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

School of Engineering

# Mechanical & Manufacturing Engineering

# Student Handbook

# Years 3, 4, 5 (JS, SS, MAI)

# 2024-2025

# Table of Contents

# 1 Introduction

We wish to extend a very warm welcome to our incoming Junior Sophister students, and to our returning Senior Sophister and MAI students. We are delighted that you have chosen to follow our Mechanical & Manufacturing Engineering degree programme. This is one of the broadest of all disciplines in terms of career options for graduates and in the way that it contributes to humanity. Curious people sometimes ask me 'What is mechanical engineering?' and the short answer is that 'anything that moves probably involves mechanical engineers'. They are then surprised to discover that it involves everything from aircraft to datacentres to heart valves, and much more. Many of our engineering graduates even follow career paths in finance, investment, and management, where their numeracy skills and systematic approach to tackling large scale problems is highly valued. Much of our work is truly multi-physics (fluid/thermal/structural/material/electromagnetic…), and now harnesses very advanced simulation and machine learning techniques coupled with revolutionary new manufacturing technologies to yield ever more efficient and sustainable solutions for our modern society.

Now, considering the sheer breadth of opportunities for mechanical engineers to contribute to future society, ask yourself what are the constraints that limit your potential? I say that the only limitations on your future are your own ambition and imagination. To help you calibrate your ambitions, please take a few minutes to review the global impact of one of our famous past Trinity students, Charles Parsons, and set your own expectations accordingly.

*Prof. Stephen Spence, Head of Discipline*

## 1.1 Overview

Mechanical & Manufacturing Engineering is a School of Engineering stream within the grouped disciplines of Mechanical, Manufacturing, and Biomedical Engineering (MMBE). Mechanical Engineering is perhaps the most expansive and demanding of the engineering disciplines and provides much of the innovation necessary for addressing societal challenges such as sustainability and climate change. Our students benefit from research led teaching from experts in the field and they

develop a range of transferrable skills and knowledge of multiple fields such as materials science and engineering, fluid mechanics, thermodynamics, heat transfer, vibrations, acoustics, manufacturing technology, design engineering, and many more. This handbook provides information about your year, stream, and course. Alternative formats of this handbook can be made available on request.

## 1.2 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 effort 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. 1 credit (=1 ECTS) represents 20-25 hours estimated student effort, so a 5 credit (= 5 ECTS) module will be designed to require 100-125 hours of student effort including class contact time, assessments, and examinations.

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

## 1.3 Student workload

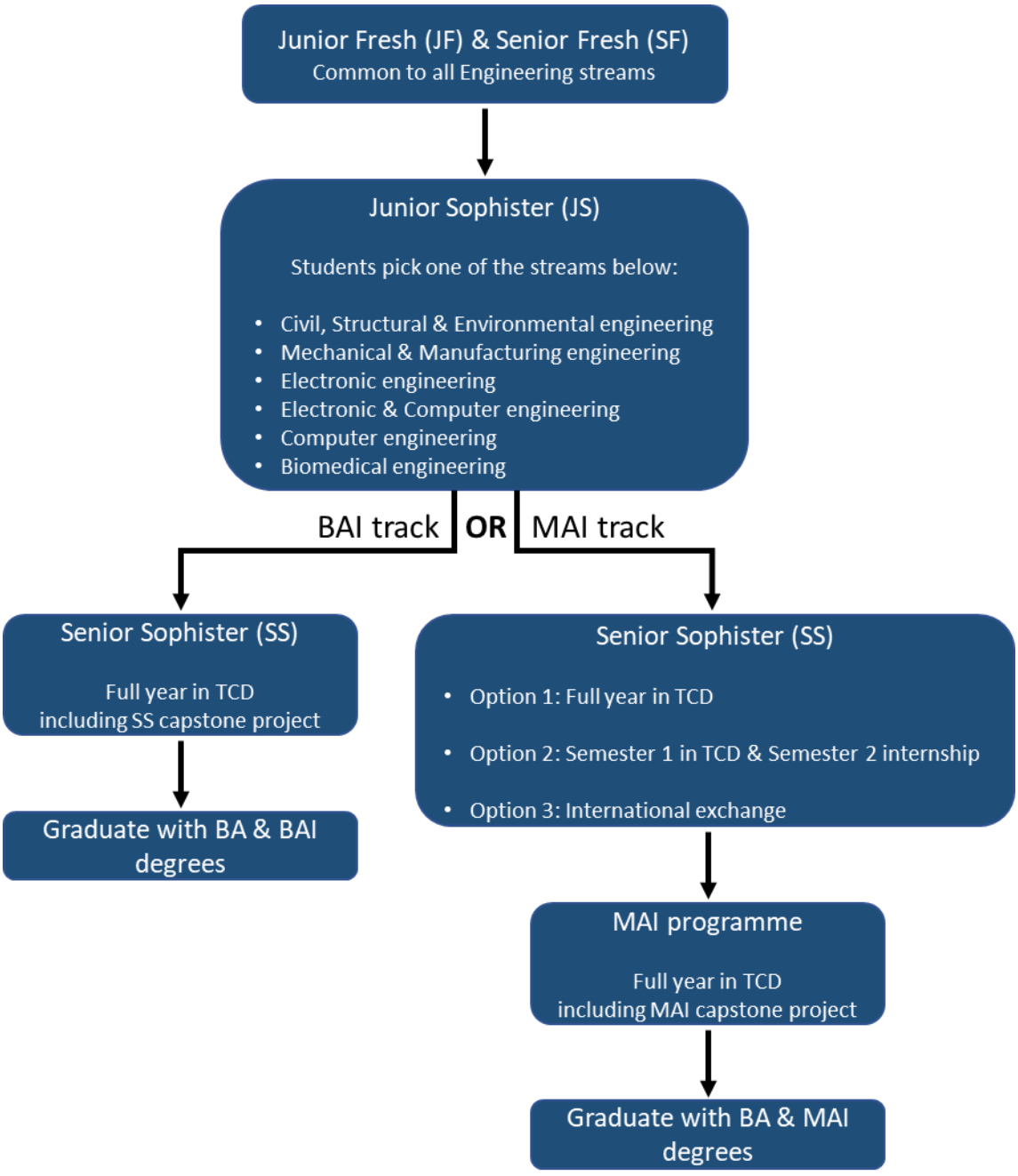
The Junior Sophister year is much more specialised than the Junior Fresh and Senior Fresh years. In your studies, you should aim to work for a minimum of 50 hours per week. With a total timetable schedule of about 25 hours per week, this means you should be planning private study for about 25 hours per week, on average. Developing proper study techniques and the capacity to use the library and the internet, as well as interacting with your peers and lecturers to supplement formal lecture material, are central aspects of a university education. You should not expect to be given full details of all aspects of the modules in lectures or tutorials. It is ultimately your responsibility to ensure that you have understood the fundamentals of every module and that you can solve both tutorial problems and other examples to be found in appropriate textbooks. These developed study skills will carry forward to your next year and beyond.

## 1.4 College rules & regulations

All students are encouraged to fully familiarise themselves with the College Calendar Part II which contains various sub-sections, including college rules and general regulations, which can be found here. Regulations specific to the Faculty of Science, Technology, Engineering and Mathematics can be found here.

In the event of any conflict or inconsistency between the General Regulations published in the University Calendar and information contained in programme or local handbooks, presentations or other sources, the provisions of the general regulations in the Calendar will prevail.

## 2 Engineering course overview




The integrated BAI/MAI degree programme is professionally accredited by Engineers Ireland and meets the educational requirements for corporate membership of this professional institution and registration as a chartered engineer. Further information can be found here.

## 2.1 Academic year structure

The academic year is delivered in two semesters of 30 ECTS each, with assessment sessions at the end of each semester. To do well in each year it is important to work consistently.

**Your Year 3 (JS) performance affects the following:**

- Your final degree result (BAI track only).
- Eligibility for SS year international exchange (MAI track only).
- Eligibility for SS year internship (MAI track only).
- Eligibility for MAI track.
- BAI project choices in the SS year (BAI track only).
- MAI project choices in the MAI year (MAI track only)

**Your Year 4 (SS) performance affects the following:**

- Your final degree result (BAI track only).
- Eligibility for MAI track.

**Your =Year 5 (MAI) performance affects the following:**

- Your final degree result (MAI track only).

## 2.2 Eligibility criteria

### 2.2.1 International exchange (MAI track)

To be eligible to apply for an international exchange in the Senior Sophister (4th) year of the engineering course, students must have a minimum grade of 60 per cent at the first sitting of the Junior Sophister Engineering examinations. Those required to take reassessment for any Junior Sophister Engineering module(s) will be deemed ineligible to apply. No exceptions to this rule will be considered. More information is available here.

### 2.2.2 Internship (MAI track)

To be eligible to apply for the MEU44E04 Industrial Partnership/Internship module in the second semester of the Senior Sophister (4th) year of the engineering course,

students must have a minimum grade of 60 per cent at the first sitting of the Junior Sophister Engineering examinations. Those required to take reassessment for any Junior Sophister Engineering module(s) will be deemed ineligible to apply. No exceptions to this rule will be considered. More information is available here.

#### 2.2.3 MAI (integrated masters)

Students must pay a tuition fee for the 5th or MAI year. More information is available here. To be eligible to proceed to the MAI year of the programme, students in the Senior Sophister year must achieve a minimum overall BAI mark of 60 per cent for the combined Junior Sophister and Senior Sophister years (on a 30:70 basis) at the first attempt at the annual assessment session of the BAI degree year. Students eligible for MAI will be sent a list of available MAI projects at the end of the Senior Sophister year and asked to rank their preferences. The allocation is made based on a student's Junior Sophister ranking.

### 2.3 Degree award routes

#### 2.3.1 BA

Students who complete the third year by examination and who choose not to proceed to, or fail to complete satisfactorily, the fourth or MAI year of the Engineering course may elect to be conferred with the ordinary degree of BA (this is not a BA in Mathematics).

#### 2.3.2 BA and BAI

Awarded to those Engineering students who exit the course by fulfilling all 3 criteria below:

1. obtained the required credit for years 1 to 4 of the course.
2. Senior Sophister students who are exiting with a B.A.I./B.Sc. degree must complete a capstone project. In exceptional circumstances, where the Director of Undergraduate Teaching and Learning and the relevant stream co-ordinator are satisfied that a specific internship project has demonstrated the equivalent learning outcomes to a capstone project, the internship project may be deemed equivalent to capstone project.

3. spent their final semester in the University of Dublin, Trinity College.

The BAI mark combines the average mark achieved in the Junior Sophister year (30% towards overall average) and the Senior Sophister year (70% towards overall average). Students who take the Senior Sophister internship in Semester 2 of the fourth year are on the MAI track and are not allowed to exit with a BAI.

#### 2.3.3 BA and MAI

Awarded to those Engineering students admitted in 2016-17 onwards who exit the course by fulfilling all 3 criteria below:

1. obtained the required credit for years 1 to 5 of the course.
2. successfully completed a MAI capstone project.
3. spent their final semester in the University of Dublin, Trinity College.

## 2.4 School of Engineering examination regulations

Please refer to the regulations specific to the Faculty of Science, Technology, Engineering and Mathematics, or here.

## 2.5 External examiner

Professor Mahdi Azarpeyvand, Professor of Aerodynamics and Aeroacoustics, School of Civil, Aerospace and Design Engineering, University of Bristol, UK.

# 3 Mechanical & Manufacturing Engineering

## 3.1 Stream learning outcomes

The main objective is the pursuit of excellence in teaching and research in Mechanical & Manufacturing Engineering with the central aim of producing graduate engineers with a capacity for independent thought in problem solving and creative analysis & design. To achieve this, we must:

- instil in students an enthusiasm for the art and practice of Engineering.
- teach the engineering science and mathematics which underpin the subject areas of Mechanical & Manufacturing Engineering.
- demonstrate the application of these principles to the analysis, synthesis and design of engineering components and systems.
- foster the development of team working skills.
- encourage students to exercise critical judgement and develop the communication skills necessary to make written and oral presentations of their work.

These objectives are underpinned by:

- undertaking both basic and applied research.
- the provision of advanced facilities for students to undertake graduate research degrees.
- the development of academic staff in teaching and research by ensuring that adequate resources are available to assist them.
- ensuring that the research work is of the highest international standard by participation in international conferences and publication in learned journals.

In addition, we must consider:

- the requirements of the relevant professional institutions.
- the needs of Irish and European industry in the undergraduate curriculum.

## 3.2 Modules and module descriptors

### 3.2.1 Year 3 - Junior Sophister (JS) modules

The table below details the modules, credit value, and coordinator. Year 3 module descriptors are available here.

| Module Code | Module Title | ECTS | Status | Sem. | Module Coordinator |
|---|---|---|---|---|---|
| **MEU23B10** | Computer Aided Design | 5 | Mandatory | 1 | Daniel Trimble |
| **MAU33E01** | Engineering Mathematics | 5 | Mandatory | 1 | Tristan McLoughlin |
| **EEU33C01** | Signals & Systems | 5 | Mandatory | 1 | Nicola Marchetti |
| **MEU33B02** | Fluid Mechanics | 5 | Mandatory | 1 | Craig Meskell |
| **MEU33B04** | Mech. Engineering Materials | 5 | Mandatory | 1 | Kevin O'Kelly |
| **MEU33B09** | Universal Design Innovation | 5 | Mandatory | 1 | Gareth Bennett |
| **EEU33E03** | Probability & Statistics | 5 | Mandatory | 2 | Bidisha Ghosh<br>Arman Farhang |
| **MEU33B01** | Thermodynamics | 5 | Mandatory | 2 | Tony Robinson |
| **MEU33B03** | Mechanics of Solids | 5 | Mandatory | 2 | Shuo Yin<br>Mark Ahearne |
| **MEU33B05** | Mechanics of Machines | 5 | Mandatory | 2 | Ciaran Simms |
| **MEU33B07** | Manuf. Technology & Systems | 5 | Mandatory | 2 | Daniel Trimble |
| **TEUxxxxx** | Trinity Elective | 5 | Choose 1 | 2 | Various |

### 3.2.2 Year 4 - Senior Sophister (SS) modules

The table below details the modules, credit value, and coordinator. Year 4 module descriptors are available here.

| Module Code | Module Title | ECTS | Status | Sem. | Module Coordinator(s) |
|---|---|---|---|---|---|
| **CEU44E01** | Management for Engineers | 5 | Mandatory | 1 | John Gallagher |
| **MEU44E03** | Research Methods | 5 | Mandatory | 1 | John Kennedy<br>Gareth Bennett |
| **MEU44B04** | Heat Transfer | 5 | Mandatory | 1 | Tim Persoons |
| **MEU44B07** | Fluid Mechanics | 5 | Mandatory | 1 | Tim Persoons |
| **MEU44B13** | Fluid Mechanics 2 | 5 | Mandatory | 1 | Craig Meskell |
| **MEU44B17** | Multibody Dynamics | 5 | Mandatory | 1 | Ciaran Simms |
| **MEU44E04** | Engineering Internship | 30 | Optional | 2 | Tony Robinson |
| **MEU44E02** | Mechanical Engineering Project | 15 | Optional | 2 | Garret O'Donnell |
| **MEU44B01** | Mechanics of Solids | 5 | Optional | 2 | Mark Ahearne |
| **MEU44B02** | Forensic Materials Engineering | 5 | Optional | 2 | David Taylor |
| **MEU44B05** | Laser Processing and Additive Manufacturing I | 5 | Optional | 2 | Moyin Otubela<br>Amir Pakdel |
| **MEU44B06** | Manufacturing Systems & Project Management | 5 | Optional | 2 | Shuo Yin<br>Garret O'Donnell |
| **MEU44B09** | Control Engineering I | 5 | Optional | 2 | Siyuan Zhan<br>Henry Rice |
| **MEU44B10** | Turbomachinery | 5 | Optional | 2 | Charles Stuart |
| **MEU44B12** | Introduction to Autonomous Robotics | 5 | Optional | 2 | Adam Coyne |
| **MEU44B14** | Engineering Vibrations & Noise | 5 | Optional | 2 | John Kennedy |
| **EEU44C08** | Digital Image and Video Processing | 5 | Optional | 2 | Francois Pitie |

### 3.2.3 Year 5 - MAI modules

The table below details the modules, credit value, and coordinator. Year 5 module descriptors are available here.

| Module Code | Module Title | ECTS | Status | Sem. | Module Coordinator(s) |
|---|---|---|---|---|---|
| **MEP55E02** | Mechanical Engineering Research Project | 30 | Mandatory | 1 & 2 | Garret O'Donnell |
| **ME5MM3** | Supply Chain Management | 5 | Optional | 1 | Garret O'Donnell |
| **ME5MM7** | Risk Management & Safety Assessment Systems | 5 | Optional | 1 | Garret O'Donnell Kevin O'Kelly |
| **CE7J04** | Energy Policy & Energy Storage | 5 | Optional | 1 | Sarah McCormack |
| **MEP55E04** | Computational Fluid Mechanics | 5 | Optional | 1 | Seamus O'Shaughnessy |
| **MEP55B10** | Finite Element Analysis | 5 | Optional | 1 | Triona Lally |
| **EEU55C16** | Deep Learning | 10 | Optional | 1 | Francois Pitie |
| **EEP55C21** | Cyber Physical Systems and Control | 10 | Optional | 1 & 2 | Harun Šiljak |
| **MEP55B15** | Low Carbon Transport Technology | 10 | Optional | 1 & 2 | Charles Stuart |
| **MEP55B16** | Low Carbon Power Technology | 10 | Optional | 1 & 2 | Stephen Spence |
| **MEU55E03** | Innovation in Product Development | 15 | Optional | 1 & 2 | Kevin Kelly |
| **ME5B03** | Advanced Thermal Fluid Design | 10 | Optional | 2 | Tony Robinson |
| **MEP55M10** | Turbomachinery | 5 | Optional | 2 | Stephen Spence |
| **MEP55B14** | Engineering Vibrations & Noise | 5 | Optional | 2 | John Kennedy |
| **ME5MM1** | Nanotechnology & Additive Manufacturing | 5 | Optional | 2 | Amir Pakdel |
| **CE7J01** | Wind Energy | 5 | Optional | 2 | Breiffni Fitzgerald |
| **CE7J06** | Wave Energy | 5 | Optional | 2 | Biswajit Basu |
| **EEP55C23** | Computation for Transportation Engineering | 5 | Optional | 2 | Biswajit Basu |

*The deadline for changing module choices is the end of week 1 of each semester.

## 3.3 Timetables

- Year 3 (scroll to see timetable link)
- Year 4 (scroll to see timetable link)
- Year 5 (scroll to see timetable link)

## 3.4 Tutorials

Tutorials will be scheduled with your lecture timetable. Attendance at tutorials is mandatory. For some modules, multiple tutorial groups and tutorial sessions may be required. Tutorial groups will be published at the beginning of each semester on the departmental online noticeboard. A link will be sent to students. If you do not have access to this link, email the lab and tutorial coordinator, Prof. Siyuan Zhan.

## 3.5 Laboratories

Certain modules may have associated laboratory experiments or computer-based assignments. Students are expected to keep a logbook recording the details of every experiment performed. Students may be required produce a technical written or oral report about experiments and/or assignments. Each student is required to submit their report in a format required by the assignment brief by the specified date to avoid penalty. Guidelines as to the required format, length, and due date of such assignments should be specified by the relevant module coordinator.

### 3.5.1 Lab schedule

Laboratory groups and schedules will be published at the beginning of the semester on the departmental online noticeboard. A link will be sent to students. If you do not have access to this link, email the lab and tutorial coordinator, Prof. Siyuan Zhan. Please note that you **must** attend the specific laboratory sessions to which you have been assigned. Students should not swap sessions with other students unless prior approval by the module and/or lab schedule coordinator is given.

### 3.5.2 Lab attendance & grading

Attendance at labs is mandatory. Absence from a lab will result in a mark of zero, even if a report is submitted. No report submitted results in a mark of zero, even if

the lab was attended. Labs cannot be taken in the summer/autumn periods if missed during the teaching terms.

## 3.6 Policy on late submission of coursework

Coursework and assessment are an essential part of student learning to reinforce aspects of module content. For **ALL** modules within Mechanical & Manufacturing Engineering the following applies:

### 3.6.1 Individual coursework

Coursework received up to two weeks after the due date will be graded, but a penalty will be applied as follows:

- Up to 1 week late = minus 15%
- From 1 week to 2 weeks late = minus 25%
- Submissions > 2 weeks late will not be accepted and will receive a zero grade**.**

Submission dates may be extended in exceptional and extenuating circumstances. Students must apply directly (via email) to the relevant module coordinator requesting an extension and must provide an explanation and/or evidence for such (*e.g.*, medical cert). Please note that the module coordinator reserves the right to refuse granting of an extension.

### 3.6.2 Group coursework

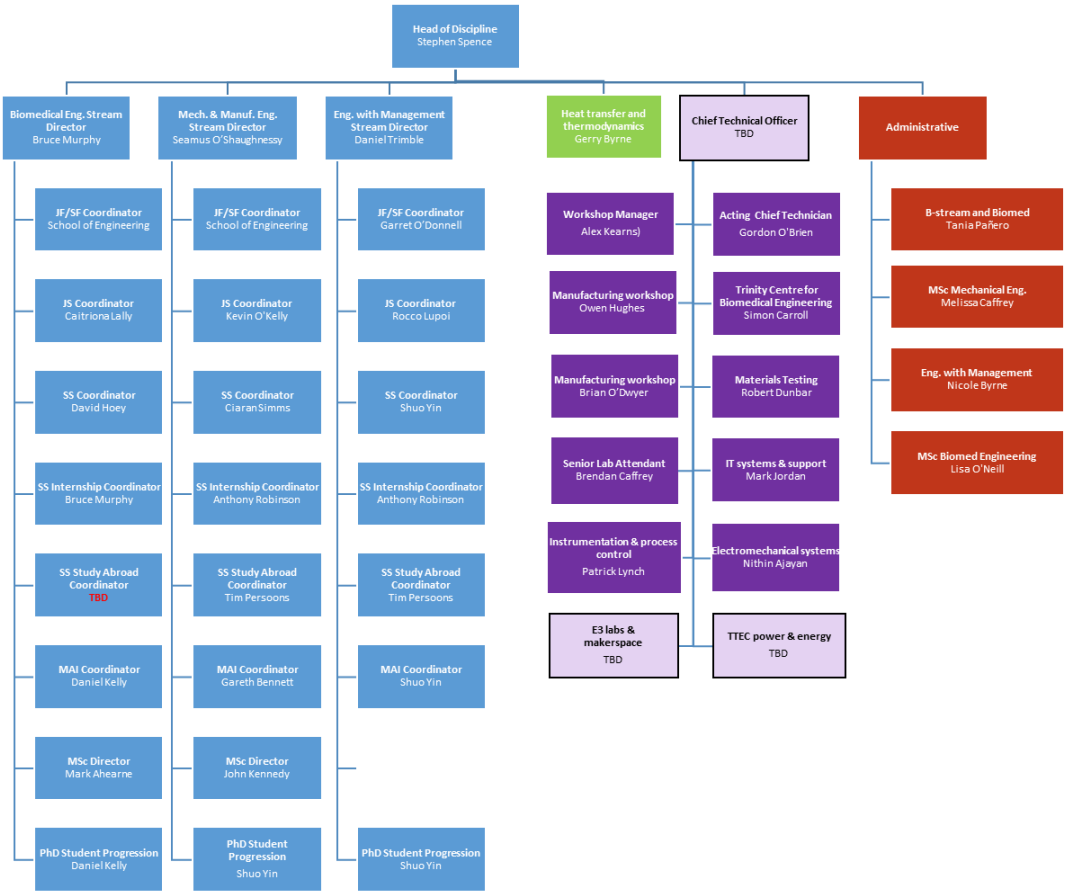
The same penalties for late submissions will apply to group coursework as outlined for “Individual Coursework”. Certain modules may adopt an additional grading scheme whereby group projects/assignments will be graded as a function of lecture attendance. Please consult the module coordinators.

## 3.7 Policy on participation in continuous assessment-based modules

Students who are absent from a third of their lectures, tutorials, or labs of a continuous assessment-based module, or who fail to submit a third of the required coursework will be deemed non-satisfactory. Students reported as non-satisfactory for both semesters of a given year may be refused permission to take their examinations and may be required by the Senior Lecturer to repeat the year. Further

details of the procedure for reporting a student as non-satisfactory can be viewed on the College Undergraduate Studies website.

## 3.8 MMBE Organisation Chart



## 3.9 Contact Persons

### 3.9.1 Director of Mechanical & Manufacturing Stream

Professor Seamus O'Shaughnessy (✉ oshaugse@tcd.ie)

### 3.9.2 Junior Sophister Co-ordinator

Professor Kevin O'Kelly (✉ okellyk@tcd.ie)

### 3.9.3 Senior Sophister Co-ordinator

Professor Ciaran Simms (✉ csimms@tcd.ie)

### 3.9.4 MAI Co-ordinator

Professor Gareth Bennett (✉ bennettg@tcd.ie)

### 3.9.5 BAI & MAI project Co-ordinator

Professor Garret O'Donnell (✉ odonnege@tcd.ie)

### 3.9.6 Erasmus / Unitech / Year Abroad Co-ordinator

Professor Tim Persoons (✉ persoont@tcd.ie)

### 3.9.7 Administrative contacts

Tania Pañero, Senior Executive Officer (✉ panerogt@tcd.ie)

## 3.10 Feedback and evaluation

The Staff/Student Liaison Committee meets once per semester to discuss matters of interest and concern to students and staff. It comprises elected student class representatives from each year of the Mechanical and Manufacturing Engineering programme and the relevant academic staff in their roles as year coordinators and stream directors.

Module surveys may be carried out by module coordinators during and/or at the end of each semester. Students are encouraged to participate as this enables staff to make improvements to the programme. Students are encouraged to discuss matters of concern with module coordinators through their class representatives.

## 4 Graduate Attributes

Throughout their time at Trinity, our students will be provided with opportunities to develop and evidence achievement of a range of graduate attributes that support their academic growth. Graduate attributes can be achieved in academic and co- and extra- curricular activities.

# 5 Key dates

## 5.1 Academic calendar

Weblink: https://www.tcd.ie/calendar/

## 5.2 Teaching weeks

Semester 1: 09 September to 25 November 2024 inclusive

Semester 2: 20 January to 11 April 2025 inclusive

## 5.3 Annual assessment sessions

Semester 1: 09 – 13 December 2024 plus contingency days

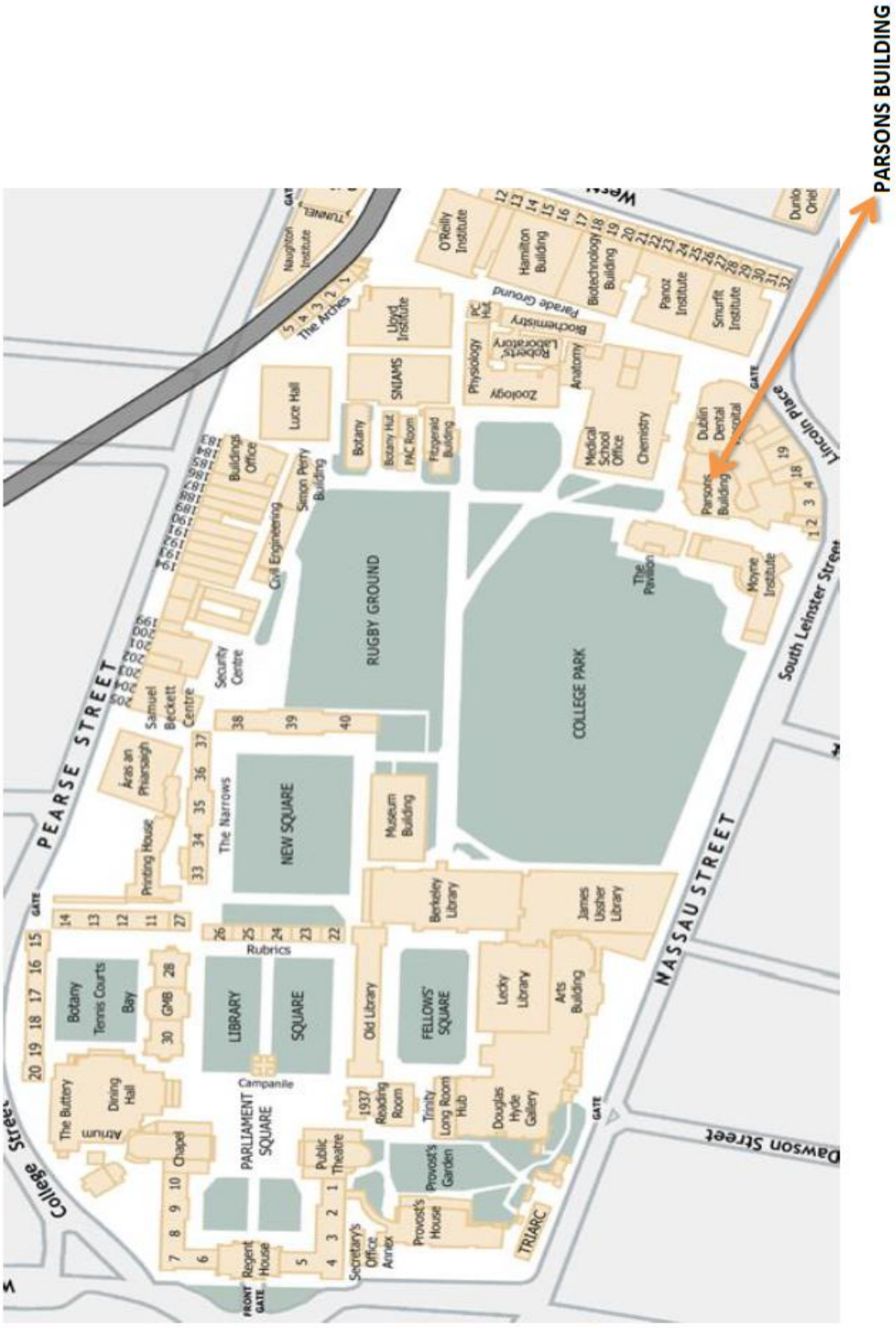
Semester 2: 21 April – 25 April 2025 plus contingency days

## 5.4 Re-assessment session

To be confirmed, likely late August 2025.

## 6 Key locations

Interactive college map available here.



# 7 Prizes and Scholarships

## 7.1 Stanford-Smith Prize (€350 each)

These prizes were founded in 1994 by a bequest from Raymond Thomas Kennedy in memory of his grandfather, Francis Stanford-Smith. They are awarded annually in the third (JS) year of the Bachelor in Engineering course based on the annual examinations in that year. The prize is awarded in six equal parts; each part is awarded to the student achieving the best examination results in the following streams: (i) Biomedical Engineering, (ii) Civil, Structural and Environmental Engineering, (iii) Computer Engineering, (iv) Electronic and Electrical Engineering, (v) Electronic/Computer Engineering, (vi) Mechanical and Manufacturing Engineering.

## 7.2 Jeffcott Prize (€250)

Awarded to the best performing student in year 4 (SS) of the Mechanical and Manufacturing Engineering stream. The awardee must achieve a First Class Honours.

## 7.3 The Professor John Fitzpatrick Prize (€400) & Medal

Awarded to the best MAI student across all streams at the annual examinations.

## 7.4 MAI stream prize (€300 each)

Awarded to the MAI students in each of the six Engineering streams, and in Engineering with Management, who obtain the highest aggregate of marks.

## 7.5 Collen Prize (€80 each)

Six prizes are awarded to the best MAI project or joint project on the nomination of the Head of stream in each of engineering streams or courses (Biomedical Engineering; Civil, Structural and Environmental Engineering; Computer Engineering; Electronic Engineering; Mechanical Engineering and Engineering with Management).

# 8 Health and Safety

It is the Department's policy to ensure, in so far as possible, the health, safety, and welfare of all its staff and students in accordance with the College Safety Policy, the Safety, Health and Welfare at Work Act of 2005 and relevant, later, subsidiary legislation and statutory instruments. All reasonable steps will be taken to ensure that no persons – be it staff, students, or others – health, safety and welfare is put at risk by, or as a result of the activities of the Department.

Students are expected to co-operate by taking proper care for their own health and safety and the safety of others who may be affected by their acts or omissions. Students are expected to follow any instructions in safe practices and procedures and ensure they do not intentionally or recklessly interfere or misuse anything provided in the interest of health safety and welfare. Failure to comply with safe procedures or instructions may result in the commencement of disciplinary procedures by the college.

The Safety, Health and Welfare at Work Act 2005 requires that you take all precautions, as far as is reasonably practicable, to avoid endangering yourself or others by your activities. The Health and Safety Statement and Codes of Practice for the Department areas are set out in the MMBE Safety Statement. You are required to read, understand, and abide by them. **You must also complete the Safety Statement Acknowledgement Form. Students and staff will be excluded from all laboratories and workshops until they have completed this.**

The Departmental Safety Statement supplements the University Safety Statement and University Policies, which are accessible on Trinity College Dublin's website.

## 8.1 Emergency procedure

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

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

Should you require any emergency or rescue services on campus, you must contact Security Services. This includes chemical spills, personal injury or first aid assistance.

It is recommended that all students save at least one emergency contact in their phone under ICE (in Case of Emergency).

## 8.2 Risk Assessments

All members of the college must carry out a risk assessment where their work has the potential for harm to themselves and others. All experimental work requires a risk assessment that:

- includes and addresses any potential hazard, including lone working.
- is updated if there is a significant change to experimental equipment or procedures.
- is reviewed and updated annually.
- is signed by the responsible Principal Investigator or supervisor.

Preferably, your risk assessments will be included in a Project Safety Statement. The Project Safety Statement will include but is not limited to the following;

- Title block
- Student & Lab info
- Emergency contacts
- Overview of project
- Registered users form
- Activity details
- SOPs
- Safety Data Sheets
- Risk Assessments in 5x5 format

Some projects may require multiple risk assessments. Completed Project Safety Statements should be uploaded to the Projects SharePoint. Previous examples can be found on SharePoint.

## 8.3 New Hazard Safety Document

This document is required for new High-Risk Hazards such as Chemicals, Compressed Gas, Cryogenics, etc. The document should provide an overview of the hazard (why the hazard is required, hazard location, duration the hazard is required for, etc.).

Additionally, an in-depth account of the hazard should include safety information and documentation, MSDS and any additional safety documentation relevant to the hazard. All new hazards will require risk assessments and approval.

## 8.4 After Hours Working

It is now compulsory to use the SafeZone App while in MMBE labs or offices outside of normal working hours. The normal working hours for the Department are 8am to 5pm, Monday to Friday. Outside of MMBE normal working hours, the use of SafeZone app is mandatory. Extended hours for the Department are 5pm to 10pm, Monday to Friday and 10am to 4pm Saturday and Sunday. There will be no access to Parsons Building outside of these hours.

Working on experimental systems (or machinery) outside normal working hours is not permitted without prior authorization of the project supervisor (or person-in-charge) after they have conducted a full assessment of risk and devised a safe system of work.

No staff member, postdoctoral worker, or student will be permitted to carry out experimental or technical work of any kind in the Department at any time outside normal working hours unless there is another person close by, who is aware of their presence so that they can summon assistance in the event of an accident.

Isolated individuals must never carry out potentially hazardous work or activities and should apply for Lone Working approval.

Please download the SafeZone app and see the University lone working policy and the MMBE Protocol for After Hours Working.

## 8.5 General Safety Action

When you enter a building in the University, MMBE or otherwise:

- Find out how to get out in an emergency.
- Know the location of the emergency evacuation assembly point.
- Know where the nearest alarm call point is.
- Read the hazard information signs (fire, first aid, chemical, biological, radiation, laser etc.).
- Emergency numbers are:
    - 1999 or 01 8961999 – Main Campus
    - 3999 or 01 8963999 – TBSI

## 8.6 Fire Action

What to do if you discover a fire:

- Raise the alarm at the nearest break glass unit or alarm call point.
- Leave your building immediately using the nearest exit route.
- Do not use lifts.
- Close doors behind you as you leave.
- Do not take risks.
- Notify Security at 1999 or mobile 01 896 1999, informing them that the alarm has been raised and in which area. TBSI numbers are: 3999 or 01 8963999.
- Notify a Fire Warden of your findings if there is one outside the building.
- Report to your designated Assembly Point, do not congregate at the building entrance.
    - Parsons Building & SNIAM Point D
        - Grass triangle (‘Flat Iron’) at east end of Boardwalk (College Park).
    - WATTS Point E
        - Between the Lloyd and O’Reilly Buildings, near the Arches.
    - TBSI Points G and F
        - To the sides of the Institute on Cumberland St South and Sandwich Street.

What to do if the fire alarm sounds

- Obey, promptly, all instructions given by the Fire Wardens/Safety Officer.
- Leave your building immediately using the nearest exit route.
- Do not use lifts.
- Close doors behind you as you leave.
- Do not take risks.
- Move away from the building.
- Report to your designated Assembly Point, do not congregate at the building entrance.
- Do not re-enter building for any reason until authorised to do so and fire alarm is switched off.

## 8.7 First Aid

First Aid will not take the place of professional treatment. In the case of minor injuries such as cuts or burns, assistance may be sought from members of the Department who possess a qualification in First Aid. For serious injuries during normal office hour's emergency medical attention can be obtained from the University Health Services by contacting Ext. 1556.

Updated lists of first aiders in the Department are located near first aid boxes installed throughout the Department. Make sure to familiarise with the location of the nearest first aid box.

Current MMBE first aiders can be contacted through the Mechanical workshop.

Should the local first aiders be unavailable then the emergency services can be contacted on Ext. 1999 for the Main campus or 3999 for the TBSI building.

## 8.8 MMBE Safety Contacts

| | | |
|---|---|---|
| First Aid: | Mr. Alex Kearns | ext. 1463 (workshop) |
| | Mr. Gordon O'Brien* | ext. 2396 |

*MMBE Safety Officer ✉ gordon.obrien@tcd.ie

Specialist Safety Area contacts (Chemical, Laser, Electrical, Fire Wardens, *etc*.) and University Safety contacts can be found in Section 6 of the MMBE Safety Statement.

## 8.9 Safety Links

- MMBE Website Safety Section
  - MMBE Lone and Out-of-Hours Working Policy
  - Risk assessments

University Safety Office: https://www.tcd.ie/safetyoffice/

https://www.tcd.ie/students/orientation/shw/

SafeZone App: https://safezoneapp.com/

# 9 Student Supports

Trinity College provides a wide range of personal and academic supports for its students.

## 9.1 Tutors

A tutor is a member of the academic staff who is appointed to look after the general welfare and development of the students in their care. Whilst your tutor may be one of your lecturers, the role of tutor is quite separate from the teaching role. Tutors are a first point of contact and a source of support, both on arrival in college and at any time during your time in college. They provide confidential help and advice on personal as well as academic issues or on anything that has an impact on your life. They will also, if necessary, support and defend your point of view in your relations with the college. If you cannot find your own tutor, you can contact the Senior Tutor (tel: 01 896 2551). Senior Tutor's website: https://www.tcd.ie/seniortutor/.

## 9.2 Student Counselling Service

Address: The Student Counselling Service, 3rd Floor, 7-9 South Leinster Street, College.

Opening hours: 9:15 am to 5:10 pm Monday to Friday during lecture term.

Tel: 01 896 1407 ✉: student-counselling@tcd.ie

Web: https://www.tcd.ie/studentcounselling/

## 9.3 College Health Service

The Health Centre is situated on Trinity Campus in House 47, a residential block adjacent to the rugby pitch.

Opening hours: 09.00 - 16.40 with emergency clinics from 09.00 - 10.00.

Tel: 01 896 1591 or 01 896 1556

Web: https://www.tcd.ie/collegehealth/

## 9.4 Chaplaincy

The Chaplains are representatives of the main Christian Churches in Ireland who work together as a team, sharing both the college chapel and the chaplaincy in House 27 for their work and worship.

- Steve Brunn (Anglican Chaplain): ✉ brunns@tcd.ie; tel: 01 896 1402
- Alan O'Sullivan (Catholic Chaplain): ✉ aeosulli@tcd.ie; tel: 01 896 1260
- Peter Sexton (Catholic Chaplain): ✉ sextonpe@tcd.ie; tel: 01 896 1260

Web: https://www.tcd.ie/Chaplaincy/

## 9.5 Trinity Disability Service

Declan Treanor, Disability Services Coordinator

Room 3055, Arts Building

Tel: 01 896 3475 ✉: mdtreanor@tcd.ie

Web: https://www.tcd.ie/disability/

## 9.6 Niteline

A confidential student support line run by students for students which is open every night of term from 9pm to 2.30am.

Tel: 1800 793 793 Web: https://niteline.ie/

## 9.7 Students' Union Welfare Officer

House 6, College

✉: welfare@tcdsu.org Web: https://www.tcdsu.org/welfare

## 9.8 Maths Help Room

The Maths Help Room offers free assistance to students who are having difficulty with Mathematics, Statistics or related courses. It runs every week of

term and at certain times out of term. The Maths help-room is a drop in centre, where you can bring in a maths or stats question and get some help.

The Helproom is located in the New Seminar Room in House 20 in the School of Mathematics in the Hamilton Building.

Web: https://www.maths.tcd.ie/outreach/helproom/

## 9.9 Undergraduate Programming Centre

The Programming Centre is available to all Computer Engineering students free of charge. The centre operates as a drop-in service where you can get help with any problems you might have with programming in your courses. For further information, please visit http://www.scss.tcd.ie/ugpc/.

## 9.10 Student Learning Development

Student Learning Development provides learning support to help students reach their academic potential. They run workshops, have extensive online resources and provide individual consultations. To find out more, visit their website at https://student-learning.tcd.ie/.

## 9.11 Student 2 Student (S2S)

S2S offers trained Peer Supporters for any student in the College who would like to talk confidentially with another student, or just to meet a friendly face for a chat. This service is free and available to everyone. To contact a Peer Supporter you can email student2student@tcd.ie. Web: https://student2student.tcd.ie/peer-support/.

## 9.12 Trinity Careers Service

As a Trinity College Dublin student you have access to information, support and guidance from the professional team of Careers Consultants throughout your time at Trinity and for a year after you graduate. The support offered includes individual career guidance appointments, CV and LinkedIn profile clinics and practice interviews. The Trinity Careers Service and the School of Computer Science and

Statistics also hold an annual Careers Fair in October which gives you the opportunity to find out about career prospects in a wide range of companies..

- Visit https://www.tcd.ie/Careers/ for career and job search advice
- Sign into MyCareer to book appointments, find information about vacancies and bursaries, and book your place on upcoming employer events.
- Follow the service on Instagram for career news and advice @trinity.careers.service

## 9.13 Co-curricular activities

Trinity College has a significant number of diverse student societies which are governed by the Central Societies Committee. They provide information on the societies including how to get involved and even how to start your own society. See http://trinitysocieties.ie/ for more details. Students are encouraged to get involved.

Trinity College also has a huge range of sports clubs which are governed by the Dublin University Athletic Club (DUCAC). See https://www.tcd.ie/sport/student-sport/sport-clubs/ for more details.

## 9.14 Trinity College Students' Union

The Trinity College Students' Union (TCDSU) is run for students by students. TCDSU represent students at college level, fight for students' rights, look after students' needs, and are here for students to have a shoulder to cry on or as a friend to chat with over a cup of tea. Students of Trinity College are automatically members of TCDSU. It has information on accommodation, jobs, campaigns, as well as information pertaining to education and welfare. For more information see https://www.tcdsu.org/.

# 10 General Regulations

## 10.1 Attendance requirements

Please note that attendance at lectures, tutorials and laboratory sessions is mandatory as is the submission of all work subject to continuous assessment. Students who prove lacking in any of these elements may be issued with a Non-Satisfactory form and asked for an explanation for their poor attendance or performance. Students who do not provide a satisfactory explanation can be prevented from sitting the annual examinations. The following is an extract from the College Calendar outlining the College policy on attendance and related issues:

*18* Students must attend College during the teaching term. They must take part fully in the academic work of their class throughout the period of their course. Lecture timetables are published through my.tcd.ie and on school or department notice-boards before the beginning of Michaelmas teaching term. The onus lies on students to inform themselves of the dates, times and venues of their lectures and other forms of teaching by consulting these timetables.

*19* The requirements for attendance at lectures and tutorials vary between the different faculties, schools and departments. Attendance is compulsory for Junior Freshers in all subjects. The school, department or course office, whichever is relevant, publishes its requirements for attendance at lectures and tutorials on notice-boards, and/or in handbooks and elsewhere, as appropriate. For professional reasons lecture and tutorial attendance in all years is compulsory in the School of Engineering, the School of Dental Science, the School of Medicine, the School of Nursing and Midwifery, the School of Pharmacy and Pharmaceutical Sciences, for the B.S.S. in the School of Social Work and Social Policy, and for the B.Sc. in Clinical Speech and Language Studies. Attendance at practical classes is compulsory for students in all years of the moderatorship in drama and theatre studies and drama studies two-subject moderatorship.

*20* In special circumstances exemption from attendance at lectures for one or more terms may be granted by the Senior Lecturer; application for such

exemption must be made in advance through the tutor. Students granted exemption from attendance at lectures are liable for the same annual fee as they would pay if attending lectures. Students thus exempted must perform such exercises as the Senior Lecturer may require. If these exercises are specially provided, an additional fee is usually charged.

*21* Students who in any term have been unable, through illness or other unavoidable cause, to attend the prescribed lectures satisfactorily, may be granted credit for the term by the Senior Lecturer and must perform such supplementary exercises as the Senior Lecturer may require. The onus for informing the Senior Lecturer of illness rests with individual students who should make themselves familiar with the general and more detailed school or course regulations regarding absence from lectures or examinations through illness. In addition, issues with students may arise from time to time, which in the opinion of the Senior Lecturer affect a student's ability or suitability to participate in his or her course. If required by the Senior Lecturer, students (other than those subject to §28 below) are obliged to undergo a medical examination or assessment by a doctor or specialist nominated by the Senior Lecturer at the expense of the College for the purpose of obtaining an opinion as to the student's medical fitness to continue with his/her studies or as to his/her ability or suitability to participate in his/her course to the standards required by the College. Students found to be unfit following such a medical examination or assessment may be required to withdraw until such times as they are deemed fit to resume their studies. Students who fail to attend such a medical examination or assessment within a reasonable period may be required by the Senior Lecturer to withdraw until such time as they attend the aforementioned medical examination or assessment and are deemed fit to resume their studies.

*22* Students who are unable to attend lectures (or other forms of teaching) due to their disability should immediately contact the Disability Service to discuss the matter of a reasonable accommodation. Exceptions to attendance requirements for a student, on disability grounds, may be granted by the Senior Lecturer following consultation with the student's school, department or course office, and the Disability Service.

*23* Students who find themselves incapacitated by illness from attending lectures (or other forms of teaching) should immediately see their medical advisor and request a medical certificate for an appropriate period. Such medical certificates should be copied to the school, department or course office, as appropriate, by the student's tutor.

Course work

*24* Students may be required to perform course work as part of the requirements of their course of study. The assessment of course work may be based on the writing of essays, the sitting of tests and assessments, attendance at practical classes and field trips, the keeping and handing in of practical books, the carrying out of laboratory or field projects, and the satisfactory completion of professional placements. The school, department or course office, whichever is appropriate, publishes its requirements for satisfactory performance of course work on school notice-boards and/or in handbooks and elsewhere, as appropriate.

Non-satisfactory attendance and course work

*25* All students must fulfil the course requirements of the school or department, as appropriate, with regard to attendance and course work. Where specific requirements are not stated, students may be deemed non- satisfactory if they miss more than a third of their course of study or fail to submit a third of the required course work in any term.

*26* At the end of the teaching term, students who have not satisfied the school or department requirements, as set out in §§19, 24 and 25 above, may be reported as non-satisfactory for that term. Students reported as non-satisfactory for the Michaelmas and Hilary terms of a given year may be refused permission to take their annual examinations and may be required by the Senior Lecturer to repeat their year. Further details of procedures for reporting a student as non-satisfactory are given on the College website at:

*https://www.tcd.ie/undergraduate-studies/academic-progress/*

## 10.2 Absence from examinations

The following is an extract from the College Calendar outlining the College policy on absence from Examinations:

35 Students who consider that illness may prevent them from attending an examination (or any part thereof) should consult their medical advisor and request a medical certificate for an appropriate period. If a certificate is granted, it must be presented to the student's tutor within three days of the beginning of the period of absence from the examination. The tutor must immediately forward the certificate to the Senior Lecturer. Medical certificates must state that the student is unfit to sit examinations. Medical certificates will not be accepted in explanation for poor performance.

*(a)* Where a student becomes ill prior to the commencement of the annual examination, they may seek permission through their tutor from the Senior Lecturer to withdraw and take the supplemental examination in that year.

*(b)* Where illness prevents a student from completing any part of the annual examination and they withdraw from the examination, permission may be given for a supplemental examination to be taken in that year.

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

Students who consider that other grave cause beyond their control may prevent them from attending an examination (or any part thereof) should consult their tutor who should make representations immediately to the Senior Lecturer that permission be granted for absence from the examination. Regulations (a) and (b) also apply in the case of absence from annual examinations due to other grave cause beyond a student's control.

Regulations (a) and (b) apply only to examinations which are non-final non- degree examinations. However, regulations (a) and (b) apply in all years of those

professional courses which permit supplemental examinations in final or degree years.

## 10.3 Plagiarism

In the academic world, the principal currency is *ideas*. As a consequence, you can see that *plagiarism* – i.e. passing off other people's ideas as your own– *is tantamount to theft*. It is important to be aware the plagiarism can occur knowingly or unknowingly, and the offence is in the action not the intent.

Plagiarism is a serious offence within College and the College's policy on plagiarism is set out in a central online repository hosted by the Library which is located at https://libguides.tcd.ie/academic-integrity/. This repository contains information on what plagiarism is and how to avoid it, the College Calendar entry on plagiarism and a matrix explaining the different levels of plagiarism outlined in the Calendar entry and the sanctions applied.

Undergraduate and postgraduate new entrants and existing students are required to complete the online tutorial ***'Ready, Steady, Write'***. Linked to this requirement, all cover sheets which students must complete when submitting assessed work, must contain the following declaration:

I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at: http://www.tcd.ie/calendar

I have also completed the Online Tutorial on avoiding plagiarism 'Ready, Steady, Write', located at https://libguides.tcd.ie/academic-integrity/

Plagiarism detection software such as "Turnitin" and Blackboard's "SafeAssign" may be used to assist in automatic plagiarism detection. Students are encouraged to assess their own work for plagiarism prior to submission using this or other software.

## 10.4 University regulations, policies and procedures

Academic Policies - https://www.tcd.ie/teaching-learning/academic-policies/

Student Complaints Procedure - https://www.tcd.ie/about/policies/university-policies/complaints-procedure/

Dignity and Respect Policy - https://www.tcd.ie/media/tcd/about/policies/pdfs/hr/dignity-and-respect.pdf

Link to College guidelines for writing documents:

https://www.tcd.ie/academicpractice/resources/resources_a_z/academic_writing/index.php

## 10.5 Data protection

A short guide on how College handles student data is available here: https://www.tcd.ie/dataprotection/

## 11 Guidelines on Grades

The following Descriptors are given as a **guide** to the qualities that assessors are seeking in relation to the grades usually awarded. A grade is the anticipated degree class based on consistent performance at the level indicated by an individual answer. In addition to the criteria listed examiners will also give credit for evidence of critical discussion of facts or evidence.

Guidelines on Grades for Essays and Examination Answers

| 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. |