



Trinity College Dublin

Coláiste na Tríonóide, Baile Átha Cliath

The University of Dublin

Department of Microbiology

School of Genetics and Microbiology

# Senior Sophister Handbook AY 2024–2025



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# ***Welcome***

Welcome to Microbiology at Trinity College Dublin, the University of Dublin. The Department of Microbiology occupies the Moyne Institute of Preventive Medicine, a building presented to the College in 1953 by Grania Guinness (now the dowager Marchioness of Normanby) in memory of her father, the first Baron Moyne. This 2024-2025 handbook is designed to help you find your way around your course details and requirements, and to describe the facilities and functions of the Department of Microbiology in the School of Genetics and Microbiology, which is part of the **Faculty of Science, Technology, Engineering, and Mathematics (STEM)**. It is intended to complement information found in the University Calendar. The latter includes details of university regulations and procedures and may be consulted online, in this handbook or the departmental office.

Enjoy the year!

## ***Regulation notification***

This handbook applies to students taking the Moderatorship in Microbiology. It is available to download from the Departmental website. Please retain for future reference. The information provided in this handbook is accurate at time of preparation. Any necessary revisions will be notified to students via email. Please note that although every effort has been made to ensure the accuracy of the contents of this handbook, it is not a legally binding document and the Department of Microbiology reserves the right to modify any element, subject to the normal regulations of the University. In the event of any conflict or inconsistency between the General Regulations published in the University of Dublin Calendar (<http://www.tcd.ie/calendar/>) and this handbook, the provisions of the General Regulations will prevail.

### **Reference/Source**

[Calendar Calendar Part II](#)

[Part B: General Regulations and Information](#)

[Calendar Part III, Section 1: General Academic Regulations](#)

# General Course information

## Senior Sophister Staff Contact Details:

Staff Name	Role/Title	Email
<b>Marta Martins</b>	Course Director/Head of Discipline	<a href="mailto:mmartins@tcd.ie">mmartins@tcd.ie</a>
<b>Kim Roberts</b>	Course Advisor	<a href="mailto:kroberts@tcd.ie">kroberts@tcd.ie</a>
<b>Jayne Vance</b>	SS Course Administrator/Office	<a href="mailto:magoverj@tcd.ie">magoverj@tcd.ie</a>

Direct queries regarding timetabling, submission deadlines etc. should be made to the course administrator in the first instance or to the SS Course Advisor/Director if necessary. E-mails sent outside working hours are unlikely to be read before the following working day.

## Department of Microbiology Teaching Staff

Dr. Anna Ershova, Teaching Fellow ([eshovaa@tcd.ie](mailto:eshovaa@tcd.ie))

Dr. Alastair Fleming, Associate Professor ([Alastair.Fleming@tcd.ie](mailto:Alastair.Fleming@tcd.ie))

Prof. Tim Foster, Fellow Emeritus ([tfoster@tcd.ie](mailto:tfoster@tcd.ie))

Mr Fergal Hamrock, Teaching Fellow ([hamrockf@tcd.ie](mailto:hamrockf@tcd.ie))

Dr. Carsten Kroger, Assistant Professor ([Carsten.Kroeger@tcd.ie](mailto:Carsten.Kroeger@tcd.ie))

Dr. Marta Martins, Head of Discipline ([mmartins@tcd.ie](mailto:mmartins@tcd.ie))

Dr. Máire Ní Leathlobhair, Assistant Professor ([nleathlm@tcd.ie](mailto:nleathlm@tcd.ie))

Dr. Nicky O'Boyle, Assistant Professor ([oboylen1@tcd.ie](mailto:oboylen1@tcd.ie))

Dr. Kim Roberts, Assistant Professor ([kroberts@tcd.ie](mailto:kroberts@tcd.ie))

In addition, the Department has teaching links with the Department of Clinical Microbiology, School of Medicine at St. James's Hospital

[http://www.medicine.tcd.ie/clinical\\_microbiology/](http://www.medicine.tcd.ie/clinical_microbiology/) and the School of Dental Science

<https://www.tcd.ie/dental/>.

## Senior Sophister Course Overview

Module code	Module title	ECTS
MIU44001	Research in Microbiology	20
MIU44002	Molecular and Cellular Biology	10
MIU44003	Microbial Pathogenicity	10
MIU44004	Advanced Topics in Microbiology	10
MIU44005	Problem Solving, Data Analysis and Interpretation in Microbiology	10
Total		60

1 ECTS credit represents 20-25 hours estimated student input, so a 10-credit module will be designed to require 200-250 hours of student input including class contact time and assessments.

# Prizes in Microbiology

## CYRIL J. SMYTH PRIZE IN MICROBIOLOGY

This prize was founded in 2008 by the donation of the Provost's Lifetime Achievement Award in Teaching and Learning to Professor Cyril J. Smyth. It is awarded annually, on the recommendation of the Professor of Microbiology, to the student achieving the highest marks in the research project in the moderatorship examination in microbiology. Value, €200.

## F.S. STEWART PRIZE IN MICROBIOLOGY

This prize was founded in 1977 by a gift from F.S. Stewart, Professor of Bacteriology and Preventive Medicine 1950-75. It is awarded annually, on the recommendation of the Professor of Microbiology, to the science or medical student achieving the highest marks in the moderatorship examination in microbiology. Value, €200.

## Key Dates 2024-2025

The academic timetable can always be found on the Calendar website -

<https://www.tcd.ie/calendar/academic-year-structure/>

09.09.24	Michaelmas Term (Semester 1) teaching begins <ul style="list-style-type: none"><li>• <b>Information Session with Dr. Marta Martins from 10:30am</b></li></ul> The following should be emailed to Jayne Vance ( <a href="mailto:magoverj@tcd.ie">magoverj@tcd.ie</a> ) <ul style="list-style-type: none"><li>• Nomination of Class Representative</li></ul>
11.09.24	Project Q & A Coffee morning with the PIs offering projects and the postgrads that will be helping to supervise the Projects <b>at 11am.</b>
13.09.24	The following should be emailed to Jayne Vance ( <a href="mailto:magoverj@tcd.ie">magoverj@tcd.ie</a> ) <ul style="list-style-type: none"><li>• Project Choices; to be organised by Class Rep., compiled in an Excel File.</li></ul>
18.09.24	<b>Careers Support</b> <ul style="list-style-type: none"><li>• <b>John Wynne, Careers Advisory Service Time: 15:00</b></li></ul> This session will take a practical look at postgrad research, further education, jobs, deadlines, what you should be thinking about and when in the form of an Online Q & A Session.
20.09.24	The following should be emailed to Jayne Vance ( <a href="mailto:magoverj@tcd.ie">magoverj@tcd.ie</a> ) <ul style="list-style-type: none"><li>• Advanced Topic Choices; to be organised by Class Rep., compiled in an Excel File.</li></ul>
<b>LIBRARY HITS</b> (Students are asked to follow their emails on Library announcements)	<b>"Library HITS" – how to get the best from the Library"</b> <a href="https://www.tcd.ie/library/news/library-hits-how-to-get-the-best-from-the-library/">https://www.tcd.ie/library/news/library-hits-how-to-get-the-best-from-the-library/</a>

21.10.24	Reading/Study Week
15.12.24	Michaelmas Term (Semester 1) teaching ends
20.01.25	Hilary Term (Semester 2) teaching begins
03.03.25	Reading/Study Week
14.04.25	<b>Revision Week Semester 2:</b> Monday 14 April to Friday 18 April (Good Friday) 2025
21.04.25	Trinity Term begins <b>Trinity week:</b> Monday 28 April to Friday 3 May 2025
01.06.25	Trinity Term ends
<b>Formal Assessment weeks</b> Semester 1 examinations Monday 9 December to Friday 13 December 2024 <b>TBC</b> Semester 2 examinations Tuesday 22 April to 02 May 2025 <b>TBC</b> <b>Note that the dates of formal assessment weeks may extend to begin earlier or run later – examination schedules have not yet been finalised.</b>	
<b>Note that College is closed on the following dates 2024-25:</b>	
28.10.24	Public Holiday
16.12.24- 01.01.25	Christmas Period
03.02.25	St Brigid's Day
17.03.25	St Patrick's Day
18.03.25	Good Friday
21.04.25	Easter Monday
05.05.25	Public Holiday
02.06.25	Public Holiday
	<b>Project activity dates</b> <ul style="list-style-type: none"> <li>Monday 11<sup>th</sup> November -29<sup>th</sup> November 2024 (3 Weeks)</li> <li>Monday 20<sup>th</sup> January – 28<sup>th</sup> February 2025 (6 Weeks).</li> </ul>
<b>To Be Confirmed (T.B.C)</b>	<b>Problem Solving, data analysis and interpretation in Microbiology</b> <ul style="list-style-type: none"> <li>The schedule of the session delivered by the Microbiology Academic Staff will be circulated in Semester 2.</li> </ul> <b>Projects 2024-25</b> <ul style="list-style-type: none"> <li><b>Project Thesis Information Session</b></li> <li><b>Project presentation</b></li> <li><b>Project Submission Deadline</b></li> <li><b>Project Vivas</b> (Supervisor and Chosen Markers)</li> </ul>

# ***The Senior Sophister Year in Microbiology***

## **Module Descriptors**

### **The Core Curriculum (MIU44002, MIU44003)**

Students in their fourth year have an opportunity to explore, in detail, the major areas of Microbiology under the themes of (a) **Molecular and Cellular Biology**, and (b) **Microbial Pathogenicity**. The themes are covered in two Core Modules: MIU44002, and MIU44003. **Lectures in the core themes are compulsory for all students**. Each 10 ECTS module requires lecture attendance by students, self-directed study guided by recommended reading material and further reading beyond the course.

### **Advanced Topic Courses (MIU44004)**

Students are provided an opportunity to choose **three** areas of Microbiology for advanced study. Each component consists of 10 hours, and together the 3 courses account for **10 ECTS** credits. The format of these courses varies from lectures to small group tutorials and in many cases includes elements of student participation, assigned reading and group assignments. Students are required to carry out self-guided study on primary literature sources in preparation for class participation and presentations. The group size for each advanced topics is capped at approximately 14-16 students. Students will return a sheet ranking each option in order of preference. Advanced topic options will then be assigned.

Examination of MIU44004 includes an in-course assessment for each Topic, worth 5%/0.5 ECTS of the final module mark. In total, the in-course assessment is worth 15%/1.5 ECTS of the final module mark, with the written examination in the second semester worth the remaining 85%/8.5 ECTS. Format of the in-course assessment for each advanced topic is determined according to the preference of the academic lead.

### **Problem Solving, data analysis and interpretation in Microbiology (MIU44005)**

Students will develop their problem solving and data analysis skills throughout the Senior Sophister year, through reading and critiquing research papers, Advanced Topic discussions, laboratory work etc. In the second semester, students will receive tutorials in data handling, data interpretation and problem solving to complement the lectures in



the core themes. The culmination of these skills is then assessed by a written examination at the end of the second semester.

### **Research in Microbiology (MIU44001)**

This module comprises a Research project (13 ECTS) and Research Essay (7 ECTS) to be completed by the student, and **attendance at research seminars** given by invited international and national research leaders.

#### **Research Project**

Each student undertakes a chosen research project under the supervision of an academic member of staff over a nine-week period. The research project accounts for **13 ECTS** credits of the Senior Sophister year. Students will receive a list of dry and wet-lab research projects later in the Michaelmas semester. Students will return a sheet, ranking each option in order of preference. Projects will then be assigned according to the JS class ranking. Students produce a thesis of their research project when completed. Students will also present the main findings from their thesis to their class and academic staff. This may take the form of a 5min “flash” PowerPoint presentation plus Q&A session or a poster symposium (specific details to follow). In addition, students will undergo a short *viva* examination with the project supervisor and a second academic assessor.

#### **Review Essay**

Each student undertakes an independent, in-depth review of current research on a specific area of Microbiology. Students are provided with a choice of essay titles. More detailed instruction will follow regarding the essay, including the submission date. The review essay accounts for **7 ECTS** of the Senior Sophister year.

#### **Microbiology Seminar Series**

Throughout the academic year research seminars on the most current topics in Microbiology will be delivered by visiting scientists to the department. Attendance is **compulsory** as the subject matter is often relevant to the course work. Seminars will be held on Thursdays at 1pm, unless specified otherwise. Students are encouraged to attend these seminars, read up on the seminar topics and to integrate this information with that provided in their course. This will help develop a deeper understanding of topics and facilitate more in-depth answering in examinations. Details of each invited seminar will be circulated in advance.

## **Annual Examinations**

All examinations are held during the **Semester 2 examination period**. Students are formally examined on all material covered in the Core and Advanced Topic courses. Students are encouraged to integrate into their answers information covered during their Junior Sophister year. A fourth paper is problem-based.

On completion of the semester two examinations, some students will be called to sit an in-person ***viva voce* examination with the External Examiner**. Students who have a borderline mark (within 1% of the next grade) will be called to attend the *viva interview*. For borderline students the *viva* is an opportunity to potentially bring their mark up to the next division, but there is no guarantee that you will receive the higher grade. Grades cannot be reduced as a result of the *viva* interview. Not all students who are called to a *viva* interview would be at a grade boundary, additional students will be included so that the external examiner is able to assess the overall quality of our degree, which includes our graduates, the moderatorship curricula and assessment types. You will not be told which category you are in. You will not know your mark before sitting the *viva*. **All students are requested to be available for interview during the visit of the external examiner.** *Vivas* will be held in-person only so please ensure you are in the country and available if called. Requests for remote online vivas will not be granted. Viva voce with the External Examiner are usually held in the period following completion of examinations but before release of results. You must be available to attend during this period should you be requested.

The marking guidelines for Sophister essays and exams can be found in **Appendix D**.

<b>The Moderatorship Examination - <i>Senior Sophister Year</i></b>					
<b>Module</b>	<b>Title</b>	<b>ECTS</b>	<b>Examination components</b>	<b>% module component</b>	<b>% Final degree</b>
MIU44001	Research in Microbiology	20	Project (13 ECTS) Essay (7 ECTS)	65,35	23.33
MIU44002	MicrobialMolecular and Cellular biology	10	Paper 1	100	11.67
MIU44003	Microbial Pathogenicity	10	Paper 2	100	11.67
MIU44004	Advanced Topics in Microbiology	10	Paper 3	100	11.67
MIU44005	Data Handling	10	Paper 4	100	11.67
Total SS	60				70.00
Junior Sophister component					30.00
<b>Total Moderatorship</b>					<b>100.00</b>

The Moderatorship degree in Microbiology is awarded based on a student's performance over the two Sophister years. 70% of the final degree marks derive from the Senior Sophister year final marks and 30% derive from the Junior Sophister year marks.

# MIU44002 Lecture Timetables 2024-2025

The following timetables can be subject to minor changes.

Please ensure you check your emails on a daily basis.

SENIOR SOPHISTER					SEMESTER 1, 2024-25		
MIU44002 (MOLECULAR AND CELL BIOLOGY) TIMETABLE							
WEEK	DAY/DATE/TIME	LECTURERS	LECTURES				
3	Monday	09-Sep 11:00	Marta Martins	Information Session		NLR	
		14:00	Alastair Fleming	The Eukaryotic genome		NLR	
		15:00	Alastair Fleming	Chromatin modifications and remodeling I		NLR	
	Tuesday	10-Sep	12:00	Alastair Fleming	Chromatin modifications and remodeling II		NLR
			14:00	Alastair Fleming	Chromatin modifications and remodeling III		NLR
	Wednesday	11-Sep	10:00	Anna Ershova	Getting Started: Initiation, promoter recognition and patterns		NLR
			14:00	Anna Ershova	The Machine: The Structure and regulation of RNA polymerase II		NLR
	Thursday	12-Sep	11:00	Anna Ershova	Moving Along: Transcription elongation and linked events		NLR
			12:00	Anna Ershova	Getting to the end. 3'end formation and transcription termination		NLR
	Friday	13-Sep	11:00	Anna Ershova	Controlling the Levels: Make and degrade		NLR
			12:00	Kim Roberts	Mechanisms of viral transcription		
	4	Monday	16-Sep 12:00	Kim Roberts	Mechanisms of viral translation		NLR
14:00			Anna Ershova	The world of Non-coding RNAs: Roles in viral infection		NLR	
Tuesday		17-Sep	12:00	Alastair Fleming	Metabolic Engineering in yeast		NRL
			14:00	Alastair Fleming	Bacterial Biotechnology I		NLR
Wednesday		18-Sep	12:00	Carsten Kröger	Next-Generation Sequencing		NLR
			14:00	Anna Ershova	COVID19 vaccine: transcribing our knowledge of mRNA		NLR
Thursday		19-Sep	12:00	Carsten Kröger	Omics in bacteria		NLR
Friday		20-Sep	15:00	Gary Moran	The Genomes of Pathogenic Fungi		NLR
5		Tuesday	24-Sep 11:00	Anna Ershova	The dynamic genome I		NLR
			12:00	Anna Ershova	The dynamic genome II		NLR
	Wednesday	25-Sep	11:00	Carsten Kröger	CRISPR-Cas9		NLR
			12:00	Carsten Kroger	Post-transcriptional regulation in Bacteria		NLR
			14:00	Anna Ershova	Nucleoid structuring proteins I		NLR
	Friday	27-Sep	14:00	Maire Ni Leathlobhair	Applied Microbial Genomics		NLR
			15:00	Anna Ershova	Nucleoid structuring proteins II		NLR
6	Monday	30-Sep 12:00	Anna Ershova	Nucleoid structuring proteins III		NLR	
	Tuesday	01-Oct 14:00	Anna Ershova	Nucleoid structuring proteins IV		NLR	
	Wednesday	02-Oct 14:00	Anna Ershova	The next level of complexity: DNA methylation		NLR	
	Thursday	03-Oct 14:00	Maire Ni Leathlobhair	Applied Microbial Transcriptomics		NLR	

\* Venue: New Lecture Room (NLR), Microbiology Department

\*\*Some lecture titles and lecturers may vary

# MIU44003 Lecture Timetables 2024-2025

The following timetables can be subject to minor changes.

Please ensure you check your emails on a daily basis.

SENIOR SOPHISTER						SEMESTER 1, 2024-25
MIU44003 (MICROBIAL PATHOGENICITY) TIMETABLE						
WEEK	DAY/DATE/TIME	LECTURERS	LECTURES			
3	Monday	09-Sep	16:00 Fergal Hamrock	Polymicrobial interactions in health and disease		NLR
	Tuesday	10-Sep	11:00 Fergal Hamrock	Bacterial secretion systems 1		NLR
	Wednesday	11-Sep	15:00 Fergal Hamrock	Bacterial secretion systems 2		NLR
			16:00 Carsten Kröger	Gram-negative pathogens: <i>Acinetobacter baumannii</i>		NLR
	Thursday	12-Sep	14:00 Carsten Kröger	Gram-negative pathogens: <i>Salmonella enterica</i>		
	Friday	13-Sep	14:00 Julie Renwick	Respiratory infection and CF Part I		NLR
15:00 Julie Renwick			Respiratory infection and CF Part II		NLR	
4	Monday	16-Sep	15:00 Tim Foster	Methicillin-resistant <i>Staphylococcus aureus</i> (MRSA)		NLR
	Tuesday	17-Sep	11:00 Tim Foster	Immune evasion by <i>Staphylococcus aureus</i>		NLR
	Wednesday	18-Sep	11:00 Sinead Smith	<i>Helicobacter pylori</i> pathogenesis		NLR
	Thursday	19-Sep	14:00 Derek Sullivan	Pathogenesis of fungal infections		NLR
			15:00 Derek Sullivan	Pathogenesis of fungal infections		NLR
	Friday	20-Sep	11:00 Tim Foster	Wall-anchored surface proteins of Gram-positive bacterial pathogens		NLR
12:00 Marta Martins			<i>Mycobacterium tuberculosis</i> ( <i>Mtb</i> )		NLR	
14:00 Derek Doherty			Cellular Immunology		NLR	
5	Monday	23-Sep	11:00 Derek Doherty	Cellular Immunology		NLR
			12:00 Derek Doherty	Cellular Immunology		NLR
	Tuesday	24-Sep	14:00 Nicky O'Boyle	Evasion of GI Immunity- Salmonella		NLR
			15:00 Nicky O'Boyle	Evasion of GI Immunity- Listeria monocytogenes		NLR
	Thursday	26-Sep	11:00 Nicky O'Boyle	Enterohaemorrhagic E. coli - A sensitive beast		NLR
			12:00 Nicky O'Boyle	Uropathogenic E. coli - A sticky situation		NLR
14:00 Fergal Hamrock			Genomic approaches to vaccine design		NLR	
Friday	27-Sep	11:00 Marta Martins	The Antibiotic Resistance Crisis		NLR	
		12:00 Anna Rose Prior	Infection and Antimicrobial Resistance		NLR	
6	Monday	30-Sep	11:00 Marta Martins	Platforms for antibacterial drug discovery in the resistance era		NLR
	Tuesday	01-Oct	11:00 Marta Martins	New drugs for old bugs		NLR
			12:00 Marta Martins	What's in the pipeline? Alternatives to antibiotics: I		NLR
	Wednesday	02-Oct	11:00 Marta Martins	What's in the pipeline? Alternatives to antibiotics: II		
			12:00 Kim Roberts	Viral manipulation of apoptosis (TBC)		NLR
	Thursday	03-Oct	11:00 Kim Roberts	Viral induction of oncogenesis		NLR
12:00 Kim Roberts			Oncolytic Viruses		NLR	
Friday	04-Oct	11:00 Kim Roberts	Antiviral vaccines			
		12:00 Kim Roberts	Antiviral drugs		NLR	

\* Venue: New Lecture Room (NLR), Microbiology Department

\*\*Some lecture titles and lecturers may vary

# Core Course Lecture Timetable 2024-2025

		Start Core Course				
		Week 3 September-09	Week 4 September-16	Week 5 September-23	Week 6 September-30	
<b>Monday</b>	09:00					
	10:00	JS & SS talk				
	11:00	Coffee/Tea		MIU44003 DD	MIU44003 MM	
	12:00	Coffee/Tea	MIU44002 KR	MIU44003 DD	MIU44002 AE	
	13:00					
	14:00	MIU44002 AF	MIU44002 AE			
	15:00	MIU44002 AF	MIU44003 TJF			
	16:00	MIU44003 FH				
	17:00					
18:00						
<b>Tuesday</b>	09:00					
	10:00					
	11:00	MIU44003 FH	MIU44003 TJF	MIU44002 AE	MIU44003 MM	
	12:00	MIU44002 AF	MIU44002 AF	MIU44002 AE	MIU44003 MM	
	13:00					
	14:00	MIU44002 AF	MIU44002 AF	MIU44003 NO'B	MIU44002 AE	
	15:00			MIU44003 NO'B		
	16:00					
	17:00					
18:00						
<b>Wednesday</b>	09:00					
	10:00	MIU44002 AE				
	11:00	BOOKED for PROJECTS/Coffee & Discussion	MIU44003 Clinical (SS)	MIU44002 CK	MIU44003 MM	
	12:00		MIU44002 CK	MIU44002 CK	MIU44003 KR	
	13:00					
	14:00	MIU44002 AE	MIU44002 AE	MIU44002 AE	MIU44002 AE	
	15:00	MIU44003 FH	SS Career Talk JW	MIU44002 AF		
	16:00	MIU44003 CK				
	17:00					
18:00						
<b>Thursday</b>	09:00					
	10:00					
	11:00	MIU44002 AE		MIU44003 NO'B	MIU44003 KR	
	12:00	MIU44002 AE	MIU44002 CK	MIU44003 NO'B	MIU44003 KR	
	<i>Seminar</i>	13:00				
		14:00	MIU44003 CK	MIU44003 DS	MIU44003 FH	MIU44002 MNIL
		15:00		MIU44003 DS		
	<i>Seminar</i>	16:00				
		17:00				
18:00						
<b>Friday</b>	09:00					
	10:00					
	11:00	MIU44002 AE	MIU44003 TJF	MIU44003 MM	MIU44003 KR	
	12:00	MIU44002 KR	MIU44003 MM	MIU44003 Clinical (AP)	MIU44003 KR	
	13:00					
	14:00	MIU44003 Clinical(JR)	MIU44003 DD	MIU44002 MNIL		
	15:00	MIU44003 Clinical(JR)	MIU44002 GM	MIU44002 AE		
	16:00					
	17:00					
18:00						

# Advanced Topics in Microbiology 2024-2025

Students are **required** to complete 3 Advanced Topics courses which will be held between 7-11 of Michaelmas Semester. Courses will be capped at 14-16 students. Please note, courses with three students or fewer may not run at the lecturer's discretion.

Assessment for this module is 15% in-course assessment (5% per Topic) and 85% written exam in semester 2.

## LESSONS FROM YEAST: CHROMATIN, EPIGENETICS AND DISEASE

**Dr. Alastair Fleming**

The yeast *Saccharomyces cerevisiae* has long been used as a model system for the study of eukaryotic cells. Recent developments have seen this model system used as a powerful experimental tool to understand complex biological processes, particularly those associated with human diseases. The first part of this course will explore the experimental approaches offered by yeast as a model biological system. With this background information, you will review how many of the fundamental chromatin-mediated cellular processes were first identified in yeast and were then found to exist in human cells. Finally, we will discuss how using yeast as a model organism has offered insight into when chromatin-mediated processes become aberrant and the relevance of this failure of function to cellular aging and cancer.

### Topics discussed in first 7 lectures:

- 1: Yeast as a Model Organism
- 2: The Yeast Deletion Library: Looking for Phenotypes
- 3: A brief history of chromatin research: from obscurity to the cutting edge
- 4 & 5: Early studies in yeast which first demonstrated chromatin regulates transcription
- 6: Chromatin and aging
- 7: Chromatin and cancer

Sessions 8, 9 and 10 will involve class discussion of topical papers (to be selected).

*In-course assessment: 5% Presentation of a recent scientific paper relevant to the topic.*

## **SMALL RNA-MEDIATED GENE REGULATION IN GRAM-NEGATIVE BACTERIA**

***Carsten Kröger***

To respond to environmental changes, the gene expression programs in bacteria must be tightly controlled. In addition to gene regulation by transcription factors or DNA topology, small, non-coding RNA molecules have been established as a class of regulatory elements in the bacterial cell. Throughout the course of this class, we will discuss current knowledge such as the identification, mechanism of action and biological functions of selected small RNAs and their RNA-binding proteins in Gram-negative bacteria. Guided by selected research articles, we will follow the cellular path of a regulatory sRNA from expression to target interaction and subsequent degradation. The course involves in-depth reading of primary literature as a group and discussions on experimental design and interpretation.

*In-course assessment: 5% Presentation.*

## **TRANSMISSION OF RESPIRATORY VIRUSES**

**Kim Roberts**

There has been considerable debate about the routes of transmission of respiratory viruses, such as influenza A and SARS-CoV-2. During the COVID19 pandemic, many people have questioned the evidence, definitions, and biological relevance of fomite vs respiratory droplet vs airborne transmission, creating a new body of work investigating this topic.

In this course we will explore and compare the range of different types of viruses that can cause respiratory infection, from common cold-causing adenovirus and rhinovirus to viruses with pandemic potential like SARS-CoV-2 and influenza virus. We will discuss the biological properties of viruses that impact the efficiency of their transmission. For example, using SARS-CoV-2 and influenza A variants we will explore how mutations in viral receptor binding proteins increase (or decrease) infection and transmission efficiency. We will also explore viral host adaptations that enable viruses to cause zoonotic outbreaks. We will examine environmental factors that can affect transmission efficiency, such as temperature, humidity and ventilation. Finally, we will discuss the evidence for/against different non-pharmaceutical interventions that are used to reduce respiratory virus transmission. Throughout the course, we will work together to identify general principles that could help prepare society for future respiratory virus pandemics.



The course will be divided into five 2-hour (2x 45 minutes with a break in the middle) classes:

- 1) Viruses that cause respiratory infections
- 2) Routes of respiratory virus transmission and their impact on disease
- 3) Viral adaptations that affect transmission and pandemic potential
- 4) Environmental factors that affect transmission
- 5) Non-pharmaceutical interventions to reduce respiratory virus transmission

Recommended multi-media resources will be available before each class, including a review relevant to the class topic. Each class will be comprised of a mixture of lecture material, followed by a class discussion. All students are expected to engage with the material provided ahead of the classes and to participate in the class discussions. The discussions will include critiques of primary research papers, experimental design and data interpretation.

*In-course assessment: 5% Question-led summaries of the class material on Blackboard.*

## **“WINNING THE BATTLE BUT NOT THE WAR – FROM NEW DRUGS TO NOVEL THERAPEUTICS TO FIGHT THE SILENT PANDEMIC OF ANTIBIOTIC RESISTANCE ON ESKAPE PATHOGENS”**

**Marta Martins**

The rapid emergence of multidrug resistance in bacteria occurring worldwide is jeopardizing the efficacy of available antibiotics, which for decades have saved millions of lives. In addition, the development of new drugs continues to decline with pharmaceutical companies curtailing their anti-infective research programs. Antimicrobial resistance is considered a “silent pandemic” constituting a neglected global crisis that requires urgent attention and action. Appropriate prescription and optimised use of antimicrobials guide the principles of antimicrobial stewardship activities, together with quality diagnosis and treatment. However, there are several threats that can affect antimicrobial stewardship activities and drive antimicrobial resistance. Furthermore, hospital admissions increase the risk of health-care-associated infections and the transmission of multidrug-resistant organisms, which in turn leads to increased antimicrobial use. Due to this concerning situation, in 2017, the WHO published a list of pathogens for which new antimicrobial development is urgently needed. Within this list, ESKAPE (*Enterococcus faecium*, *Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, and *Enterobacter* species)

pathogens were designated “priority status”. This highlights the urgency in the development and discovery of new drugs or the repurpose of existing ones. This course will discuss the lack of new antimicrobial compounds to treat multidrug resistant infections caused by ESKAPE pathogens, as well as the (still) problematic (mis)use of antibiotics. We will focus on the process of discovery and development of new drugs and the reason why thousands of new molecules never reach the market. We will also discuss the use of potential alternative therapeutics that are focused on shifting the current drug discovery paradigm from “finding new drugs” to “combining existing agents”. Some examples of the approaches to be discussed will include host-directed therapeutics; bacteriophage-based therapies; anti-virulence strategies; development of biofilm inhibitors/disruptors; among others. Using this background information, we will review cutting-edge papers where these approaches are discussed, opening the way to the discovery of new drugs or to the repurpose of existing ones. The students will have the opportunity to read and discuss fundamental papers in this area as well as to work with their peers in critically presenting their view about antimicrobial resistance. Group work will be focused on potential solutions to tackle this public health issue and discover/design a new antimicrobial. The students will also be challenged to be the next Antimicrobial Resistance Ambassadors for public engagement and to develop new ideas and solutions to engage with the public to raise awareness of this Global Public Health Issue.

*In course assessment: 4% Presentation of a scientific paper on novel drugs to treat MDR ESKAPE pathogens. 1 % Flash cards with summary information on ESKAPE pathogens to be distributed during AMR awareness week.*

## **The role of DNA modifications in bacterial physiology and evolution**

**Anna Ershova**

### **Learning Aims:**

Students will enhance their understanding of epigenetic regulation and the mechanisms underlying bacterial immunity.

### **Module Content:**

This module will include 10 lectures focused on bacterial DNA methylation and its role in antiphage defense and epigenetic regulation. We will explore methods for identifying methylated bases in DNA, examine methylation-based bacterial defense systems, and discuss how methylation influences gene expression and cell cycle regulation. An important topic will be the role of methylation in maintaining heterogeneity within bacterial populations, a critical

factor for their survival. Additionally, we will compare DNA methylation in bacteria and eukaryotes, with discussions extending to the role of DNA methylation in human diseases.

#### **Learning Outcomes:**

- Understand the diversity of bacterial and bacteriophage defense mechanisms.
- Comprehend the impact of methylation on bacterial gene expression regulation.
- Understand the role of DNA methylation in maintaining population heterogeneity and its implications for bacterial survival.

*In course assessment: 5% Presentation and discussion of a scientific paper.*

### **CANCER MICROBIOLOGY: Connecting the Dots**

#### **Máire Ní Leathlobhair**

This advanced course will explore the intersection of microbiology, immunology, and cancer biology, showing how evolutionary principles shape the dynamics of both microbial populations and cancer cells. Through the lens of clonal evolution—a process fundamental to a broad spectrum of organisms from viruses and bacteria to cancers—we will explore how these mechanisms drive critical health challenges such as antimicrobial resistance and cancer progression. We will use microbial systems as models to better understand the dynamics of cancer cell populations, drawing parallels between microbial evolution and somatic clonal evolution in cancers. The course will also investigate rare clonally transmissible cancers—remarkable cases where cancers have become contagious between individuals via the transfer of living cancer cells, behaving more like parasitic organisms than typical malignant cells and blurring the lines between infectious diseases and conventional cancers. Beyond evolutionary concepts, we will also address key questions linking microorganisms and cancer development, such as:

- What types of microbes have been associated with cancer?
- Can microbes play a beneficial role in the treatment and prevention of cancer?
- How do microbes influence cancer cells and the tumor microenvironment?
- How can viruses influence cancer?

Students will engage with cutting-edge research literature, participate in peer presentations, and take part in collaborative discussions to develop a deeper understanding of how

evolutionary processes bridge microbiology and cancer biology, and their implications for public health.

*In-course assessment: 5% Mini-grant proposal presentation (title, brief background, 3 research objectives, impact).*

## **METABOLISM MEETS VIRULENCE**

### **Nicky O'Boyle**

An individual's appearance, behaviours and lifestyles are shaped by the foods they eat. The same is true in many respects for bacteria. Bacterial virulence mechanisms are often metabolically costly to produce, and their expression must be controlled precisely to ensure activity in the appropriate infection niche. A plethora of signals from the environment, the host, the diet, and endogenous sources therefore converge on virulence factor-encoding genes and their regulators to facilitate niche-specific virulence control.

This course will focus on clinically relevant bacterial pathogens, aiming to build understanding of how diverse virulence factors are regulated in response to the sensing and breakdown of metabolites during infection. You will learn about how host-associated environments vary in their metabolite profiles and the strategies employed by pathogens to exploit these variations to optimise infection. The experimental methodologies used to analyse alterations in metabolism and dissect how this affects specific virulence factors will also be discussed. Students will be tasked with analysing cutting-edge literature and presenting to the group to inspire intensive proactive discussion.

*In-course assessment: 5% Presentation of an example from the literature of how metabolism influences virulence.*

# Research Review Essay

The Research Review Essay in Senior Sophister year is a self-guided assessment which should be accomplished without any input from staff members. Details of the members of staff providing the essay titles, and who will mark the essays, are not given to students.

Students are provided with a choice of essay titles. More detailed instruction will follow regarding the essay, including the submission date. Unlike in JS year, there will be no initial meeting with members of staff, and no starter references will be provided. All research and writing of the essay is the sole responsibility of the student. Essays will be anonymously marked by at least two members of staff and the final result will be incorporated into the annual end of year results.

## 2024-25 Essay titles:

1. The Expanding Virosphere: Charting Hidden Viromes with Metagenomics
2. Describe the development of the smallpox vaccine Modified Vaccina Ankara and discuss its current and potential uses
3. Finding a needle on a haystack – The mining of the Soil environment for novel antibacterial drugs
4. Opportunistic pathogens in inflammatory bowel disease: Diversity and potential for therapeutic targeting.
5. The bacterial crossbow: The Type-6-secretion system.
6. Organisation and inheritance of the *Saccharomyces cerevisiae* mitochondrial genome.
7. Discuss the diversity, regulation and functional roles of sigma factors in bacterial adaptation and pathogenesis".
8. The Role of DNA Methylation in Bacterial Adaptation to Changing Environments.

There are no limits to the number of students that can choose each essay title. Essays should be no longer than 4,000 words (excluding tables, figure legends and references). Include a word count after the abstract. The essay should be written in the style adopted by the journals *Molecular Microbiology* and *Cellular Microbiology*. **References:** The system adopted by *Molecular Microbiology* and *Cellular Microbiology* **must** be used for

citation and listing of references. A complete listing of references must be compiled at the end of the essay. These should be listed in alphabetical order of the first author. Papers with two authors should follow those of the first named author, arranged in alphabetical order according to the name of the second author. Articles with more than two authors should follow those of the first named author in chronological order. For papers with eight or more authors, the first six should be listed followed by “*et al*”. The title of the article must be included in all cases.

**You are expected to compile your bibliography using EndNote.**

The inclusion of diagrams and other illustrations is strongly encouraged and figure legends must be included. Students should consult the journal for figure styles and formatting of figure legends. Sources of figures must be fully acknowledged.

All essays must be typed, using 1.5 or double line spacing and page numbers should be included. An abstract of 200 words summarising the essay should be included ahead of the Introduction. It is up to the individual students to show initiative in researching the relevant field. The marking guidelines used to grade the essays is included in Appendix D.

## **Declaration**

Please create a **separate** word document to accompany your essay submission which contains **your Name & Student Number** and the following **DECLARATION** information;

**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/ready-steady-write>**

The statement should be signed (electronic signature will suffice) and dated. Please save the document as a pdf and names as

**SS Research\_EssayDeclaration24\_25\_username.pdf** (insert your own username).

## Essay Submission

Since essays are anonymously marked, **do not put your name on any page of the essay.** The “title page” should **ONLY** have the title of the review essay. The order of pages should be (a) **Title Page** (b) **Abstract** (c) **Introduction, etc.**

The completed essay and declaration form must be submitted electronically as two separate pdf documents in the **one email** to the departmental secretary, details on submission to follow.

Use the filenames **SS Research\_Essay24\_25\_username.pdf**. Include **SS Research\_Essay24\_25\_username** in the subject line of the email. (Students are urged to save “**back-up**” files regularly in case of computer problems.)

Your essay will be submitted as a Turnitin assignment on Blackboard. The Department will use this sensitive anti-plagiarism tool to screen essays and other forms of formal assessed work. It allows students and lecturers to check students’ work for academic integrity by searching for text that is improperly cited or potentially plagiarised. Once uploaded to Turnitin, assignments are compared to millions of books, journal articles, web pages and student papers, identifying any unoriginal material within the essay. The software then creates an Originality Report which highlights and quantifies unoriginal content. Turnitin reports can be used as evidence if plagiarism is suspected. **Accordingly, you are strongly recommended to synthesize your own language at all times.**

For more information see Appendix C.

The essays will be marked by two or more members of staff and will account for 10% of the marks of the Moderatorship Examination. **(The essays will not be returned, so you may want to retain a copy for future reference.)**

### **Late submission & Penalty**

There will be a penalty of 10% per week or part thereof for late submission of **any** course material including research project theses and research essays. Students please note that submission of material even one day late will incur a penalty of 10%.

## **Plagiarism**

Plagiarism is regarded as a serious offence by the University and could result in censure by the Junior Dean. Proven instances of plagiarism will result in heavy penalties.

A full statement of the College's position on plagiarism can be found in the College Calendar **and is reproduced in Appendix B.**

**All students** are required to access the **online central repository** in which all information and resources on plagiarism have been consolidated. This facility explains what plagiarism is, and how it can be avoided. The central repository is being hosted by the Library and is located at <https://libguides.tcd.ie/academic-integrity>

It includes the following:

- (i) The 2023-24 Calendar entry on plagiarism for undergraduate and postgraduate students;
- (ii) The matrix explaining the different levels of plagiarism outlined in the Calendar entry and the sanctions applied;
- (iii) Information on what plagiarism is and how to avoid it;
- (iv) 'Ready, Steady, Write', an online tutorial on plagiarism which must be completed by all students;**
- (iv) The text of a declaration which must be inserted into all cover sheets accompanying all assessed course work;
- (v) Details of software packages that can detect plagiarism, e.g. Turnitin.

**All students must complete the online tutorial** on avoiding plagiarism '**Ready, Steady, Write**', located at <https://libguides.tcd.ie/academic-integrity/ready-steady-write>.

Plagiarism can occur in many forms, for example copying another student's work, or quoting directly from published sources without acknowledgement, or using as your own slightly modified versions of the published work of others. Thus, in writing essays or other project work you are warned against copying verbatim, or copying and making



minor modifications to, phrases, sentences, paragraphs, sections or illustrations from other published work.

Students and staff have access to Turnitin computer software (see Appendix C) that can readily detect plagiarism. The Department will use this sensitive anti-plagiarism tool to screen essays and other forms of formal assessed work and Turnitin reports can be used as evidence if plagiarism is suspected. **Accordingly, you are strongly recommended to synthesize your own language at all times.** A full statement of the College's position on plagiarism can be found in the College Calendar **and is reproduced in Appendix B.**

## ***The Educational Objective of Your Degree***

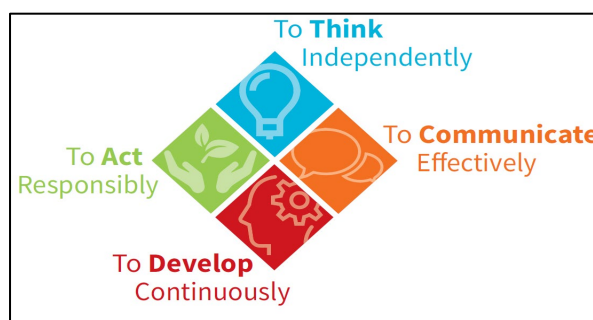
### **Graduate Attributes**

<https://student-learning.tcd.ie/assessments/graduate-attributes/>

The Trinity Graduate Attributes represent the qualities, skills and behaviours that you will have the opportunity to develop as a Trinity student over your entire university experience, in other words, not only in the classroom, but also through engagement in co- and extra-curricular activities (such as summer work placements, internships, or volunteering).

The four Trinity Graduate Attributes are:

- To Think Independently
- To Act Responsibly
- To Develop Continuously
- To Communicate Effectively



### **Why are the Graduate Attributes important?**

The Trinity Graduate Attributes will enhance your personal, professional and intellectual development. They will also help to prepare you for lifelong learning and for the challenges of living and working in an increasingly complex and changing world. The Graduate Attributes will enhance your employability. Whilst your degree remains fundamental, also being able to demonstrate these Graduate Attributes will help you to

differentiate yourself as they encapsulate the kinds of transversal skills and abilities, which employers are looking for.

### **How will I develop these Graduate Attributes?**

Many of the Graduate Attributes are 'slow learned', in other words, you will develop them over the four or five years of your programme of study. They are embedded in the curriculum and in assessments, for example, through undertaking independent research for your final year project, giving presentations and engaging in group work. You will also develop them through the co-curricular and extra-curricular activities. If you help to run a club or society you will be improving your leadership skills, or if you play a sport you are building your communication and team-work skills.

In the fourth year the student, having acquired a solid grasp of the fundamental elements and methodology of the particular discipline and a broad base of knowledge, is in a position to undertake advanced, intellectually demanding work, requiring extensive independent research, the critical evaluation of data, the search for new interpretations, and the rigour, discipline and independence of effort that are designed to develop the mental capacities and creative skills. Students typically do much of their formal work in this fourth year in tutorials, in seminars or in the laboratory, where they are required to present reports on particular problems and have to deal with the criticism of their peers and lecturers. They also have to write extended essays or dissertations, which are elaborate exercises in independent research, analysis, argumentation and presentation. Their examinations require them not merely to reproduce facts but to show understanding and to make sense of what they have learned.

### **What is the Capstone Research Project?**

The Capstone is a substantial independent research project that you will carry out in the final year of your undergraduate degree programme. It enables you to showcase the skills and knowledge that you have acquired over your programme of study and also to demonstrate how you have developed the Graduate Attributes.

### **What are the benefits of doing a Capstone?**

The Capstone will provide you with an opportunity to work and to think independently, to motivate yourself and to take responsibility, and to communicate effectively through

the tools of your discipline. Students who have completed a substantial piece of independent work as part of their degree tend to be more employable as well as more prepared for further advanced study. It will therefore add to the value of your Trinity degree.

The object of this fourth year is to ensure that students emerge with a high level of expertise in a chosen field and with versatile skills of a high order that equip them to proceed at once to advanced research or to whatever employment they enter, and the capacity to master quickly new areas of expertise, to solve problems, to generate ideas and to communicate well.

### **How your degree is categorized**

**The Pass degree B.A. Junior Sophister Year**

*Ordinary Bachelor's degree = (Level 7, National Framework of Qualifications)*

**Honours Degree B.A. (Mod.) = Moderatorship = Senior Sophister Year**

*Honours Bachelor's degree (Level 8, National Framework of Qualifications)*

Awarded to students who have completed a course of study which enables them to show:  
(a) a comprehension (that builds on and supersedes their general secondary education) of the theory, concepts, methods and processes pertaining to a field or (in the case of joint degrees) fields of learning;

(b) a detailed knowledge, supported by the use of advanced textbooks, of one or more specialised areas, some of it at the current boundaries of the subjects;

(c) that they can apply this knowledge and comprehension in a manner that indicates a thorough and informed approach to their work or vocation, and have competences typically demonstrated through devising and sustaining arguments, and formulating and solving problems within their field or fields of study;

(d) that they have a mastery of a number of specialised skills and tools which they can use selectively to address complex problems, including design problems, or to conduct closely guided research;

(e) that they have the ability to devise data gathering experiments, and to gather and interpret relevant data to inform independent judgements which include reflection on relevant social, scientific or ethical issues;

(f) that they can act effectively, under the guidance of qualified practitioners, in a peer relationship within multiple, complex and heterogeneous groups;

(g) that they can communicate information, ideas, problems and solutions to both specialist and non-specialist audiences

(h) that they have developed those learning skills that are necessary for them to continue to undertake further study with a high degree of autonomy.

*Adapted from Calendar 2022-23, General Regulations and Information, pg 27-29*

## ***College Calendar and Regulations***

It is the student's responsibility to familiarize themselves with College regulations, particularly on attendance, illness and examinations, as stipulated in the College Calendar. Please note, as of 2018, Senior Sophister students can sit supplemental exams during the reassessment period. The following are some important excerpts pertaining to Senior Sophister, taken from the 2023-24 General regulations and information.

### **Degree of ordinary B.A.**

88 In the majority of undergraduate degree courses, students who have passed the Junior Sophister year may have the degree of ordinary B.A. conferred if they do not proceed to the Senior Sophister year or if they do not pass the Senior Sophister year/final degree assessments. Except by special permission of the University Council, on the recommendation of the court of examiners and, in some cases, of school executive committees, the ordinary degree of B.A. may normally be conferred only on candidates who have spent at least three years in the University. In the case of advanced entry into the Senior Freshman or Junior Sophister year of a student's degree course, the degree of ordinary B.A. may be conferred only on candidates who have spent at least two years in the University subject always to the successful completion of the Junior Sophister year. (pg 45).

### **Academic progress/Progression regulations: Bachelor programmes**

In order to rise with their class, students must obtain credit for the academic year by satisfactory attendance at lectures and tutorials and by carrying out, submitting and sitting the required assessment components. In addition, students must pass the year by achieving,

at a minimum, an overall credit-weighted average pass mark for the year **(40 per cent or 50 per cent, as per programme regulations)** and either:

(a) accumulate 60 credits by achieving at least the pass mark in all modules

or

(b) pass by compensation. All modules and components within modules are compensatable (except in particular professional programmes where compensation does not apply).

To pass a year by compensation, in programmes that locate the pass mark at 40 per cent, a student must achieve the pass mark in modules carrying a minimum of 50 credits and obtain a module mark of at least 35 per cent in any remaining module(s). A student may accumulate a maximum of 10 credits at qualified pass where the mark lies between 35-39 per cent.

To pass a year by compensation, in programmes that locate the pass mark at 50 per cent, a student must achieve the pass mark in modules carrying a minimum of 50 credits and obtain a module mark of at least 45 per cent in any remaining module(s). A student may accumulate a maximum of 10 credits at qualified pass where the mark lies between 45-49 per cent.

60 Progression is on an annual basis. Within a year students may carry failed modules from one semester to the next but not from one academic year to another; that is, they will not be able to rise to the next year of their programme until they have successfully completed the preceding year(s). Students who have not passed their year are required to present for reassessment when:

- (a) they obtain in excess of 10 credits at qualified pass (i.e. marks between 35-39 per cent where the pass mark is 40 per cent; or 45-49 per cent where the pass mark is 50 per cent);
- (b) they fail any module (i.e. achieving marks below 35 per cent where the pass mark is 40 per cent; or below 45 per cent where the pass mark is 50 per cent);
- (c) they do not obtain an overall pass mark for the year; (d) any combination of (a) - (c) occurs.

61 If a student has achieved both fail and qualified pass grades at the first sitting or has exceeded the 10 credit limit allowed for compensation and is not permitted to rise with their year, they must present for reassessment in all modules for which they obtained a fail and/or a qualified pass.

62 Different modalities of assessment to the first sitting are permitted in the reassessment session, as determined by the programme.

63 The same progression and compensation regulations as outlined above apply at the reassessment session. The overall credit-weighted average for the academic year will be calculated using the most recent marks achieved.

64 Students who fail to satisfy the requirements of their year at the reassessment session are required to repeat the year in full (i.e. all modules and all assessment components).

65 Students are permitted to repeat any year of an undergraduate programme subject to not repeating the same year more than once and not repeating more than two academic years within a degree course, except by special permission of the University Council.

66 The maximum number of years to complete an undergraduate degree is six years for a standard four-year programme and seven years for a five-year programme. (pg 38)

# Appendices

## A. Attendance

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

### *Non-satisfactory attendance and course work*

**24** All students must fulfil the requirements of the faculty, 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.

**25** At the end of the teaching term, students who have not satisfied the school or department requirements, 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.

(Above Abstracted from the College Calendar - [www.tcd.ie/calendar](http://www.tcd.ie/calendar) )

## B. Academic Integrity (Plagiarism)

The College Calendar has been updated for 2023-24 it sets out the steps for the summary procedure and describes the levels of plagiarism and the sanctions. The central repository for all information on plagiarism also contains the 2023-24 Calendar entry, the matrix outlining the different levels of plagiarism and the sanctions, as well as the online tutorial 'Ready, Steady, Write'. It is located at <https://libguides.tcd.ie/academic-integrity/what-is-plagiarism>. Students are required to complete the online tutorial on plagiarism 'Ready, Steady, Write' and to sign a declaration that they have done so when submitting course work for assessment.

## **The 2023-24 Calendar entry on plagiarism;[11]**

### **Academic Integrity (Plagiarism)**

#### **96 General**

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

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

- (i) plagiarism - presenting work/ideas taken from other sources without proper acknowledgement. Submitting work as one's own for assessment or examination, which has been done in whole or in part by someone else, or submitting work which has been created using artificial intelligence tools, where this has not been expressly permitted;
- (ii) self-plagiarism - recycling or borrowing content from the author's own previous work without citation and submitting it either for an assignment or an examination;
- (iii) collusion - undisclosed collaboration of two or more people on an assignment or task, or examination, which is supposed to be completed individually;
- (iv) falsification/fabrication;
- (v) exam cheating - action or behaviour that violates examination rules in an attempt to give one learner an unfair advantage over another;
- (vi) fraud/impersonation - actions that are intended to deceive for unfair advantage by violating academic regulations. Using intentional deception to gain academic credit;
- (vii) contract cheating - form of academic misconduct in which a person uses an undeclared and/or unauthorised third party to assist them to produce work for academic credit or progression, whether or not payment or other favour is involved. Contract cheating is any behaviour whereby a learner arranges to have another person or entity ('the provider') complete (in whole or in part) any assessment (e.g. exam, test, quiz, assignment, paper, project, problems) for the learner. If the provider is also a student, both students are in violation. Further examples of the above available at [www.tcd.ie/teaching-learning/academic](http://www.tcd.ie/teaching-learning/academic) integrity.



### **97 Academic misconduct in the context of group work**

Students should normally submit assessments and/or examinations done in co-operation with other students only when the co-operation is done with the full knowledge and permission of the lecturer concerned. Without this permission, submitting assessments and/or examinations which are the product of collaboration with other students may be considered to be academic misconduct.

When work is submitted as the result of a group project, it is the responsibility of all students in the group to ensure, so far as is possible, that no work submitted by the group is plagiarised, or that any other academic misconduct has taken place. In order to avoid academic misconduct in the context of collaboration and group work, it is particularly important to ensure that each student appropriately attributes work that is not their own. Should a module co-ordinator suspect academic misconduct in a group assignment, the procedure in cases of suspected academic misconduct must be followed for each student.

### **98 Avoiding academic misconduct**

Students should ensure the integrity of their work by seeking advice from their module co-ordinator, tutor or supervisor on avoiding academic misconduct. All schools and departments must include, in their handbooks or other literature given to students, guidelines on the appropriate methodology for the kind of work that students will be expected to undertake. In addition, a general set of guidelines for students on avoiding academic misconduct is available at <https://libguides.tcd.ie/academic-integrity>.

### **99 Procedure in cases of suspected academic misconduct**

If academic misconduct as referred to in §96 above is suspected, in the first instance, the module co-ordinator may choose to arrange an informal meeting with the student to discuss the instance of concern. Following this informal meeting, or if a meeting is not necessary, the module co-ordinator must complete the academic integrity form (accessed via [www.tcd.ie/teaching-learning/academic-integrity](http://www.tcd.ie/teaching-learning/academic-integrity)), which will provide an indicative score and level, as below.

- (i) Level 1: (0 - 200) poor academic practice/conduct
- (ii) Level 2: (201 - 350) academic misconduct (minor)
- (iii) Level 3: (351 - 500) academic misconduct (major)
- (iv) Level 4: (501+) academic misconduct (severe)

Levels 1 - 3 are normally managed by the School, and all level 4 cases will be referred directly to the Junior Dean.

Level 1 (0 - 200): Scores in the range 0 - 200 are considered to reflect poor academic practice and level 1 consequences should apply. The module co-ordinator must inform their School's Director of Teaching and Learning (Undergraduate), or their designate, who will either approve the outcome, or if they form the view that the misconduct is more serious, agree an alternative level with the module co-ordinator.

Levels 2 - 3 (201 - 500): The module co-ordinator must inform their School's Director of Teaching and Learning (Undergraduate), or their designate, of the suspected infringement and proposed consequence. If the Director or designate approves the recommended consequences, the module co-ordinator will write to the student advising them of the suspected infringement of academic integrity, offering them the option of an appropriate consequence should they admit that misconduct has taken place.

If the Director or designate forms the view that the alleged misconduct requires further investigation, or if the student disputes the academic misconduct or the consequence, it will proceed to the academic integrity meeting.

### **100 Academic integrity meeting**

The Director of Teaching and Learning (Undergraduate), or their designate, writes to the student and the student's tutor indicating the nature of the suspected academic misconduct and the evidence for it, and inviting the student to:

- (i) respond to the suspicions by completing and submitting the academic integrity response form (accessed via [www.tcd.ie/teaching-learning/academic-integrity](http://www.tcd.ie/teaching-learning/academic-integrity)) within an appropriate timeline determined by the School;
- (ii) indicate whether or not they (and a representative) plan to attend an academic integrity meeting on a specified date.

If the student and or/representative is unable to attend, or chooses not to attend, the meeting will take place as planned. The academic integrity response form will be the student's submission to the meeting.

The academic integrity meeting is attended by a Director of Teaching and Learning (Undergraduate) or their designate (Chair); two academic colleagues from the School (at least one from the discipline to which the module belongs); the student and their tutor (or a representative of the Students' Union), if they wish; the co-ordinator of the module, if they wish, but only to present additional evidence.

The academic integrity meeting considers the assessment or examination(s) in question; the academic integrity form (and any verbal submissions by the module coordinator, if present); the student's academic integrity response form (and any verbal submissions by the student and/or tutor, if present).

The academic integrity meeting assesses the abovementioned evidence in order to determine at what level (if at all) academic misconduct has occurred and selects a consequence appropriate to that level, giving due consideration to any mitigating circumstances. Minutes of the meeting must be recorded. The Chair completes the academic integrity meeting decision form (accessed via [www.tcd.ie/teaching-learning/academic-integrity](http://www.tcd.ie/teaching-learning/academic-integrity)), which is submitted for approval to the Senior Lecturer/Dean of Undergraduate Studies. The Senior Lecturer may approve, reject, or vary the recommended consequence, or seek further information before making a decision. If the Senior Lecturer considers that the consequences provided for under the above procedure are inappropriate given the circumstances of the case, he/she may also refer the matter directly to the Junior Dean who will interview the student and may implement the procedures as referred to under CONDUCT AND COLLEGE REGULATIONS §2. If the Senior Lecturer/Dean of Undergraduate Studies approves the recommended consequence, the Chair communicates the decision to the student and their tutor.

### **101 Consequences in cases of suspected academic misconduct**

If the instance of concern can be dealt with under the above procedure, one of the following consequences will be recommended:

(i) Level 1: (0 - 200): poor academic practice/conduct

- Mandatory academic integrity training is required
- Informal warning – a record is kept for the duration of the learner's enrolment on the programme of study to inform any future instances of concern
- The work must be corrected. The student is required to amend all elements identified as poor academic practice. Other content may or may not be altered as appropriate to the assessment and as determined by the School. The corrected work will be assessed.

In the case of examinations, the work must be reassessed. The mark for the component/assessment/examination may or may not be reduced;

(ii) Level 2: (201 - 350): academic misconduct (minor infringement)

- Mandatory academic integrity training is required

- Formal warning – a written warning is issued by the Director of Teaching and Learning (Undergraduate) or designate, and the instance of academic misconduct is recorded for the duration of the learner’s enrolment on the programme of study

- The work must be resubmitted. The student is required to amend all elements identified as breaching academic integrity. Other content may or may not be altered as appropriate to the assessment and as determined by the School. The resubmitted work will be assessed.

In the case of examinations, the work must be reassessed. The component/assessment/examination mark will be reduced or capped at the pass mark and might not be confirmed until the reassessment Court of Examiners;

(iii) Level 3: (351 - 500): academic misconduct (major infringement)

- Mandatory academic integrity training is required

- Formal warning – a written warning is issued by the Director of Teaching and Learning (Undergraduate) or designate, and the instance of academic misconduct is recorded for the duration of the learner’s enrolment on the programme of study

- The work must be resubmitted at the reassessment session. The student is required to amend all elements identified as breaching academic integrity. Other content may or may not be altered as appropriate to the assessment and as determined by the School. In the case of examinations, the work must be reassessed. The mark for the module will be capped at the pass mark and will not be confirmed until the reassessment Court of Examiners;

(iv) Level 4: (501 - 615): severe academic misconduct

- The case will be referred directly to the Junior Dean.

**102 If the facts of the case are in dispute, or if the Director of Teaching and Learning (Undergraduate), or designate, feels that the consequences provided for under the academic misconduct procedure are inappropriate given the circumstances of the case, they may refer the case directly to the Junior Dean, who will interview the student and may implement the procedures as referred to under under CONDUCT AND COLLEGE REGULATIONS §2. Nothing provided for under the summary procedure diminishes or prejudices the disciplinary powers of the Junior Dean under the 2010 Consolidated Statutes.**

**[1] UG: Calendar Part II, General Regulations, Academic Progress, Paragraphs 96 and following.**

## C. Turnitin – Blackboard

Turnitin is an online software program that aids plagiarism prevention. It allows students and lecturers to check students' work for academic integrity by searching for text that is improperly cited or potentially plagiarised. Once uploaded to Turnitin, assignments are compared to millions of books, journal articles, web pages and student papers, identifying any unoriginal material within the essay. The software then creates an Originality Report which highlights and quantifies unoriginal content.

For more information, see <https://libguides.tcd.ie/academic-integrity/what-is-plagiarism> and to access the student training tutorial, see Blackboard tutorials.

Guidelines for interpreting the Originality Report will be posted on Blackboard in the MIU44001 Research in Microbiology section.

## D. Guidelines on Awarding Grades

### For Essays & Examination Answers in the Sophister Years

**Note that these guidelines are for use as a general reference. Differences may occur between disciplines.**

	Mark Range	Criteria
I	90-100	<b>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.</b>
	80-89	<b>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.</b>
	70-79	<b>MAINLY OUTSTANDING ANSWER; falls short on presentation and reading or thought beyond the course, but retains insight and originality typical of first class work.</b>

II-1	65-69	VERY COMPREHENSIVE ANSWER; <b>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.</b>
	60-64	LESS COMPREHENSIVE ANSWER; <b>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.</b>
II-2	55-59	SOUND BUT INCOMPLETE ANSWER; <b>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.</b>
	50-54	INCOMPLETE ANSWER; <b>suffers from significant omissions, errors and misunderstandings, but still with understanding of main concepts and showing sound knowledge. Several lapses in detail.</b>
III	45-49	WEAK ANSWER; <b>limited understanding and knowledge of subject. Serious omissions, errors and misunderstandings, so that answer is no more than adequate.</b>
	40-44	VERY WEAK ANSWER; <b>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.</b>
F-1	35-39	MARGINAL FAIL; <b>inadequate answer, with no substance or understanding, but with a vague knowledge relevant to the question.</b>
	30-34	CLEAR FAILURE; <b>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.</b>
F-2	0-29	UTTER FAILURE; <b>with little hint of knowledge. Errors serious and absurd. Could also be a trivial response to the misinterpretation of a question.</b>
U.G.		Ungraded

## E. Blackboard

The Microbiology Department is using Blackboard for accessing your student notes. You can locate your notes at the following link: <https://tcd.blackboard.com/>

1. Go to <https://tcd.blackboard.com/webapps/login/>
2. Click TCD Student and Staff login
3. Enter your student name and password.
4. Click on modules for relevant student notes.

**If you are experiencing problems with accessing your lecture notes, please contact Departmental Office.**

## F. Student Disability Services

If you have dyslexia, pain, phobias, physical ailments or problems which make it difficult to study or sit exams, talk to the disability service early. They can assess the problem and arrange ways to help you.

**Disability Officer, School Contact**

**Name:** *Kieran Lewis*

**Web:** [www.tcd.ie/disability](http://www.tcd.ie/disability)

**Room:** 2054 Arts Building

**Phone:** 01 896 3111

**Email:** [klewis@tcd.ie](mailto:klewis@tcd.ie)

**For further information please follow the link below to access the Student Handbook:** <https://sway.office.com/USsnZGFNCAOuYFkf?ref=Link>

## G. Health and Safety

Students should stay up-to-date with the guidelines issued by College, Trinity College Dublin.

## H. Microbiology Moderatorship Learning Outcomes

Upon successful completion of this programme, students will be able to:

- Demonstrate in written and oral form a foundation level of knowledge and understanding of the biological, physical and quantitative sciences underpinning microbiology.
- Demonstrate in written and oral form an advanced level of knowledge and understanding of the principles of microbiology, including:
  - the nature and diversity of microorganisms and the methods of studying them

- the genetic, biochemical and physiological processes occurring in some of the best-characterised microorganisms
  - the interactions between some of the best-characterised pathogenic microorganisms and their hosts
  - the roles, uses and manipulation of microorganisms in health and disease, agriculture, biotechnology and the environment
  - the roles of microorganisms as model systems in related fields
  - the scientific method of investigation and testing of hypotheses and the distinction between scientific and unscientific arguments.
- Demonstrate in written and oral form a detailed, critical knowledge and understanding, supported by the use of advanced textbooks, journal articles and data sets, of one or more specialist areas, some of it at the current boundaries of the field.
  - Apply the knowledge and understanding gained to the critical analysis of experimental data, to sustaining evidence-based arguments on microbiological hypotheses, to solving microbiological problems and to designing microbiological experiments.
  - Pursue with a degree of independence an original microbiological research project including project planning; identification, appraisal and safe application of the appropriate experimental techniques; accurate recording and presentation of data; identification of the limitations of and sources of error in experiments; analysis and interpretation of complex data; formulation of logical conclusions; and appraisal of the project outcome in the context of related, published work.
  - Demonstrate proficiency in the application of computers to such problems as the searching of literature databases, analysis of biological sequence data, visualisation of biological macromolecules and analysis of experimentally acquired data.
  - Demonstrate recognition of the value of scientific inquiry and an understanding of the ethical responsibilities of scientists.
  - Demonstrate the capacity to apply international standards and practices within the discipline.



- Act effectively, under the guidance of senior scientists as necessary, as an individual, as part of a team, and/or in a multidisciplinary environment.
- Communicate information and ideas at a high level to both specialist and non-specialist audiences.
- Show that they have acquired the learning skills necessary to update their knowledge and to undertake further study with a high degree of autonomy.

## I. General College Information

### *General Information*

#### **Administration, health and wellbeing**

Please remember that there are supports in place for you at Trinity if you need help. In the case of administrative questions, please contact the Course Director, Dr Marta Martins ([mmartins@tcd.ie](mailto:mmartins@tcd.ie)) or Jayne Vance, Executive Officer ([magoverj@tcd.ie](mailto:magoverj@tcd.ie)). Module-related information will be available on your module outlines and on Blackboard.

If you are ill and unable to attend any face-to-face teaching activities, **please submit a medical certificate to the departmental office within 10 days of your illness.** Medical certification or other evidence of extenuating circumstances must support absence from class. Attendance and participation is assessed.

#### **STUDENT SERVICES**

You will find information on the full range of support services available to you, including the Health Centre, Student Counselling Services, Student Learning Development and Student Disability Service at the following link: <http://www.tcd.ie/students/supportservices/> and [Student Services Handbook](#).

If your cohort shares any concerns (around deadlines for instance), please communicate these to us via your class rep.

## ***Tutors***

All undergraduate students are assigned a tutor when they are admitted to College. Your tutor, who is a member of the teaching staff, will give confidential advice on courses, discipline, examinations, fees and other matters and will represent you before the College authorities should the need arise. For more information please see [https://www.tcd.ie/Senior\\_Tutor/fag/](https://www.tcd.ie/Senior_Tutor/fag/)

## ***Support Provision for Students with Disabilities***

Trinity has adopted a Reasonable Accommodation Policy that outlines how supports are implemented in Trinity. Student seeking reasonable accommodation whilst studying in Trinity **must register online with the Disability Service in their student portal my.tcd.ie.**

Based on appropriate evidence of a disability and information obtained from the student on the impact of their disability and their academic course requirements, the Disability Staff member will identify supports designed to meet the student's disability support needs. Following the Needs Assessment, the student's Disability Officer prepares an Individual Learning Educational Needs Summary (LENS) detailing the Reasonable Accommodations to be implemented. The information outlined in the LENS is communicated to the relevant School via the student record in SITS.

Student responsibilities for departmental assessments/course tests:

- Students are required to initiate contact with the School/Department and request reasonable accommodations as per their LENS report, or email received following their needs assessment for particular assessments for School/Department administered assessment. Students are advised to make contact at least two weeks prior to the assessment date to enable adjustments to be implemented. Please note - no reasonable accommodation can be provided outside the procedures outlined in the Trinity Reasonable Accommodation Policy.

## ***Societies and Activities***

College offers over 100 societies across the University. From arts, culture, politics and debating to gaming, advocacy and music, you're sure to find your niche. You can find a list of all student societies here: <http://trinitysocieties.ie>. College has 50 sports clubs in a range

of disciplines, from Basketball to Archery. Further details available at <https://www.tcd.ie/Sport/student-sport/>.

## ***Student Union***

### **TCDSU**

The Trinity College Students Union is a union for students, by students. They represent the undergraduate student body at College level. You can find further information about the union, and how to get involved, here: <https://www.tcdsu.org/> and can find information on the student representation structures here:

<https://www.tcdsu.org/aboutus>

## ***Emergency Procedure***

In the event of an emergency, dial Security Services on extension 1999 or 01 8961999 from a mobile phone. 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. 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). It is also recommended that students download the SafeZone app to access alerts for closures in inclement weather, etc.

## ***Data Protection***

**Please note that due to data protection requirements Staff in the Department of Microbiology cannot discuss individual students with parents/guardians or other family members.**

We are careful to comply with our obligations under data protection laws, you can find further information on how we obtain, use and disclose student data here:

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

## **Explanation of ECTS Weighting**

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

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

The European norm for full-time study over one academic year is 60 credits. Within Undergraduate courses 1 credit represents 20-25 hours estimated student input, so a 10-credit module will be designed to require 200-250 hours of student input including class contact time, assessments and examinations. Within Postgraduate courses, 1 credit represents 25 hours estimated student input, so a 10-credit module will be designed to require 200-250 hours of student input including class contact time, 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.

## Supports and Services

The Programme Administrator is your first port of call for all general queries. College also provides a range of administrative, academic and wellbeing supports and services to help smooth your route through college, these include the College Tutorial Service, Student-2-Student, College Health, the Disability Service and a range of other activities. You can find further information at the links below:

- Supports and Services in College: <https://www.tcd.ie/students/supports-services/> and [Student Services Handbook.pdf \(tcd.ie\)](#)
- Student Counselling [http://www.tcd.ie/Student\\_Counselling/](http://www.tcd.ie/Student_Counselling/)
- Health Centre <http://www.tcd.ie/collegehealth/>
- Sport <http://www.tcd.ie/Sport/> Clubs <http://www.tcd.ie/Sport/student-sport/> Societies <http://trinitysocieties.ie/>
- Student2Student <http://student2student.tcd.ie/>
- Student Learning Development <http://student-learning.tcd.ie/>
- Careers Advisory Service - <http://www.tcd.ie/Careers/>
- Graduate Studies Office - <http://www.tcd.ie/graduatestudies/>
- Mature Student Office - <https://www.tcd.ie/maturestudents/>
- Student Services Website and Information booklet – [https://www.tcd.ie/students/assets/pdf/Student%20Services%20Booklet%20\(web%20version\).pdf](https://www.tcd.ie/students/assets/pdf/Student%20Services%20Booklet%20(web%20version).pdf)
- Senior Tutor and Tutorial Service - <https://www.tcd.ie/seniortutor/>  
Remember, you can ask your Tutor for advice and guidance about anything and they will point you in the right direction  
<http://www.tcd.ie/seniortutor/students/undergraduate/financial-assistance/>
- Trinity Disability Service - <http://www.tcd.ie/disability/>
- The Library <http://www.tcd.ie/library/>
- Academic Registry <http://www.tcd.ie/academicregistry/>

# **Online resources**

## **Virtual learning environment (VLE)**

Online resources for all modules that students are enrolled in, including full module descriptors and compulsory reading lists, are stored in Blackboard available at <https://tcd.blackboard.com/>.

## **Student Information System (SITS) – Access via *my.tcd.ie***

Timetables are available online via your online portal <https://my.tcd.ie>. All communications from College will be sent to you via this portal which will give you access to an ‘in-tray’ of your messages. Details about modules may also be read on SITS. All fee invoices/payments, student levies and commencement fees will be issued online and all payments will be carried out online. You may view your personal details in the system, some sections of which you will be able to edit yourself. You will be able to check your examination results online via SITS.

For help with the system contact the Academic Registry  
<https://www.tcd.ie/academicregistry/contact/>

- Monday, Wednesday, Friday 9.30 – 5.00
- Tuesday and Thursday 9.30 – 6.00
- Email: [academic.registry@tcd.ie](mailto:academic.registry@tcd.ie)
- Tel: **+353 (0) 1 896 4500**

## **Email**

You are required to check your Trinity email address regularly as this is the primary mode of communication between staff and students outside of scheduled meetings.

Staff members deal with very high volumes of email correspondence so please include your name in the subject line and a phrase that makes the purpose of the email clear. If the matter is urgent, make sure to explain the reason for the urgency.

It is reasonable to expect a response from teaching staff between three and five working days after an email has been sent. If you have not received a reply by then a follow-up email or telephone call to the departmental office may be useful. Please note that emails that require careful consideration may take longer to process.

## Library Holdings and Resources

### Books and Articles

It is essential to equip yourself with books and you must acquire copies of set texts: you will not be able to depend on the library for such texts. Reading lists for each module are available from the beginning of term and you should start reading the texts that figure in the early weeks as soon as possible. Individual lecturers will give more information about the texts they assign. Occasionally, lecturers will post copies of key articles on Blackboard.

## Career Opportunities

Graduates in Microbiology find employment in pharmaceutical and medical research laboratories, as quality control officers in the preparation of drugs, in food processing and packaging, science publications, science journalism, and in public utilities. Such employment may involve working with the newer biotechnologies and using microorganisms for the commercial production of drugs, enzymes, antibiotics, vaccines and agricultural products. Many graduates go on to study for a higher research degree.

### MyCareer from Careers Advisory Service

An online service that you can use to:

- Apply for opportunities which match your preferences - vacancies including research options
- Search opportunities- postgraduate courses and funding
- View and book onto employer and CAS events
- Submit your career queries to the CAS team
- Book an appointment with your Careers Consultant

Simply login to MyCareer using your Trinity username and password and personalise your profile.

### Careers Advisory Service

### Connect with us

#### Opening Hours

**During term:** 9.30am - 5.00pm, Monday - Friday

**Out of Term:** 9.30am - 12.30pm & 2.15 - 5.00pm, Monday – Friday

Trinity College Dublin, 7-9 South Leinster Street, Dublin 2

01 896 1705/1721 | Submit a career query through MyCareer

Instagram: [www.instagram.com /trinity.careers.service](https://www.instagram.com/trinity.careers.service)

Twitter: @tcdcareers

Podcast: Graduate Stories Podcast

# Contact information

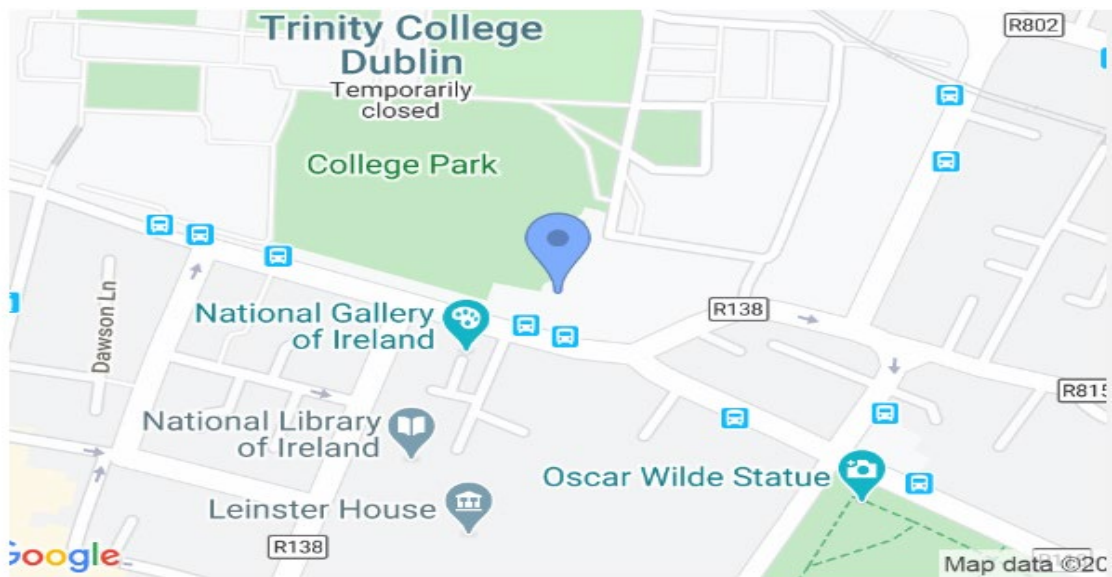
Address: Department Microbiology, Moyne Institute of Preventive Medicine,  
Trinity College, the University of Dublin  
Dublin 2  
Republic of Ireland  
Web: <https://www.tcd.ie/Microbiology/>  
Email: [magoverj@tcd.ie](mailto:magoverj@tcd.ie)

You may email to arrange an appointment with a member of staff to discuss matters related to their modules. Staff contact details can be found:

<https://www.tcd.ie/Microbiology/people/>

# Key locations

The Department of Microbiology is located in the Moyne Institute of Preventive of Medicine building overlooking the College Park.



If you need to navigate campus, please use <https://www.tcd.ie/Maps/map.php?b>