advanced Material Laboratory, SNIAM Building
SNIAM LAB 1	JF Physics Laboratory, SNIAM Building
SNIAM LAB 2	SF Physics Laboratory, SNIAM Building
SNIAM LAB 3	JS Physics Laboratory, SNIAM Building
Main Lab	Geology Department, Museum Building
Pal Lab	Geology Department, Museum Building
Pet Lab	Geology Department, Museum Building
M4	Geology Department, Museum Building
GLT	Geography Lecture Theatre, Museum Building
GG.SEM A	Geography Seminar Room A, Ground Floor, Museum Building
GG.SEM B	Geography Seminar Room B, Ground





# Science



Ireland's EU Structural Funds  
Programmes 2007 – 2013

Co-funded by the Irish Government  
and the European Union



**HEA**  
Higher Education Authority  
An tÚdarás um Ard-Oideachas

