



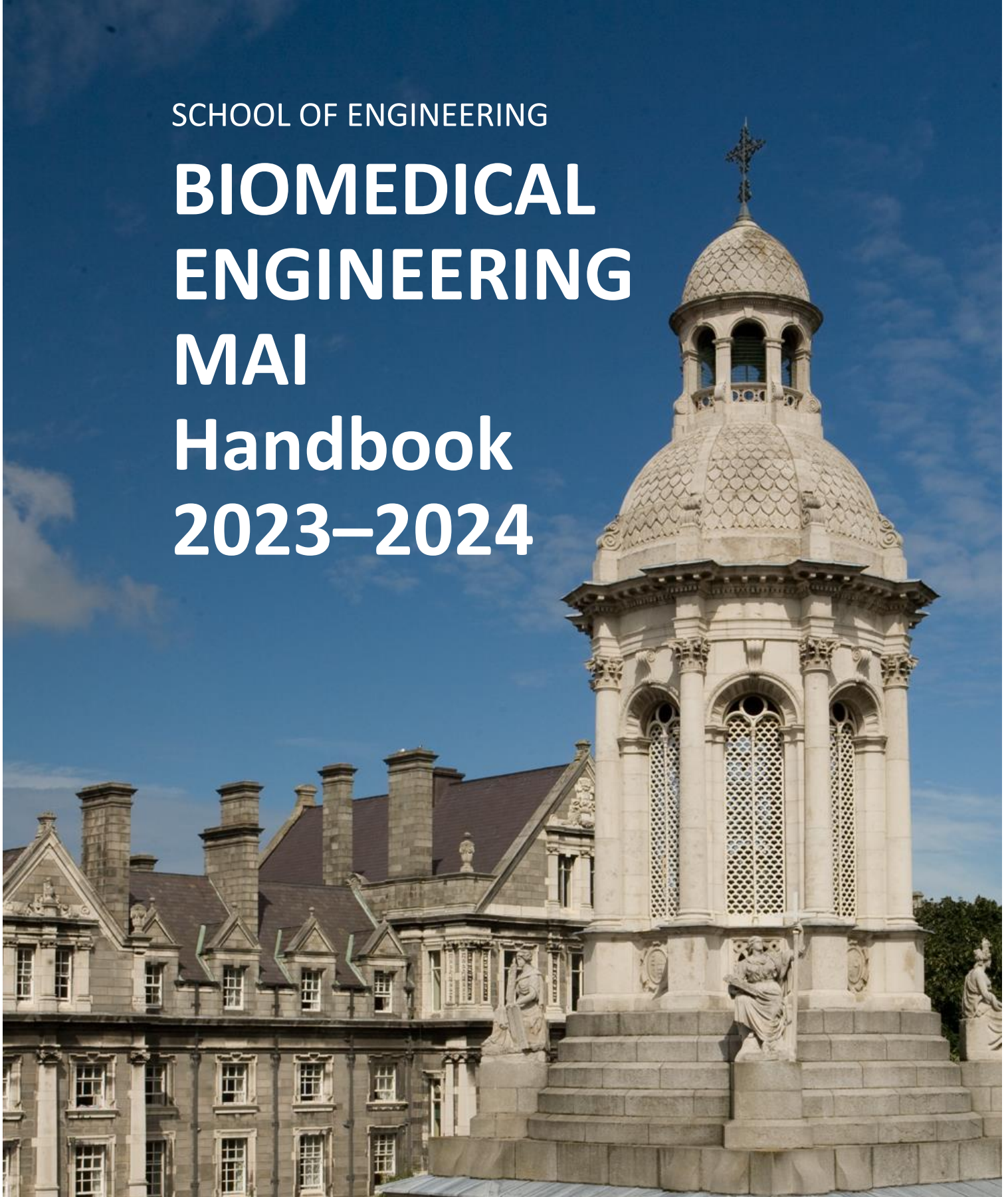
Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

SCHOOL OF ENGINEERING

**BIOMEDICAL  
ENGINEERING  
MAI  
Handbook  
2023–2024**



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## 1. Introduction

### **Welcome to the MAI Year in Biomedical Engineering,**

As students of the Biomedical Engineering stream within the School of Engineering, you are among the select few who have joined the biomedical engineering community at Trinity College Dublin for an education that will enable you to become the next leaders in this emerging and continuously evolving field.

Some of the most exciting work in engineering today takes place at the intersection of disciplines. Research in biomedical engineering is an example of where the biological, physical, and digital worlds intersect and where you have the opportunity to have a profound impact on society.

Engineering is not just about crunching numbers or solving problems; it is seeing how problems affect society and how society actually changes because of the solutions you provide. You have an opportunity here as students in biomedical engineering to become involved in that community, so that, as you move into your professional life, you will become a leader who has an impact on the human condition. To see this impact, I recommend you watch the following videos at:

<http://students.embs.org/>

You are part of a discipline that offers great opportunities for learning and advancement within Ireland's premier university. You are now part of the Trinity Centre for Biomedical Engineering (TCBE). The Centre brings together over 30 academics from the Schools of Engineering, Natural Sciences, Dental Sciences and Medicine in Trinity and colleagues from the Royal College of Surgeons in Ireland, Dublin City University and University College Dublin. There are also over 100 postdoctoral, PhD and MSc researchers working in the Centre. All of these researchers are involved in exciting new developments in biomedical engineering ranging from developing new materials for use in cardiac care, analysing minute electrical signal changes in the brain for neurological diagnosis, to artificially growing new tissue for organ transplantation. The Trinity Centre for Biomedical Engineering has extensive clinical research in all the five teaching hospitals in Dublin (St James's Hospital, Tallaght Hospital, St

Vincent's University Hospital, The Mater Misericordiae Hospital and Beaumont Hospital). As a member of this biomedical community, use the opportunity to learn from activities in the Trinity Centre for Biomedical Engineering, so that you can relate your course material to the real clinical challenges that are being researched and the solutions that are being generated.

The Trinity Centre for Biomedical Engineering is based in the Trinity Biomedical Sciences Institute and many of its laboratories are located here. You will be sent emails of seminars, news, and other developments. Keep up to date with these and your studies will become more fruitful and relevant. You can also keep up to date with TCBE news on twitter, <https://twitter.com/tcdTCBE>

This handbook contains information regarding the course including modules, assessment, course regulations, faculty members and important contact details.

On behalf of all the lecturers and staff, I would like to wish you every success. We look forward to you becoming part of the Trinity College Biomedical Engineering family as you embark on making your mark on society at large.

If you have any questions or comments, please do not hesitate to contact us.

Professor Bruce Murphy

Director- Discipline of Biomedical Engineering

Professor Daniel Kelly

MAI Coordinator - Biomedical Engineering

## **1.1 Biomedical Engineering – Mission Statement**

The Trinity Centre for Biomedical Engineering (TCBE) in the School of Engineering at Trinity College Dublin carries out world-class research under four research themes: (1) Tissue Engineering & Regenerative Medicine, (2) Medical Devices & Advanced Drug Delivery, (3) Biomechanics & Mechanobiology and (4) Neural Engineering. These themes are based on the intersection of biomedical science and engineering and form the foundation for advances in external and implantable materials and devices, surgical and medical device design, as well as informing clinical studies and interventions in ageing, neurodegeneration and rehabilitation. The Centre provides a structure to bring bioengineers, basic scientists, and clinicians together to focus on important clinical needs.

The TCBE also has a long and distinguished tradition in postgraduate education, combining fundamental research with translation to clinical practice. The Biomedical Engineering stream extends this to the undergraduate BA/MAI programme within the School of Engineering. The main objective of this stream is the pursuit of excellence in teaching and research in Biomedical 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:**

- instill in students an enthusiasm for the art and practice of Biomedical Engineering;
- teach engineering, medical sciences and mathematics which underpin the subject areas of Biomedical Engineering;
- demonstrate the application of these principles to the analysis, synthesis and design of biomedical engineering components and systems;
- foster the development of team working skills;
- encourage students to exercise critical judgment and develop communication skills necessary to make written and oral presentations of their work.

### **These objectives are underpinned by:**

- undertaking both basic and applied research
- 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 peer-reviewed scientific journals.

**In addition, we must consider:**

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

## 2. Contacts

### 2.1 Coordinator

Staff name	Email	Location
Daniel Kelly	<a href="mailto:Kellyd9@tcd.ie">Kellyd9@tcd.ie</a>	TBSI

### 2.2 Administrative contacts

Staff name	Email	Location
Ms. Judith Lee	<a href="mailto:julee@tcd.ie">julee@tcd.ie</a>	Reception, Parsons Building



### 2.3 Department Organisational Structure



### 3.0 Key Dates

#### 3.1 Academic year calendar

**Academic Year Calendar 2023/24**

Academic Calendar Week	Week Beginning	2023/24 Academic Year Calendar		Term / Semester
		UG continuing years / PG all years	UG new first years	
1	28-Aug-23	Reassessment * (Semesters 1 & 2 of 2022/23)		←Michaelmas term begins/Semester 1 begins
2	04-Sep-23	Orientation (Postgraduate, Visiting & Erasmus); Marking/Results		
3	11-Sep-23	Teaching and Learning	Orientation (IF UG)	←Michaelmas teaching term begins
4	18-Sep-23	Teaching and Learning	Teaching and Learning	
5	25-Sep-23	Teaching and Learning	Teaching and Learning	
6	02-Oct-23	Teaching and Learning	Teaching and Learning	
7	09-Oct-23	Teaching and Learning	Teaching and Learning	
8	16-Oct-23	Teaching and Learning	Teaching and Learning	
9	23-Oct-23	Study/Review	Study/Review	
10	30-Oct-23	Teaching and Learning (Monday, Public Holiday)	Teaching and Learning (Monday, Public Holiday)	
11	06-Nov-23	Teaching and Learning	Teaching and Learning	
12	13-Nov-23	Teaching and Learning	Teaching and Learning	
13	20-Nov-23	Teaching and Learning	Teaching and Learning	
14	27-Nov-23	Teaching and Learning	Teaching and Learning	
15	04-Dec-23	Revision	Revision	
16	11-Dec-23	Assessment *	Assessment **	←Michaelmas term ends Sunday 17 December 2023/Semester 1 ends
17	18-Dec-23			
18	25-Dec-23	Christmas Period - College closed 22 December 2023 to 1 January 2024 inclusive	Christmas Period - College closed 22 December 2023 to 1 January 2024 inclusive	
19	01-Jan-24			
20	08-Jan-24	Foundation Scholarship Examinations ^	Foundation Scholarship Examinations ^	
21	15-Jan-24	Marking/Results	Marking/Results	←Hilary term begins/Semester 2 begins
22	22-Jan-24	Teaching and Learning	Teaching and Learning	←Hilary teaching term begins
23	29-Jan-24	Teaching and Learning	Teaching and Learning	
24	05-Feb-24	Teaching and Learning (Monday, Public Holiday)	Teaching and Learning (Monday, Public Holiday)	
25	12-Feb-24	Teaching and Learning	Teaching and Learning	
26	19-Feb-24	Teaching and Learning	Teaching and Learning	
27	26-Feb-24	Teaching and Learning	Teaching and Learning	
28	04-Mar-24	Study/Review	Study/Review	
29	11-Mar-24	Teaching and Learning	Teaching and Learning	
30	18-Mar-24	Teaching and Learning (Monday, Public Holiday)	Teaching and Learning (Monday, Public Holiday)	
31	25-Mar-24	Teaching and Learning (Friday, Good Friday)	Teaching and Learning (Friday, Good Friday)	
32	01-Apr-24	Teaching and Learning (Monday, Easter Monday)	Teaching and Learning (Monday, Easter Monday)	
33	08-Apr-24	Teaching and Learning	Teaching and Learning	
34	15-Apr-24	Revision	Revision	←Hilary term ends Sunday 21 April 2024
35	22-Apr-24	Trinity Week (Monday, Trinity Monday)	Trinity Week (Monday, Trinity Monday)	←Trinity term begins
36	29-Apr-24	Assessment *	Assessment *	
37	06-May-24	Marking/Results (Monday, Public Holiday)	Marking/Results (Monday, Public Holiday)	
38	13-May-24	Marking/Results	Marking/Results	
39	20-May-24	Marking/Results	Marking/Results	
40	27-May-24	Research	Research	←Trinity term ends Sunday 2 June 2024/Semester 2 ends
41	03-Jun-24	Research (Monday, Public Holiday)	Research (Monday, Public Holiday)	
42	10-Jun-24	Research	Research	
43	17-Jun-24	Research	Research	
44	24-Jun-24	Research	Research	
45	01-Jul-24	Research	Research	
46	08-Jul-24	Research	Research	
47	15-Jul-24	Research	Research	
48	22-Jul-24	Research	Research	
49	29-Jul-24	Research	Research	
50	05-Aug-24	Research (Monday, Public Holiday)	Research (Monday, Public Holiday)	
51	12-Aug-24	Research	Research	
52	19-Aug-24	Research	Research	

\* Note: additional contingency days may be required outside of the formal assessments/assessment weeks.  
 \*\* Note: it may be necessary to hold a small number of IF examinations/assessments outside of semester 1.  
 ^ Note: it may be necessary to hold some examinations/assessments in the preceding week.

### 3.2 Submission dates for projects

Item	Date Due	Comment	% 5E1
Project Plan	23 <sup>rd</sup> Oct 2023	5 minute presentations with 5 minutes questions/feedback from Academic /Technical staff.	5%
Interim Report	Nov 2023	Literature review, work to date and project plan; supervisor feedback.	15%
Thesis	Apr 2024	As per guidelines in module descriptor: max 60 pages not including appendices.	80%
Viva-Voce Presentation & Examination	Apr/May 2024	Supervisor and second reader to attend; separate chair if required by supervisor. Supervisor/2 <sup>nd</sup> reader reports uploaded by end of teaching week 12	

### 4. Trinity College Campus Map

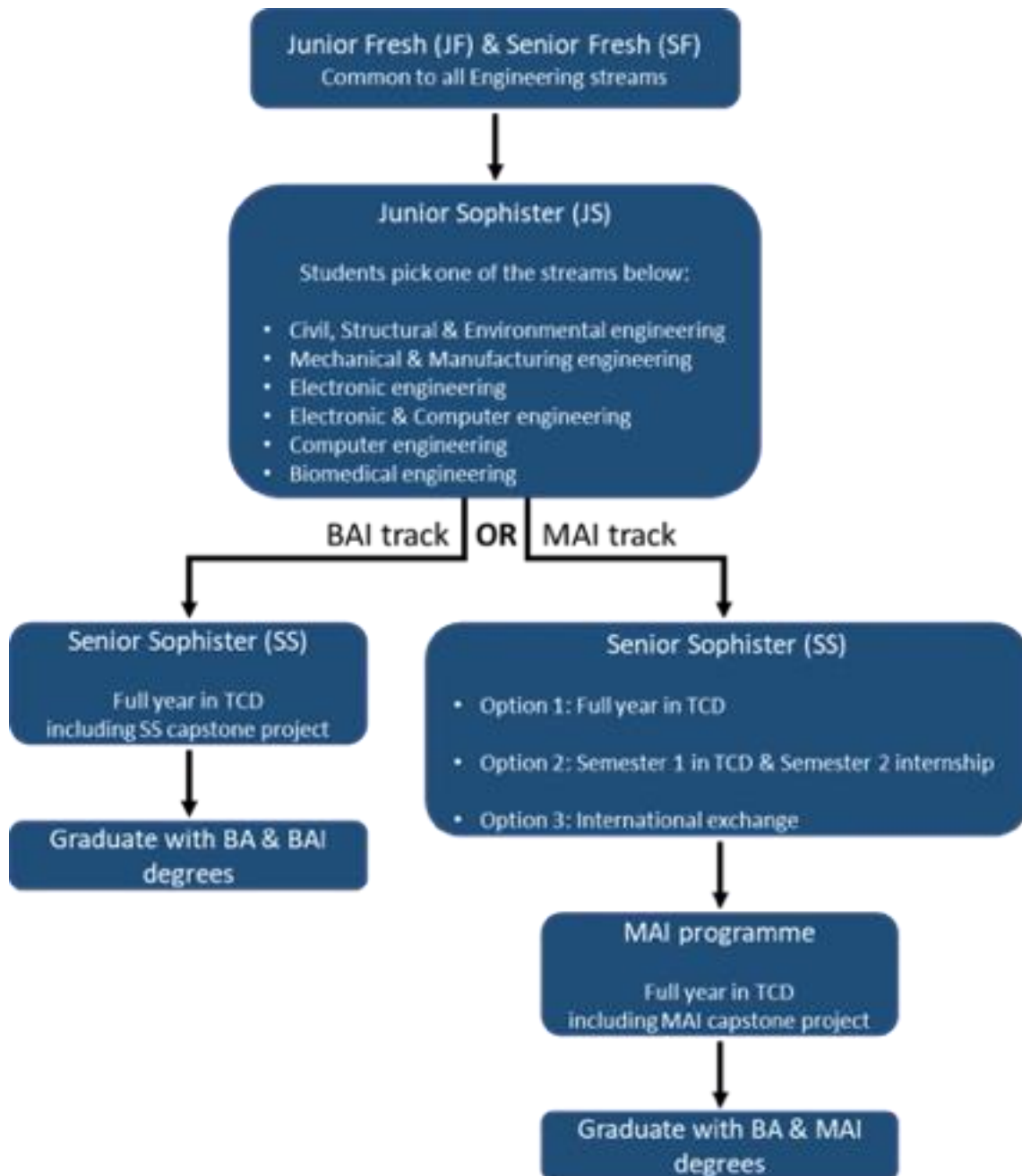


## **5. Timetable**

See School of Engineering Website – current student’s section

## 6. Programme overview

### 6.1 Engineering course structure



\*Students who take the internship and successfully complete the Senior Sophister year are eligible to exit with the BAI degree.

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 at: <http://www.engineersireland.ie/Membership.aspx>

## **6.2 Award routes**

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

Those Engineering students who exit the course having obtained credit for years one to four of the course are entitled to the degrees of B.A. and B.A.I. The B.A.I. degree award is based on an overall average mark calculated by combining the average mark achieved in the Junior Sophister examinations (20% towards overall average) and the Senior Sophister examinations (80% towards overall average).

All degrees referred to above must be conferred at the same Commencements. Students are not permitted by College regulations to have their B.A.I. or B.Sc. (Ing.) conferred and then to return to College at a later time to complete the fifth year of their course.

## **6.3 Eligibility for MAI**

Note: students must pay a tuition fee for the MAI year:

<https://www.tcd.ie/academicregistry/fees-and-payments/>

## **6.4 School of Engineering Examination Regulations**

<https://www.tcd.ie/Engineering/assets/student-resources/Examination-Regulations.pdf>

## 6.5 External Examiner

The external examiner for Biomedical Engineering is Prof. Clark T. Hung, from Columbia University in the City of New York ([Clark T. Hung | Biomedical Engineering \(columbia.edu\)](#)). For policies and procedures regarding how student assessed work is shared with the external examiner please read <https://www.tcd.ie/teaching-learning/academic-policies/assets/external-examiners-jan2021.pdf>



## 7. Programme learning outcomes

Upon successful completion of the degree programme, our biomedical engineering graduates are capable of dealing with complex multi-disciplinary problems in medicine, physiology and biological systems but also with ill-defined problems. They can design to professional codes of practice within the regulatory standards of medical devices and can deal with new problems from first principles relying on their knowledge of engineering science. In the broadest sense applying to the biomedical stream, on successful completion of the programme biomedical engineering graduates will be first and foremost engineers and be able to:

- Explain the basic anatomy, physiology, and function of the human body
- Analyse medical or clinical problems from an engineering perspective
- Model the behaviour of medical, physiological, and biological systems
- Provide engineering solutions to clinical and biological problems
- Engage in research within medical and healthcare sectors
- Design devices and instrumentation for use in medical and clinical applications
- Understand and explain the operation of a range of medical equipment
- Interpret and apply standards and specifications in the medical realm
- Interact and communicate with non-engineering but scientific professionals

## 8. 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.

### Trinity Graduate Attributes

#### To Act Responsibly

**A Trinity Graduate**

- Acts on the basis of knowledge and understanding
- Is self-motivated and able to take responsibility
- Knows how to deal with ambiguity
- Is an effective participant in teams
- Has a global perspective
- Is ethically aware

#### To Develop Continuously

**A Trinity Graduate**

- Has a passion to continue learning
- Builds and maintains career readiness
- Commits to personal development through reflection
- Has the confidence to take measured risks
- Is capable of adapting to change



#### To Think Independently

**A Trinity Graduate**

- Has a deep knowledge of an academic discipline
- Can do independent research
- Thinks creatively
- Thinks critically
- Appreciates knowledge beyond their chosen field
- Analyses and synthesises evidence

#### To Communicate Effectively

**A Trinity Graduate**

- Can present work through all media
- Is expert in the communication tools of a discipline
- Connects with people
- Listens, persuades and collaborates
- Has digital skills
- Has language skills

## 9. General programme information

### 9.1 Modules and module descriptors

In your studies you should aim to work a minimum of 50 hours per week. With a timetabled schedule of about 25 hours per week, this means you should be planning independent study of at least 25 hours per week. This includes reading course material prior to lectures – you should not expect to be given all the module material in the lectures and tutorials. The table below details the modules, credit value and coordinator.

Course Code	Module Title	ECTS	Semester	Module Coordinator
MEP55E02	Engineering Research Project	30	All year	Prof. Bruce Murphy ( <a href="mailto:bruce.murphy@tcd.ie">bruce.murphy@tcd.ie</a> )
MEP56BM1	Medical Device Design Innovation Project	10	1 + 2	Prof. Bruce Murphy ( <a href="mailto:bruce.murphy@tcd.ie">bruce.murphy@tcd.ie</a> )
ME5BIO7	Advanced Medical Imaging	5	2	Prof. Michael Monaghan ( <a href="mailto:monaghmi@tcd.ie">monaghmi@tcd.ie</a> )
MEP56BM9	Medical Devices Design Fundamentals	5	1	Prof. Bruce Murphy ( <a href="mailto:bruce.murphy@tcd.ie">bruce.murphy@tcd.ie</a> )
ME5MM3	Supply chain management	5	1	Prof Garret O'Donnell ( <a href="mailto:Garret.ODonnell@tcd.ie">Garret.ODonnell@tcd.ie</a> )
ME5MM7	Risk management and safety assessment systems	5	1	Prof Garret O'Donnell ( <a href="mailto:Garret.ODonnell@tcd.ie">Garret.ODonnell@tcd.ie</a> )
EE55C04	Speech and audio engineering	5	1	Prof Naomi Harte ( <a href="mailto:nharte@tcd.ie">nharte@tcd.ie</a> )
MEP55B10	Finite element analysis	5	1	Prof. Triona Lally ( <a href="mailto:lallyca@tcd.ie">lallyca@tcd.ie</a> )
MEP55B21	Neural Signal Analysis	10	2	Prof. Alejandro Lopez Valdes ( <a href="mailto:alopezva@tcd.ie">alopezva@tcd.ie</a> )
EEU44C16	Deep Learning & its Applications	10	1	Prof. François Pitié ( <a href="mailto:pitief@tcd.ie">pitief@tcd.ie</a> )
ME5BIO3	Tissue Engineering	5	2	Prof Daniel Kelly ( <a href="mailto:kellyd9@tcd.ie">kellyd9@tcd.ie</a> )
MEP55BM8	Active Implanted Devices and Systems	10	2	Prof. Alejandro Lopez Valdes ( <a href="mailto:alopezva@tcd.ie">alopezva@tcd.ie</a> )



# Trinity College Dublin

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ME5MM1	Advanced Manufacturing II- Manufacturing & Additive Processing Laser	5	2	Prof. John O'Hara (oharaj9@tcd.ie)
EE5C01	Motion Picture Engineering	10	2	Prof. Anil Kokaram (anil.kokaram@tcd.ie)

Module descriptors are available at the following link:

<https://www.tcd.ie/Engineering/assets/student-resources/Timetable-MAI-Biomedical.pdf>

The School reserves the right to amend the list of available modules and, in particular to withdraw and add modules. Timetabling may restrict the availability of modules to individual students.

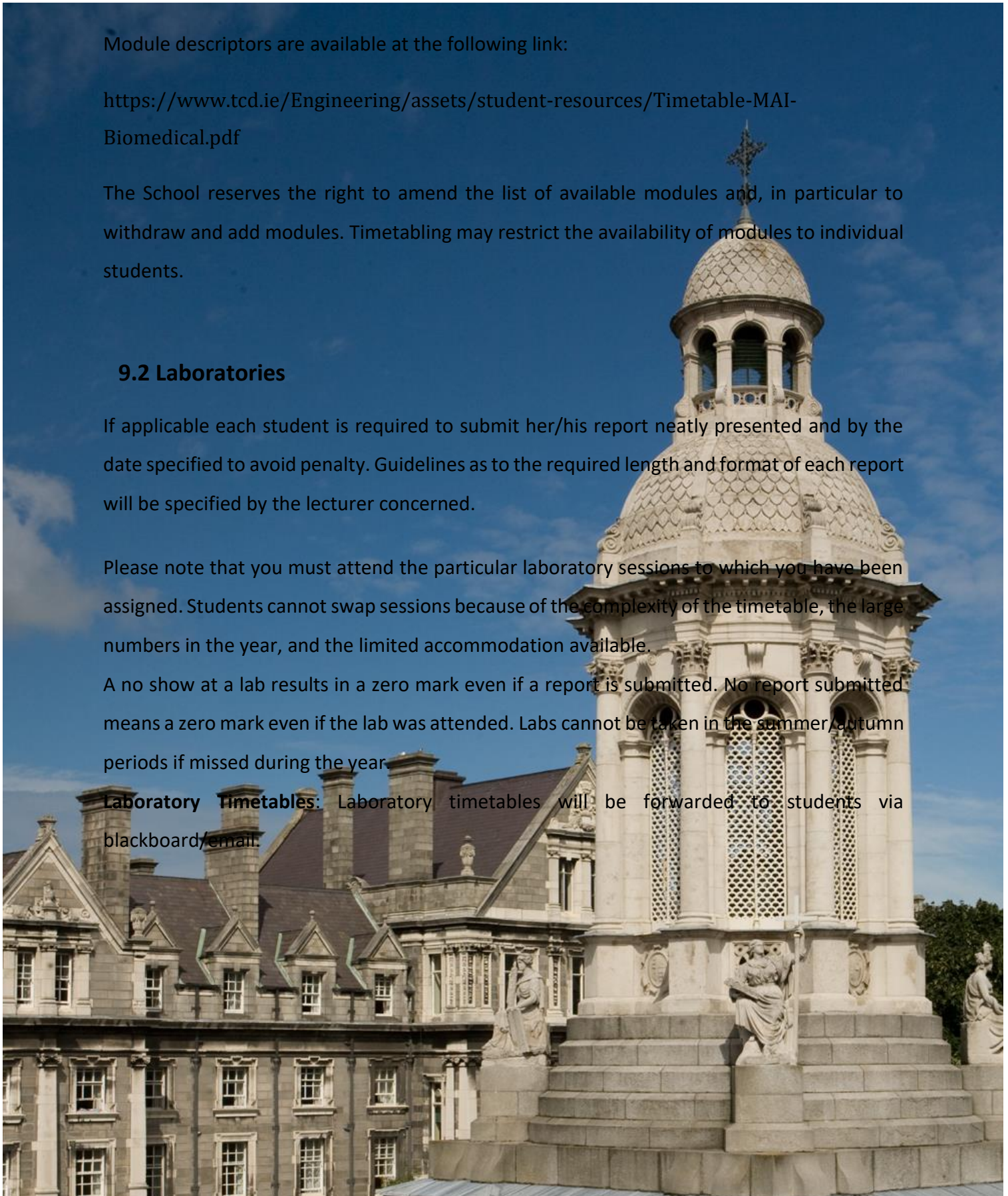
## 9.2 Laboratories

If applicable each student is required to submit her/his report neatly presented and by the date specified to avoid penalty. Guidelines as to the required length and format of each report will be specified by the lecturer concerned.

Please note that you must attend the particular laboratory sessions to which you have been assigned. Students cannot swap sessions because of the complexity of the timetable, the large numbers in the year, and the limited accommodation available.

A no show at a lab results in a zero mark even if a report is submitted. No report submitted means a zero mark even if the lab was attended. Labs cannot be taken in the summer/autumn periods if missed during the year.

**Laboratory Timetables:** Laboratory timetables will be forwarded to students via blackboard/email.



## 9.3 Coursework requirements

### 9.3.1 Policy on late submission

Coursework and assessment is an essential part of a student's learning to reinforce aspects of module content. For all years (JS/SS/MAI/MSc) and **ALL** modules within the Discipline of Biomedical Engineering the following applies:

#### Individual Coursework

1. Coursework received within two weeks of the due date will be graded, but a penalty will be applied

- Up to 1 week late = minus 15%
- From 1 week to 2 weeks late = minus 25%

2. Any submissions received two weeks after the due date will not be accepted and will receive a zero grade.

3. Submission dates may be extended in exceptional and extenuating circumstances. Students must apply directly (via email) to the module coordinator requesting an extension and 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.

#### Group Coursework

1. The same penalties for late submissions will apply to group coursework as outlined for "Individual Coursework".

2. In addition, certain modules may also adopt an additional grading scheme whereby group projects/assignments will be graded as a function of lecture attendance. Please consult module coordinator.

### 9.3.2 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.

## **10 Prizes and Scholarships**

### **10.1 Prizes**

#### PROFESSOR JOHN FITZPATRICK PRIZE

This prize was established in 2013 by a bequest from the Department of Mechanical and Manufacturing Engineering in memory of the late Professor John Fitzpatrick, former Head of the School of Engineering and Chair of Mechanical Engineering. The prize is awarded annually to the best student in the M.A.I. (St.) degree as determined by the court of examiners. Value, not less than €400.

#### COLLEN PRIZES

These prizes were founded in 1957 by a gift from L.D.G. Collen, M.A., M.A.I. to encourage interest in current engineering practice. Six prizes are offered annually in the fifth year of the M.A.I. degree course, one in each of the following: (i) Biomedical Engineering, (ii) Civil, Structural and Environmental Engineering, (iii) Computer Engineering, (iv) Electronic and Electrical Engineering, (v) Mechanical and Manufacturing Engineering, (vi) Engineering with Management, for the best project or joint project on the nomination of the Head of Biomedical Engineering. Value, €80 each.

#### M.A.I. STREAM ENGINEERING PRIZES

These prizes were established in 2015 in order to recognise the best M.A.I. student in each of the engineering streams and are awarded annually to the student(s) obtaining the highest aggregate of marks at the annual M.A.I. examination. They are funded by the three departments in the School of Engineering and by the School of Computer Science and Statistics. Value, €30.

## 10.2 Scholarships

### RANALOW SCHOLARSHIP

These scholarships were founded in 2019 by Mr Brian Ranalow and H&K International Limited and will run for five years until the scheme closes in 2024. Three Ranalow Scholars are awarded annually, from all Engineering study streams, where sufficient merit is shown, by the nomination of trustees on the result of the examination for the degree of B.A.I. for students entering the M.A.I. year. There is a limit of one award per stream. Candidates must have achieved distinction during the engineering course and personal achievements will be considered. The value of each prize is €6,500 (three prizes) to cover expenses in the M.A.I. year of study.

## 11. Health and Safety

We operate a 'safe working environment' policy and we take all practical precautions to ensure that hazards or accidents do not occur. We maintain safety whilst giving you the student very open access to facilities. Thus, safety is also your personal responsibility and it is your duty to work in a safe manner. By adopting safe practices, you ensure both your own safety and the safety of others.

Please visit the safety section of the MMBE website for working practices in the Departments of Mechanical, Manufacturing, and Biomedical Engineering. You must read the MMBE Safety Statement and complete the student acknowledgement form.

<https://www.tcd.ie/mecheng/safetystatement/>

and in the Department of Electronic and Electrical Engineering:

<http://www.mee.tcd.ie/safety/SS2012.pdf>

If you are working in Trinity Centre for Biomedical Engineering Laboratories in Trinity Biomedical Sciences Institute, please contact Mr Simon Carroll, Senior Technical Officer at [scarrol6@tcd.ie](mailto:scarrol6@tcd.ie) to complete necessary Health and Safety paperwork prior to completing any laboratory work.

If you require lone or out of hours (after 6pm weekdays or at weekends), permission is required from the MMBE Safety Officer [Gordon.obrien@tcd.ie](mailto:Gordon.obrien@tcd.ie) Please ensure you comply with the instructions given in these important documents. Failure to behave in a safe manner may result in you being refused the use of departmental facilities.

## 12. Student Supports

Trinity College provides a wide range of [personal and academic supports](#) for its students.

### 12.1 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 his or her 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/>

### 12.2 Student Counselling Service

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

Email: [student-counselling@tcd.ie](mailto:student-counselling@tcd.ie)

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

### 12.3 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/>



## 12.4 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](mailto:brunns@tcd.ie); tel: 01 896 1402

Julian Hamilton (Methodist Chaplain): [julian.hamilton@tcd.ie](mailto:julian.hamilton@tcd.ie); tel: 01 896 1901

Alan O'Sullivan (Catholic Chaplain): [aeosulli@tcd.ie](mailto:aeosulli@tcd.ie); tel: 01 896 1260

Peter Sexton (Catholic Chaplain): [sextonpe@tcd.ie](mailto:sextonpe@tcd.ie); tel: 01 896 1260

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

## 12.5 Trinity Disability Service

Declan Treanor, Disability Services Coordinator

Room 3055, Arts Building

Email: [mdtreanor@tcd.ie](mailto:mdtreanor@tcd.ie)

Tel: 01 896 3475

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

## 12.6 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/>

## 12.7 Students' Union Welfare Officer

House 6, College

Email: [welfare@tcdsu.org](mailto:welfare@tcdsu.org)

Web: <https://www.tcdsu.org/welfare>

## 12.8 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 Help room is located in the New Seminar Room in House 20 in the School of Mathematics in the Hamilton Building.

Web: <https://maths.tcd.ie/outreach/helproom/>

## 12.9 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/>.

## 12.10 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/>.

## 12.11 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](mailto:student2student@tcd.ie). Web: <https://student2student.tcd.ie/peer-support/>.

### **12.12 Trinity Careers Service**

As a Trinity College Dublin student you have access to information, support, and guidance from the professional team of expert Careers Consultants throughout your time at Trinity. The support offered includes 'next step' career guidance appointments, CV, and LinkedIn profile clinics and practice interviews. The Trinity Careers Service and the School of Engineering also hold an annual Careers Fair in October which gives students the opportunity to find out about career prospects in over fifty companies.

Web: <https://www.tcd.ie/Careers/>

### **12.13 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 [http://www.tcd.ie/Sport/student-sport/ducac/?nodeId=94&title=Sports\\_Clubs](http://www.tcd.ie/Sport/student-sport/ducac/?nodeId=94&title=Sports_Clubs) for more details.

### **12.14 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/>.

## 13. General Regulations

### 13.1 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. With regard to online teaching, attendance is mandatory at live lectures, tutorial and labs. Pre-recorded lectures should be viewed at the allocated slot on the timetable. 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 Freshmen 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/Trinity joint honors.*

*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.*

*22 Students who are unable to attend lectures (or other forms of teaching) due to 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.*

#### *Non-satisfactory attendance*

*24 All students must fulfil the course requirements of the school or department, as appropriate, with regard to attendance. Where specific requirements are not stated, students may be deemed non-satisfactory if they miss more than a third of their course of study in any term. Calendar 2020-21 33*

*25 At the end of the teaching term, students who have not satisfied the school or department requirements, as set out in §§19 and 24 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 semester two assessment/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 [www.tcd.ie/academic\\_registry/studentcases](http://www.tcd.ie/academic_registry/studentcases).*

#### **14.2 Absence from examinations**

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

*51 Students who may be prevented from sitting an examination or examinations (or any part thereof) due to illness should seek, through their tutor, permission from the Senior Lecturer in advance of the assessment session to defer the examination(s) to the reassessment session. Students who have commenced the assessment session and are prevented from completing the session due to illness should seek, through their tutor, permission to defer the outstanding examination(s)/assessment(s) to the reassessment session. In cases where the assessment session has commenced, requests to defer the outstanding examination(s) on medical grounds, should be submitted by the tutor to the relevant school/departmental/course office. If non-medical grounds are stated, such deferral requests should be made to the Senior Lecturer, as normal.*

*52 Where such permission is sought, it must be appropriately evidenced:*

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

*(b) For other grave cause: appropriate evidence must be submitted to the student's tutor within three days of the beginning of the period of absence from the assessment/examination.*

*53 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.*

*54 Where an examination/assessment has been completed, retrospective withdrawal will not be granted by the Senior Lecturer nor will medical certificates be accepted in explanation for poor performance.*

*55 If protracted illness prevents a student from taking the prescribed assessment components, so that they cannot rise into the next class, they may withdraw from College for a period of convalescence, provided that appropriate medical certificates are submitted to the Senior Lecturer. If the student returns to College in the succeeding academic year they must normally register for the year in full in order to fulfil the requirements of their class. See §26 on fitness to study and §28 fitness to practise, if relevant.*

*56 Where the effects of a disability prevent a student from taking the prescribed assessment components, so that they cannot rise into the next class, the Senior Lecturer may permit the student to withdraw from College for a period of time provided that appropriate evidence has been submitted to the Disability Service. If they return to College in the succeeding academic year they must normally register for the year in full in order to fulfil the requirements of their class.*

*57 The nature of non-standard examination accommodations, and their appropriateness for individual students, will be approved by the Senior Lecturer in line with the Council-approved policy on reasonable accommodations. Any reports provided by the College's Disability Service, Health Service or Student Counselling Service will be strictly confidential.*

### **13.3 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 <http://tcd-ie.libguides.com/plagiarism>. 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 <http://tcd-ie.libguides.com/plagiarism/ready-steady-write>**

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.

### **13.4 University regulations, policies and procedures**

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

Student Complaints Procedure –

[https://www.tcd.ie/about/policies/160722\\_Student%20Complaints%20Procedure\\_PUB.pdf](https://www.tcd.ie/about/policies/160722_Student%20Complaints%20Procedure_PUB.pdf)

Dignity and Respect Policy - <https://www.tcd.ie/equality/policy/dignity-respect-policy/>

Cyberbullying refers to bullying which is carried out using the internet, mobile phone or other technological devices and platforms. In general, cyberbullying is psychological rather than physical but is often part of a wider pattern of 'traditional' bullying (Reference- Union of students in Ireland cyberbullying-policy: <https://usi.ie/policy/usi-cyberbullying-policy/>)

Due to COVID-19 and as we move to greater online interaction and remote activities, students should be aware that all forms of bullying are a college offence and we strongly discourage



any such activity. All such incidents will be dealt with as per college guidelines and regulations. We ask students to familiarise themselves with the college [Dignity and Respect policy](#) which supports a respectful work and study environment free from bullying and harassment

### **13.5 Data protection**

A short guide on how College handles student data is available here:

[https://www.tcd.ie/info\\_compliance/data-protection/student-data/](https://www.tcd.ie/info_compliance/data-protection/student-data/)

## **14. General Information**

### **14.1 Feedback and evaluation**

The Staff/Student Liaison Committee meets once a semester to discuss matters of interest and concern to students and staff. It comprises class representatives from each year. A programme level survey is issued online to students towards the end of semester 2.

### **14.2 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 represents 20-25 hours estimated student effort, so a 5- credit 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.

### 14.3 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.

## Guidelines on Marking Projects/Dissertation Assessment

Mark Range	Criteria
90-100	Exceptional project report showing broad understanding of the project area and exceptional knowledge of the relevant literature. Exemplary presentation and analysis of results, logical organisation and ability to critically evaluate and discuss results coupled with insight and novelty/originality. Overall an exemplary project report of publishable quality (e.g. peer reviewed scientific journal/patent application <b>in-progress</b> ).
80-89	An excellent project report clearly showing evidence of wide reading far above that of an average student, with excellent presentation and in-depth analysis of results. Clearly demonstrates an ability to critically evaluate and discuss research findings in the context of relevant literature. Obvious demonstration of insight and novelty/originality. An excellently executed report overall of publishable quality (e.g. short peer reviewed conference paper such as IEEE <b>in-progress</b> ) with very minor shortcomings in some aspects.
70-79	A very good project report showing evidence of wide reading, with clear presentation and thorough analysis of results and an ability to critically evaluate and discuss research findings in the context of relevant literature. Clear indication of some insight and novelty/originality. A very competent and well-presented report overall but falling short of excellence in some aspects. Sufficient quality and breadth of work similar to the requirements for an abstract at an international scientific conference.
60-69	A good project report which shows a reasonably good understanding of the problem and some knowledge of the relevant literature. Mostly sound presentation and analysis of results but with occasional lapses. Some relevant interpretation and critical evaluation of results, though somewhat limited in scope. General standard of presentation and organisation
50-59	A moderately good project report which shows some understanding of the problem but limited knowledge and appreciation of the relevant literature. Presentation, analysis and interpretation of the results at a basic level and showing little or no novelty/originality or critical evaluation. Insufficient attention to organisation and presentation of the

40-49	A weak project report showing only limited understanding of the problem and superficial knowledge of the relevant literature. Results presented in a confused or inappropriate manner and incomplete or erroneous analysis. Discussion and interpretation of result severely limited, including some basic misapprehensions, and lacking any novelty/originality or critical evaluation. General standard of presentation poor.
20-39	An unsatisfactory project containing substantial errors and omissions. Very limited understanding, or in some cases misunderstanding of the problem and very restricted and superficial appreciation of the relevant literature. Very poor, confused and, in some cases, incomplete presentation of the results and limited analysis of the results including some serious errors. Severely limited discussion and interpretation of the results revealing little or no ability to relate experimental results to the existing literature. Very poor overall standard of presentation.
0-19	A very poor project report containing every conceivable error and fault. Showing virtually no understanding or appreciation of the problem and of the literature pertaining to it. Chaotic presentation of results, and in some cases incompletely presented and virtually non-existent or inappropriate or plainly wrong analysis. Discussion and interpretation seriously confused or wholly erroneous revealing basic misapprehensions.

#### 14.4 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).

## 15. Project Safety Documents

Before undertaking any research within the department as part of your BAI/MAI project, a Project Safety Statement should be completed. This document should include an overview of your project and the lab you are working in, emergency procedures, standard operating procedures and risk assessments.

If your research introduces a new hazard (e.g. compressed gas, chemical, cryogenics) to the research lab, you should complete a New Hazard Safety Document. This document should include an overview of the new hazard, risk assessment, safety information and documentation.

Risk assessments for the above documents should be completed using the 5x5 risk rating method. All risk assessments must be signed by both you and your supervisor.

Examples of a Project Safety Statement, New Hazard Safety Document and 5x5 Risk Assessment are available on the Projects SharePoint.

<https://tcdud.sharepoint.com/sites/TCDGroup-PeterandGerry/Safety/Forms/AllItems.aspx>

Completed safety documents should be emailed to the MMBE Safety Officer, [Gordon.obrien@tcd.ie](mailto:Gordon.obrien@tcd.ie) and uploaded to the Completed Risk Assessments folder of the Projects SharePoint

## 16. Cyberbullying

Cyberbullying refers to bullying which is carried out using the internet, mobile phone or other technological devices and platforms. In general, cyberbullying is psychological rather than physical but is often part of a wider pattern of 'traditional' bullying (Reference- Union of students in Ireland cyberbullying-policy: <https://usi.ie/policy/usi-cyberbullying-policy/>). Due to COVID-19 and as we move to greater online interaction and remote activities, students should be aware that all forms of bullying are a college offence and we strongly discourage any such activity. All such incidents will be dealt with as per college guidelines and regulations. We ask students to familiarise themselves with the college Dignity and Respect policy which supports a respectful work and study environment free from bullying and harassment.