



Maynooth University Department of Biology

Second Year
Handbook
2024-2025



**Maynooth
University**
National University
of Ireland Maynooth

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Dear 2nd year Students,

Welcome back for the 2nd year of your studies!

We hope that you will enjoy your 2nd year course in the Department of Biology.

This handbook contains a lot of practical information to support you during your studies this year. Please read it carefully and keep a copy readily to hand, so that you can refer to the information in the handbook if required during the year.

We remind you that the marks you obtain for your 2nd year contribute 10% of your final degree mark awarded in 4th year. It is therefore very important that you engage with all 2nd year lecturing material, continuous assessment and exams to give yourself the best chance to do well in your degree.

We wish you all the best for your studies in Biology this year.

Department of Biology

INFORMATION FOR SECOND YEAR STUDENTS 2024-2025

AIMS OF THE DEPARTMENT OF BIOLOGY

- enhance our students' knowledge and understanding of important concepts in the Biological Sciences
- develop our students' analytical, critical, practical and communication skills
- foster our students' appreciation of environmental and other bioethical issues

Calendar 2024– 2025

FIRST SEMESTER

Tuesday 10th September
Monday 23rd September
Monday 28th October to Friday 1st November
Monday 4th November
Friday 20th December
Monday 23rd December to Friday 3rd January
Monday 6th January to Thursday 9th January
Not before Friday 10th January

Second Year Online Registration
Lectures commence
Study Week
Resumption of Lectures
Conclusion of First Semester
Christmas Vacation
Study Period
Examination period commences

SECOND SEMESTER

Tuesday 3rd February
Monday 17th March to Friday 21st March
Monday 21st April to Friday 25th April
Monday 28th April
Friday 9th May
Monday 12th to Thursday 15th May
Not before Friday 16th May

Lectures resume
Study Week
Easter Vacation
Resumption of Lectures
Conclusion of Second Semester
Study Period
Examination period commences

Students can change their **First Semester Selections in the first THREE weeks of Semester 1 and in the first TWO weeks of Semester 2 for all Second Semester selections.**

Changes **cannot be made after these deadlines** and students will have to take the modules, they initially registered for on the University System.

2nd YEAR TEACHING RESOURCE CHARGES

Fees for manuals and handbooks:

- **Biology** (includes **MH201 Biology, MH212 Science Education** and **MH210 Pharmaceutical & Biomedical Chem**):

€10.00 will be made as a contribution towards the cost of the manuals and handouts for the various lecture courses.

- **Biological & Biomedical Science (MH208) & Biological & Geographical Sciences (MH203):**

€15.00 towards the cost of the manuals and handouts for the various lecture courses.

- **Biotechnology (MH202):**

€10.00 towards the cost of the manuals and handouts for the various lecture courses.

Access to McGrawHill Connect Resources:

2nd year fees to access the McGrawHill Connect Resources are exempt for those who paid 1st year fees last academic year.

For all other students a €45 fee is due to cover resource charges including the McGraw Hill license fee (2-year duration) to access the McGraw Hill Connect Resources.

You may pay the charges online through "[Biology Shop](#)" any time before **7th October** with a credit or debit card.

DEPARTMENT OF BIOLOGY STAFF CONSULTATION TIMES

Teaching Staff	Phone ext*	Room	E-mail	Consultation Time
Prof. Paul Moynagh <i>Head of Department</i>	6105	B3.15	fidelma.byrne@mu.ie	By appointment only
Dr. Özgür Bayram	6879	2.31	ozgur.bayram@mu.ie	Tuesday 11.00-13.00
Dr. Marion Butler	3856	B3.18	marion.butler@mu.ie	Monday 11.30-13.30
Dr. Jim Carolan	6367	2.29	james.carolan@mu.ie	Monday 11.00-14.00
Dr. Noreen Curran	3834	1.18	noreen.curran@mu.ie	Friday after lecture
Dr. John Devaney	7496	2.27	john.devaney@mu.ie	Wednesday 11.00 - 13.00
Dr. Tara Dirilgen	7261	F2	tara.dirilgen@mu.ie	Thursday 14:00-16:00
Dr. Paul Dowling	6368	2.35	paul.dowling@mu.ie	Tuesday 11.00-13.00
Prof. Sean Doyle	3858	1.24**	sean.doyle@mu.ie	Tuesday 10.00-11.30
Prof. Karen English	6290	B3.17	karen.english@mu.ie	Monday 14.00-16.00
Dr. David Fitzpatrick	Teams	1.26**	david.fitzpatrick@mu.ie	Monday 10.00-11.00
Dr. Emmanuelle Graciet	6255	B1.25	emmanuelle.graciet@mu.ie	Tuesday 10.00-12.00
Dr. Andy Hogan	6118	B2.16	andrew.e.hogan@mu.ie	Monday 11.00-12.00
Dr. Grace Hoysted	Teams	2.25	grace.hoysted@mu.ie	Tuesday 10.00-12.00
Prof. Kevin Kavanagh	3859	2.39	kevin.kavanagh@mu.ie	Monday 14.00-16.00
Dr. Lorna Lopez	Teams	2.36	lorna.lopez@mu.ie	Monday 10.00-11.30
Dr. Abigail Maher	6117	F6	abigail.maher@mu.ie	Tuesday 11.00-12.00
Dr. Joanne Masterson	6369	B2.17	joanne.masterson@mu.ie	Monday 14.00-16.00
Dr. Eoin McNamee	6148	B2.19	eoin.n.mcnamee@mu.ie	Monday 10.00-11.30
Dr. Conor Meade	6386	2.34	conor.meade@mu.ie	Monday 12.00-13.00
Dr. Sinead Miggin	3855	B3.14	sinead.miggin@mu.ie	Tuesday 12.00-13.00
Dr. Dania Movia	Teams	F1	dania.movia@mu.ie	Tuesday 12.00-13.00
Dr. Jackie Nugent	3857	B1.23	jackie.nugent@mu.ie	Tuesday 10.00-12.00
Dr. Shirley O'Dea	6480	F7	shirley.odea@mu.ie	Monday 10.00-11.30
Dr. Diarmuid O'Maoileidigh	Teams	B3.08	diarmuid.s.omaileidigh@mu.ie	Monday 10:00-12:00
Prof. Kay Ohlendieck	3842	2.33	kay.ohlendieck@mu.ie	Monday 12.00-13.00
Dr. Rebecca Owens	3839	2.30	rebecca.owens@mu.ie	Wednesday 10.00-12.00
Dr. Mark Robinson	Teams	B1.21	mark.robinson@mu.ie	Wednesday 14.00-16.00
Dr. Martina Schroeder	6853	B2.18	martina.schroeder@mu.ie	Monday 10.00-11.00
Prof. Fiona Walsh	7246	B1.24	fiona.walsh@mu.ie	Thursday 11.30-12.30

*Phone prefix: **(01) 708** *except* numbers in **red which are prefixed by (01) 474...**

**=Located on ground floor Callan Building; F=Located in Foyer, 1st floor Callan Building; B=Biosciences & Electronic Engineering Building

The times when staff are normally available for consultation are given above. Appointments for other times must be arranged with individual lecturers. Staff with Teams listed under Phone No. can be contacted via Microsoft Teams.

Administrative Offices 2.40, 2.41 open daily: 9.30am-12.30pm; 2.30-4.30pm e-mail: biology.department@mu.ie

Programme Coordinators:

OMNIBUS SCIENCE:

Dr. Jackie Nugent

BIOTECHNOLOGY:

Dr. Shirley O'Dea

SCIENCE EDUCATION:

Dr. Jackie Nugent

BIOLOGICAL & BIOMEDICAL SCIENCES:

Prof. Kevin Kavanagh

BIOLOGICAL & GEOGRAPHICAL SCIENCES:

Dr. Conor Meade

INTERNATIONAL COORDINATOR

Dr. Paul Dowling

MAP (MATURE AND ACCESS STUDENTS) ACADEMIC ADVISOR:

Dr. Joanne Masterson

POSTGRADUATE COORDINATOR:

Dr. Martina Schroeder

MSC IN IMMUNOLOGY & GLOBAL HEALTH:

Dr. Sinead Miggin

For urgent matters please contact biology.department@mu.ie to make an appointment with the relevant Programme Coordinators.

COORDINATOR CONTACT DETAILS

CODE	NAME	Coordinator	e-mail address
BI201	Biochemistry	Emmanuelle Graciet	Emmanuelle.graciet@mu.ie
BI203	Animal Physiology	Paul Dowling	paul.dowling@mu.ie
BI204	Evolutionary Biology	Jim Carolan	james.carolan@mu.ie
BI205	Biotechnology Processes 1	David Fitzpatrick	david.fitzpatrick@mu.ie
BI206	Cellular Biotechnology	Karen English	karen.english@mu.ie
BI207	Environmental Biology	Tara Dirilgen	tara.dirilgen@mu.ie
BI210	Molecular Biology of the Cell	Joanne Masterson	joanne.masterson@mu.ie
BI220	Intro. to Field Ecology Methods	Conor Meade	conor.meade@mu.ie
BI301	Introduction to Immunology	Sinead Miggin	Sinead.miggin@mu.ie
BI308	Proteomics	David Fitzpatrick	david.fitzpatrick@mu.ie

Second Year Committee: terms and conditions to be decided. Also, the Biology Department's gender equality steering committee may engage with the student reps in focus groups during the academic year.

The members may include:

- BI201 and BI210 module coordinators and
- 6 elected second year student academic reps (MSU to hold elections):
 - 2 Science
 - 1 Biotechnology
 - 2 Biological Sciences
 - 1 Science Education
 - 1 Pharmaceutical & Biomedical Science
 - 1 Biological and Geographical Sciences

Problems and matters of interest will be discussed.

If you have issues which you would like to be considered, you should tell your representative.

REGISTRATION COURSE LIST

SUBJECT: BIOLOGY

Year of Study: 2nd

Qualification: BSc Science MH201

BSc Biological & Biomedical Sciences MH208

BSc Science (with Education) MH212

BSc Physics with Astrophysics MH204

Registration will take place online, as instructed by the Registrar's Office. This document is for information only.

BSc Science (MH201), BSc Science (with Education) (MH212), BSc Biological & Biomedical Sciences (MH208) and BSc Physics with Astrophysics (MH204) students must take all compulsory modules listed below (20 credits) to continue Biology into 3rd year.

Module name	Credits	Semester	Module code
Semester 1 – Compulsory Modules You are required to take all compulsory modules			
Biochemistry	5	1	BI201
Animal Physiology	5	1	BI203
Semester 2 – Compulsory Modules You are required to take all compulsory modules			
Molecular Biology of the Cell	5	2	BI210
Evolutionary Biology	5	2	BI204

ELECTIVES: Students may choose to take an elective pairing (two 5 credit modules) in lieu of two 5 credit optional modules in one of their subjects if they wish.

Students who choose to take an elective pairing in Biology CANNOT PROGRESS in *EITHER* Biology *OR* Biological & Biomedical Science.

Registration for electives will be subject to enrolment limitations, and also must be compatible with the timetabling and other requirements of your main subjects. Some combinations of electives and subjects are excluded.

Module name	Credits	Semester	Module code
Semester 1 – Compulsory Modules You are required to take all compulsory modules			
Biochemistry	5	1	BI201
<i>Elective</i>	5	1	See coursefinder in your chosen degree
Semester 2 – Compulsory Modules You are required to take all compulsory modules			
Molecular Biology of the Cell	5	2	BI210
<i>Elective</i>	5	1	See coursefinder in your chosen degree

SUBJECT: BIOTECHNOLOGY

Year of Study: 2nd

Qualification: BSc Biotechnology MH202
BSc Pharmaceutical and Biomedical Chemistry MH210

Registration will take place online, as instructed by the Registrar's Office. This document is for information only.

You must take all compulsory modules listed below. You must take a total of **20** Credits.

Module name	Credits	Semester	Module code
Semester 1 – Compulsory Modules You are required to take all compulsory modules			
Biochemistry	5	1	BI201
Biotechnology Processes 1	5	1	BI205
Semester 2 – Compulsory Modules You are required to take all compulsory modules			
Molecular Biology of the Cell	5	2	BI210
Cellular Biotechnology	5	2	BI206

SUBJECT: BIOLOGICAL SCIENCES

Year of Study: 2nd

Qualification: BSc Biological & Biomedical Sciences MH208

Registration will take place online, as instructed by the Registrar's Office. This document is for information only.

You must take all compulsory modules listed below. You must take a total of **20** Credits.

Module name	Credits	Semester	Module code
Semester 1 – Compulsory Modules You are required to take all compulsory modules			
Environmental Biology	5	1	BI207
Introduction to Immunology	5	1	BI301
Semester 2 – Compulsory Modules You are required to take all compulsory modules			
Cellular Biotechnology	5	2	BI206
Proteomics	5	2	BI308

SUBJECT: BIOLOGY

Year of Study: 2nd

Qualification: BSc Biological & Geographical Sciences MH203

Registration will take place online, as instructed by the Registrar's Office. This document is for information only.

You must take all compulsory modules listed below. You must take a total of **20** Credits.

Module name	Credits	Semester	Module code
Semester 1 – Compulsory Modules You are required to take all compulsory modules			
Animal Physiology	5	1	BI203
Environmental Biology	5	1	BI207
Semester 2 – Compulsory Modules You are required to take all compulsory modules			
Evolutionary Biology	5	2	BI204
Introduction to field ecology methods and analysis	5	2	BI220

THE 7 SKILLS UNDERGRADUATE WRITING PROGRAMME

Assignments and writing exercises associated with the 7 Skills writing programme will be part of BI201, BI210 and BI220 (*Biological and Geographical Sciences* only). These assignments and their format will be introduced to students at the beginning of each semester during the dedicated 2nd year writing workshops.

As introduced to students in 1st Year, the 7 Skills programme is a learning and assessment framework that helps develop core science writing skills for MU Biology students. There are 7 target skills in two broad skills areas termed the 'Writing Process' and 'Critical Engagement'. These are:

The Writing Process

Layout

Citation

Originality

Composition

Critical Engagement

Use of Evidence

Information Analysis

Demonstration of Understanding

The

core guideline document for the 7 Skills programme and other supporting documents are available on the **Year 2** tab in the dedicated Moodle page '[MU Biology 7 Skills Home 2025](#)'.

All students are required to read and be familiar with the guidelines in the *Technical Description of the 7 Writing Skills* document.

The learning objective for **Year 1** of the programme is to provide a foundation in the key skills of the *Writing Process*, under the learning banner 'Organise and Paraphrase'. For **Year 2**, the learning objective is to consolidate on basic skills from Year 1 and broaden the focus onto skills in *Critical Engagement*, and the learning banner is 'Cite and Compare'.

The 7 Skills framework is also used for learning and assessment of selected **practical write-ups**, which will be notified to you by your module co-ordinators. A key aspect of the 7 Skills programme is the use of **grading rubrics**. Such rubrics will be used to grade practical write-ups. Students will be presented in advance with guidelines and assessment criteria - in the form of a rubric, based on the 7 skills framework. Assignment marking and feedback are both provided via the grading rubrics. It is **very important that you analyse these rubrics carefully**, so you have a clear understanding of the expectations and can benefit from it before even submitting your assignment. Good understanding of the rubrics will help you perform better!

Further details on the 7 Skills Programme in Year 2 assessment will be provided in an introductory *Writing Workshop* at the beginning of semester 1.

MOODLE

[Moodle](#) is the University's online learning environment and is accessible both on and off campus. We use it for: (a) posting notices and announcements (b) to pass on information/ resources about individual modules and (c) recording absences and medical conditions.

You will have access to all MOODLE areas relating to the modules for which you are registered, as well as to general information areas:

- [All Biology Students 2025](#) This page is also used for recording absence and submitting supporting documentation.
- [MU Biology 7 Skills Home 2025](#)

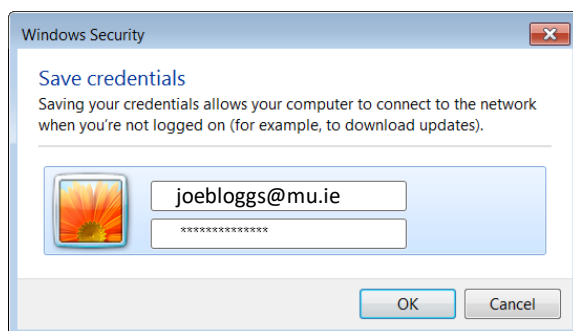
You should become familiar with the essentials of MOODLE as soon as possible.

Notices: Information for students will be posted on MOODLE and can also be notified by e-mail to your mumail address. This will include information on courses, questionnaire results etc.

Maynooth IT Services: We strongly recommend that you avail of the IT Services if you have not already done so, to familiarise yourselves with the word-processing and spreadsheet packages available on all IT computers. The Maynooth IT Services run special courses and tutorials throughout the year. Alternatively, The European Computer Driving License (ECDL), which includes modules on word processing and spreadsheets, is available on network share through the Maynooth IT Services. Further information can be found on the IT Services web pages: <https://www.maynoothuniversity.ie/it-services>

E-mail: You should check your MU email account **on a regular (daily) basis**. Messages to individual students from Staff will normally be made via e-mail, using the student's MU e-mail address. Delete messages regularly to ensure that your e-mail account is not over quota.

Connecting to Maynooth University wireless networks: Maynooth University along with many other institutions broadcasts the eduroam wireless signal for students and staff. Use your wireless client to connect to eduroam and when prompted enter your Maynooth username and password.



You may need to enter your credentials twice when connecting for the first time. Some users will see prompts regarding certificates and should choose the "Accept \ Continue" option at this prompt.

If you enter your username in the format of **username@mu.ie** (not an email address) your Maynooth account will allow you to connect to Eduroam in other participating institutions for example in UCD, DCU, TCD and many others around the world.

If you choose to connect to the wireless network called “Maynooth University” when you start to browse the internet you will be prompted to enter your username and password. Once entered you will have access to network resources. We recommend connecting to the Eduroam signal.

This document is designed to clarify:

- how your lecturers and module coordinators will communicate with the class
- how your lecturers and module coordinators will communicate with individual students
- how students can best communicate with lecturing staff and with each other

1. General guidelines

- you should **indicate your name and student number** in any e-mail you send to a lecturer.
- you should always check that your question(s) has/have not already been answered in documents posted on Moodle and Teams, or in a previous e-mail or module announcement.
- regarding general questions on module content, you should seek to find module information on Course Finder first.
- unless it is an emergency, you should seek to contact your lecturers and module coordinators during normal working hours and days.
- members of staff will do their best to answer new queries within 48 hours (during working days). Please allow at least 48 hours for a reply to your e-mail before contacting the same person or a different staff member in relation to the same query. If your query has already been answered in a previous e-mail or post, it may take longer to reply to your e-mail.

2. Class announcements by lecturers and module coordinators

Class announcements can be done using three platforms:

- e-mails to the class. We will always use your MU e-mail address.
- and/or Lecturers Announcements on a specific module's Moodle page
- and/or using the chat function in a specific module page on Teams

Class announcements can be used by your lecturers to send reminders, but also to answer queries received by e-mail from individual students, if the query is relevant to the whole class. In this case, you may not receive an individual reply to your original e-mail.

It is your responsibility to check e-mails regularly, as well as Moodle and Teams. Each of these platforms have the option of sending notifications. We encourage you to turn on these automatic notifications.

A lecturer or module coordinator may not prioritize replying to your e-mail if the answer is already available to the class.

3. Lecturing staff communication with individual students

If a query received by e-mail does not regard the whole class, lecturing staff will do their best to answer to the student individually in a timely manner (e.g. within a couple of working days). While we are happy to help you study and ensure that we provide an environment that promotes learning, some queries are not acceptable and cannot be answered.

What queries are NOT acceptable?

- asking for answers or corrections to previous exam questions. This query is not acceptable, because it is your work that is assessed and so your submissions need to reflect your own writing, ideas and thoughts.
- asking for details of calculations, answers or corrections for lab-write ups before these are handed in. This query is not acceptable, because it is your work that needs to be assessed.

Practical-related questions should be asked to demonstrators or lecturers during the lab sessions (in teaching labs or on Teams).

- demonstrators should not be asked to provide details of calculations or to pre-correct your lab write ups at any time. All questions to demonstrators should be asked during the lab sessions (online or in teaching labs).
- asking for slides or lecture notes of a module that you are not registered for.

4. Communication among students in a class

Students in a class can use multiple 'official' platforms to communicate among themselves. We encourage these because they foster group work and mutual help. Posts and communications on different platforms (Moodle, Teams, e-mails) should be linked to the course/module and be courteous and respectful. Note that these platforms are accessible to the whole class, including lecturers.

Platforms available:

- Class discussion forum on a specific module's page on Moodle
- Teams chat on a specific module's Teams group

COURSES/LECTURE MODULE DESCRIPTORS

A brief outline of the courses is given on pages 10-13, however, for a full description including Learning Outcomes please check the module descriptors on the [Course Finder](#) webpage.

In order to complete second year Biology successfully, it is essential that you work hard and study regularly and conscientiously your lecture material, whether it is provided online or in class.

Make sure that you have **your own** good set of lecture notes, as lectures provide the framework for the course and exams will be based on them. Getting notes from friends is **not satisfactory**. 'Potted course notes', 'grinds' or GenAI-generated material (e.g. Chat-GPT) should also be avoided. Courses are frequently changed in content and emphasis so there is **no substitute** for your own notes and lecture attendance.

It is necessary to read through your lecture notes as soon as possible after each lecture. If there is anything you do not understand sort it out by discussing it with friends, consulting a textbook or asking a lecturer. Remember that you have online access to McGrawHill and the Connect system during all of your 2nd year in Biology. Supplement your notes with extra information obtained by consulting books. Lecturers who will be setting and marking the exams are more impressed with an answer with evidence of extra reading than one which only restates the lecture notes.

Books and Handouts:

There is a wide range of biology books available in the library and as Ebooks, many of which provide excellent background material for the course. Lecturers will recommend specific texts to accompany their courses. Handouts are also provided to supplement the material of most lecture courses. Handouts where provided, are intended to **supplement** the lecture material, not as an alternative.

SECOND YEAR COURSES IN BIOLOGY 2024/25

For full module descriptions including Learning Outcomes, assessment, etc. please check the module descriptors on the [Course Finder](#) webpage:

BI201 BIOCHEMISTRY. This module will have a strong emphasis on proteins, the regulation of their activity and their participation to cellular processes. There will also be a particular focus on essential metabolic pathways, which will be described in detail, but also presented within a physiological context. An effort will be made to present simple experimental evidence for essential concepts. Fundamental experimental methods in biochemistry will also be presented. Tutorials will focus on developing problem-solving and analytical skills. [BI201](#)

BI203 ANIMAL PHYSIOLOGY. Topics covered include: principles of molecular, cellular and integrative physiology. An introduction to the organization of nervous systems and endocrine systems in vertebrates. Principles of membrane potential, action potential generation and propagation in neurons. Principles of synaptic transmission. Physiology of contraction in striated and smooth muscle. Physiology of circulatory systems, gas-exchange mechanisms, energy metabolism, osmoregulation and excretion. Physiology of sensory systems including the biology of eye design, colour vision, sound and hearing, mechanoreception, olfaction and taste. [BI203](#)

BI204 EVOLUTIONARY BIOLOGY. Topics covered include: origin of life, origin of eukaryotes, origin of photosynthesis, origin of animals, the colonization of land. Species concepts and modes of speciation. Macroevolutionary patterns and key evolutionary transitions: evolutionary trends and emerging phylogenetic relationships in animals and plants. Population genetics: the Hardy-Weinberg equilibrium; evolutionary forces in natural populations - mutation, migration, natural selection and genetic drift. The McGraw-Hill Connect System will be utilized throughout the module. [BI204](#)

BI210 MOLECULAR BIOLOGY OF THE CELL. Major topics covered include: Cell model systems in research; Macromolecular composition of cells; Heredity and DNA as the genetic material; Genes and genomes, organization and structure; DNA replication, DNA damage and repair, transcription and translation in prokaryotes and eukaryotes. The second half of the module will cover the nucleus, the secretory pathway, protein targeting, post-translational modifications, membrane proteins, cell signaling, gene regulation, the cytoskeleton and the cell cycle. [BI210](#)

SECOND YEAR COURSES IN BIOTECHNOLOGY/PHARMACEUTICAL CHEMISTRY

2024/25

For full module descriptions including Learning Outcomes, assessment, etc. please check the module descriptors on the [Course Finder](#) webpage:

BI201 BIOCHEMISTRY. This module will have a strong emphasis on proteins, the regulation of their activity and their participation to cellular processes. There will also be a particular focus on essential metabolic pathways, which will be described in detail, but also presented within a physiological context. An effort will be made to present simple experimental evidence for essential concepts. Fundamental experimental methods in biochemistry will also be presented. Tutorials will focus on developing problem-solving and analytical skills. [BI201](#)

BI205 BIOTECHNOLOGY PROCESSES 1. Introduction to biotechnology concepts and products; bioreactor design and operation; bioreactor and media sterilisation; process biochemistry (downstream processing) including centrifugation, filtration and process-scale protein purification; lyophilisation. [BI205](#)

BI206 CELLULAR BIOTECHNOLOGY. Topics covered include: Basic anabolic and catabolic pathways in microbial cells, glycolysis, Krebs cycle, oxidative phosphorylation, synthesis of amino acids, nucleic acids, fats, carbohydrates, products of fermentation – ethanol, lactic acid. *In vivo* culture of animal cells: applications of animal cells; production of recombinant proteins, stem cells, bioethical issues regarding use of human stem cells. Stem cell and cell based therapy applications including chimeric antigen receptor (CAR)-T cells. Cell based model systems in disease modelling. [BI206](#)

BI210 MOLECULAR BIOLOGY OF THE CELL. Major topics covered include: Cell model systems in research; Macromolecular composition of cells; Heredity and DNA as the genetic material; Genes and genomes, organization and structure; DNA replication, DNA damage and repair, transcription and translation in prokaryotes and eukaryotes. The second half of the module will cover the nucleus, the secretory pathway, protein targeting, post-translational modifications, membrane proteins, cell signaling, gene regulation, the cytoskeleton and the cell cycle. [BI210](#)

SECOND YEAR COURSES IN BIOLOGICAL & BIOMEDICAL SCIENCES 2024/25

For full module descriptions including Learning Outcomes, assessment, etc. please check the module descriptors on the [Course Finder](#) webpage:

BI206 Cellular Biotechnology. Topics covered include: Basic anabolic and catabolic pathways in microbial cells, glycolysis, Krebs cycle, oxidative phosphorylation, synthesis of amino acids, nucleic acids, fats, carbohydrates, products of fermentation – ethanol, lactic acid. In vivo culture of animal cells: applications of animal cells; production of recombinant proteins, stem cells, bioethical issues regarding use of human stem cells. Plant metabolism and development, role of hormones in regulating plant development and plant cell culture. [BI206](#)

BI207 Environmental Biology. Application of ecological concepts, theories and methods to the management of biological resources. The scope of the course includes topics such as pollution biology; conservation biology; wildlife and habitat management; restoration ecology; and the applied ecology of nuisance species (e.g. pests and invasive species) environmental microbiology and One Health of disease. [BI207](#)

BI301 Introduction to Immunology. Topics covered include: cellular and non-cellular components of the innate and adaptive immune system, the structure and downstream signalling pathways of the B cell receptor (including VDJ rearrangements), T cell receptor, cytokine receptors and pathogen recognition receptors, the role of the professional antigen presenting cells in initiating the adaptive immune response, the roles of the effector T cells and B cells in the immune response to pathogen, central tolerance, the structure and role of Major Histocompatibility complex (MHC) Class I and Class II molecules, the antigen processing pathways. [BI301](#)

BI308 Proteomics. Topics covered include: Protein characterisation and analysis including one-dimensional/two-dimensional (1D/2D) gel electrophoresis, selective enzymatic/chemical protein fragmentation, peptide purification and amino acid sequencing; Matrix Assisted Laser Desorption/Ionisation- Time of Flight (MALDI-ToF) mass spectrometry; genome database mining; gene/protein identification by alignment protocols; biologicals and biopharmaceuticals; implications of contamination/impurities in therapeutic products. Trends in the production of therapeutic proteins. [BI308](#)

SECOND YEAR COURSES IN BIOLOGICAL & GEOGRAPHICAL SCIENCES 2024/25

For full module descriptions including Learning Outcomes, assessment, etc. please check the module descriptors on the [Course Finder](#) webpage:

BI203 ANIMAL PHYSIOLOGY. Topics covered include: principles of molecular, cellular and integrative physiology. An introduction to the organization of nervous systems and endocrine systems in vertebrates. Principles of membrane potential, action potential generation and propagation in neurons. Principles of synaptic transmission. Physiology of contraction in striated and smooth muscle. Physiology of circulatory systems, gas-exchange mechanisms, energy metabolism, osmoregulation and excretion. Physiology of sensory systems including the biology of eye design, colour vision, sound and hearing, mechanoreception, olfaction and taste. [BI203](#)

BI204 EVOLUTIONARY BIOLOGY. Topics covered include: origin of life, origin of eukaryotes, origin of photosynthesis, origin of animals, the colonization of land. Species concepts and modes of speciation. Macroevolutionary patterns and key evolutionary transitions: evolutionary trends and emerging phylogenetic relationships in animals and plants. Population genetics: the Hardy-Weinberg equilibrium; evolutionary forces in natural populations - mutation, migration, natural selection and genetic drift. The McGraw-Hill Connect System will be utilized throughout the module. [BI204](#)

BI207 ENVIRONMENTAL BIOLOGY. Application of ecological concepts, theories and methods to the management of biological resources. The scope of the course includes topics such as pollution biology; conservation biology; wildlife and habitat management; restoration ecology; and the applied ecology of nuisance species (e.g. pests and invasive species) environmental microbiology and One Health of disease. [BI207](#)

BI210 MOLECULAR BIOLOGY OF THE CELL. Major topics covered include: Cell model systems in research; Macromolecular composition of cells; Heredity and DNA as the genetic material; Genes and genomes, organization and structure; DNA replication, DNA damage and repair, transcription and translation in prokaryotes and eukaryotes. The second half of the module will cover the nucleus, the secretory pathway, protein targeting, post-translational modifications, membrane proteins, cell signaling, gene regulation, the cytoskeleton and the cell cycle. [BI210](#)

BI220 INTRODUCTION TO FIELD ECOLOGY METHODS AND ANALYSIS

The course is taught over 6 individual training workshops, each focusing on a specific skill, technique or information resource, supplemented by independent and group learning. These workshops cover a number of techniques, including -inter alia - animal identification, plant identification, biodiversity assessment, field sampling, habitat surveys, field GIS tools, data analysis, report writing, understanding and working with legal conservation designations, and data presentation. Exercises will involve a mixture of laboratory, on-campus and off-campus settings. Tuition will be provided by MU staff, supplemented by Experts from external organisations involved biodiversity analysis and assessment. A significant element in the course is group-based learning activities. Module grading is entirely by continuous assessment. Students are required to submit individual reports and exercises based directly on workshop activities, as well as individual and group-based learning assignments. [note: this is a skills-based module comprising continuous assessment only, there is no written exam]. [BI220](#)

**INFORMATION REGARDING CONTINUOUS
ASSESSMENT, PRACTICALS AND ABSENCES IN
BIOLOGY**

REGULATIONS & REQUIREMENTS CONCERNING PRACTICAL CLASSES

- (1) Undergraduate Biology is a largely practical subject. It is **compulsory** that you attend **all** classes and perform the exercises in the Practical Biology set for each class.
- (2) Students with a medical condition/allergy, or who are pregnant/breastfeeding, are requested to inform the Senior Demonstrator (Patricia.McDonnell@mu.ie). If the medical condition/situation changes during the year, please inform the Senior Demonstrator. All staff involved in this process will respect student confidentiality, ensuring that this information is provided to the relevant personnel on a need-to-know basis only.
- (3) Practical Classes will begin at exactly 14.05 for afternoon session (Wednesday Biological & Biomedical Science Practicals commence at 15.05). Students are expected to be present and prepared with lab coats and safety glasses at this time. For safety reasons, usually no admittance will be allowed after these times. **Latecomers may be excluded.**
- (4) **Laboratory coat. You will NOT be allowed into the lab without a lab coat when chemicals or biological agents are used.**
- (5) **Safety glasses** are required when any chemical or biological agent is used. These may be purchased in the practical session. Prescription glasses are not safety glasses – contact your optician if you want to purchase safety glasses with prescription lenses or your demonstrator if you want to purchase alternative safety glasses which fit over prescription glasses.
- (6) You should read the relevant section of the practical manual **before** the practical.
- (7) Health and safety procedures must be adhered to at all times. Instruction from demonstrators and technical staff must be obeyed at all times. Failure to do so will result in automatic expulsion from the laboratory and the forfeit of any grades associated with that practical session and an “unexplained absence” will be awarded.
- (8) Laboratory reports must be handed in and/or submitted on Moodle for correction on the date instructed. **Permission to submit a late report/assignment** for any practical must be obtained from the **Senior Demonstrator** (Patricia.McDonnell@mu.ie) either **before** the submission deadline or **within 24 hours** of the deadline.
- (9) Each student has a responsibility to ensure that all Laboratory Reports are returned with a definite mark/grade by their demonstrator. Any errors should be made known immediately to the demonstrator and/or the Senior Demonstrator. *Mistakes cannot be rectified once grades are uploaded onto the university system!*
- (10) You should read your marked practical write-ups so that you can learn from your mistakes and so that you will be prepared for the questionnaires which make up the bulk of your practical assessment.

BIOLOGY LABORATORY SAFETY

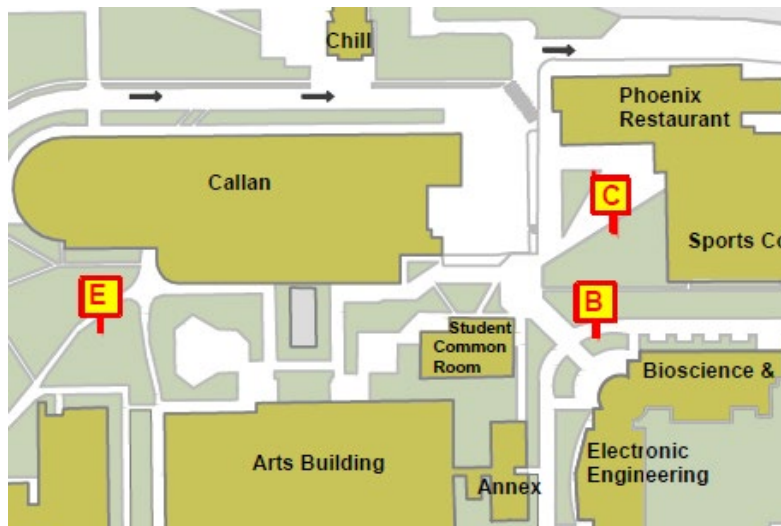
For the protection of yourself and others please read the following notes carefully and obey the instructions implicitly.

COVID-19 GUIDANCE:

- **If you have COVID:** do not come on campus, follow the HSE guidance for self-isolation (<https://www2.hse.ie/conditions/covid19/>)

FIRE:

- On hearing the fire alarm or on discovering a fire, stop what you are doing and raise the alarm.
- If you are using a Bunsen, switch it off.
- Leave in an orderly manner and close the door behind you. **Do not use the lift. Do not stop to collect your belongings.**
- Make your way to the nearest assembly point B, C or E (see the map below).
- Remain at this location until instructed by security staff to return to the building.



PERSONAL PROTECTION:

- Do not smoke, vape, eat, drink or chew gum in the laboratory. University Policy prohibits storage of food and drink and food in all laboratories.
- You are required to wear a Howie style white laboratory coat with all buttons closed and sleeves fully extended at all times.
- You must wear safety glasses at all times. Please contact your demonstrator if you need to purchase a pair.
- You will be provided with gloves for your personal protection. Unfortunately, they only protect the wearer and can easily contaminate surfaces. Remove all gloves before leaving the laboratory, even if for a brief period. Remove gloves while using laboratory equipment unless there are specific hazards present. Do not wear gloves when using Bunsen burners unless specifically instructed by the lecturer in charge.
- If you need to transfer samples or equipment to another laboratory, remove one glove and used the un-gloved hand to open doors etc.
- Sandals, flip-flops and other open footwear are prohibited when chemical and biological agents are used.
- Long hair must be tied back.

- You must wash your hands immediately at the end of the practical.

PERSONAL INJURY:

- You must cover any cuts or grazes with a plaster before starting any lab work. Please inform your demonstrator. There are first aid cabinets in all teaching laboratories.
- Report any accident or injury, however trivial, to a demonstrator.
- Specific hazards or disposal instructions for chemicals and/or materials will be explained to the class, if any. You must follow these instructions carefully.
- Please inform your demonstrator if you have any concerns relating to a pre-existing medical condition, or if chemical/biological agents used in a practical session may affect any pre-existing medical condition.

GENERAL SAFETY:

- In accordance with university regulations, you will be expelled from the practical session if you do not conduct yourself in an orderly manner, or if you deliberately act in an unsafe manner.
- Students are allowed in the teaching laboratory only during timetabled laboratory sessions. You may not use the laboratory at other times unless you obtain permission from the Senior Demonstrator.
- Undergraduate students should not enter the preparation laboratory, research laboratories, growth rooms, storerooms etc. without permission.
- Proper regard to the correct use of equipment is required from all students. Intentional interference with safety signs and safety features of any equipment is a criminal offence.
- We expect you to leave your bench place, including sink, clean and tidy.

You should be aware that we frequently transport chemicals and biological materials around the department. Therefore, it is very important that you walk slowly and carefully in the corridors.

N.B. Follow the instructions of your demonstrator at all times. Please check with your demonstrator if you have any doubts or questions in relation to safety. Notify your demonstrator or Senior Demonstrator if you have any health issues which you feel may be impacted by any practical.

REGULATIONS CONCERNING CONTINUOUS ASSESSMENT (CA) & NOTIFICATION OF ABSENCES

It is the responsibility of all students to be available for class throughout Semesters 1 and 2, between the hours of 09:00-18:00 Monday to Friday, in addition to occasional classes outside these hours (e.g. field trips, academic visits).

The CA component of a module contributes significantly to the final module mark. In all 2nd year modules, with the exception of BI220 (MH203 students only) the CA component is worth 40% of the final mark for the module, and the theory exam contributes 60% of the final mark. In addition, students who engage with the CA components generally do better in the theory exam than students who do not engage with the CA.

Module code	CA/theory point distribution
BI201	40/60
BI203	40/60
BI204	40/60
BI205	40/60
BI206	40/60
BI207	40/60
BI210	40/60
BI220*	100/0
<i>*BI220 is a practical skills-based module, with 100% CA</i>	

Students taking 3rd year modules (e.g. BI301 and BI308) should check the CA/theory point distribution on [Course Finder](#)

The module coordinator will set the marking schemes for the CA for each module. No repeat option for the CA component of a module will be available within an academic year.

FAILURE TO ATTEND AND ENGAGE IN THE CONTINUAL ASSESSMENT COMPONENT OF MODULES WILL HAVE A SIGNIFICANT EFFECT ON YOUR FINAL MODULE GRADES AND MAY BE COMMENTED ON IN STUDENT REFERENCES.

NOTE: students with verifiable, extenuating, circumstances that affect their CA performance should make their situation known to the Senior Demonstrator (Patricia.McDonnell@mu.ie), **within term time** in order for any, or appropriate, consideration to CA marks to be made.

Please read and take note of your responsibilities relating to absence as, in signing a Notification of Absence Form, you agree that you have read and understood them.

Note that:

- **Submission of an Absence Form does not automatically mean that the absence is acceptable** and that it is at the discretion of the department as to whether any absence is

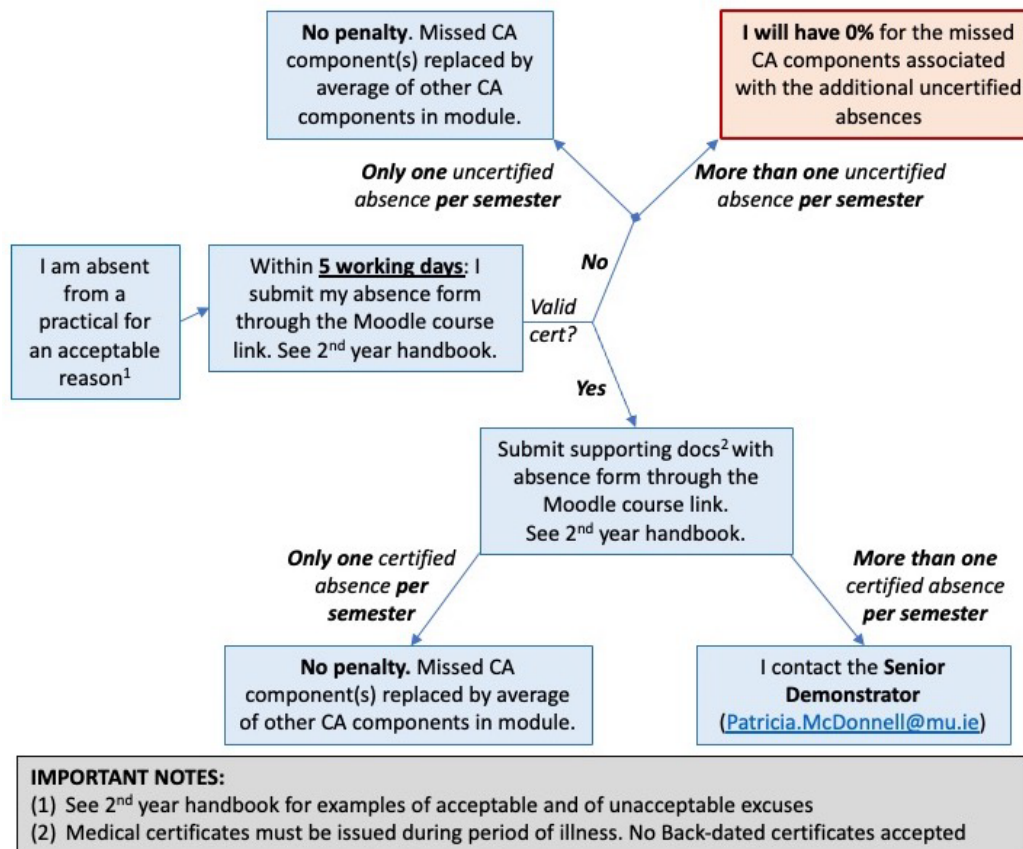
deemed acceptable or unacceptable. If the absence should be deemed as unacceptable it will be recorded as such and count against the minimum attendance level.

- Although a specific individual absence may be deemed acceptable, if your overall attendance and submission of work drops below the minimum level prescribed by your department, then **disciplinary procedures will still be followed**.
- **Notification of absence, whether it is deemed acceptable or unacceptable, does not constitute grounds for appeal** against a course or programme failure or failure to progress to the next stage of study.

Laboratory practicals/reports/assignments - absences or late submissions:

1. Attendance at **ALL** laboratory practicals in a module is compulsory.
2. If you are unable to attend a laboratory practical you must advise the Department of Biology by submitting an on-line **Absence Form** through the Moodle course [All Biology Students 2025](#) either **before** your absence or **within FIVE working days** of your absence. When submitting the absence form you will also be able to upload copies of medical certificates or other relevant supporting documentation if you have it. Instructions on how to do this are on the Moodle page indicated above. Failure to do this may result in the absence being counted as unacceptable and you will be given a mark of **zero** for the missed practical.
3. If you are submitting a medical certificate, **the cert must be issued during the period of illness**.
NOTE: BACK-DATED MEDICAL CERTIFICATES WILL NOT BE ACCEPTED FOR ANY REASON.
4. No more than **ONE** missed practical **per semester (NOT MODULE)** will be accepted without verification of extenuating circumstances. Examples of the kind of circumstances where absence **may** be deemed as 'acceptable' and 'unacceptable' for non-attendance are shown below.
5. If you lodge **more than one absence certificate in a semester** you will need to contact the **Senior Demonstrator** (Patricia.McDonnell@mu.ie) to supply appropriate certification and/or explain your absences.
6. Laboratory reports/assignments must be submitted *via* the appropriate on-line submission portal on Moodle by the date and time instructed.
7. **Permission to submit a late report/assignment** for any practical must be obtained from the **Senior Demonstrator** (Patricia.McDonnell@mu.ie) either **before** the submission deadline or **within 24 hours** of the deadline.
8. Laboratory reports/assignments approved for late submission **must be submitted within one week** of the original deadline in order for them to be graded by the laboratory demonstrator.
9. Laboratory reports/assignments submitted more than one week after the original deadline **may** be graded by the relevant lecturer and the marks for this late report **will be capped at 40%**.
10. Only one late report/assignment submission will be allowed *per* module without relevant supporting documentation to justify subsequent late submissions.

PLEASE NOTE THAT THE UNIVERSITY PLAGIARISM POLICY APPLIES TO ALL LABORATORY PRACTICAL REPORTS AND ASSIGNMENTS.

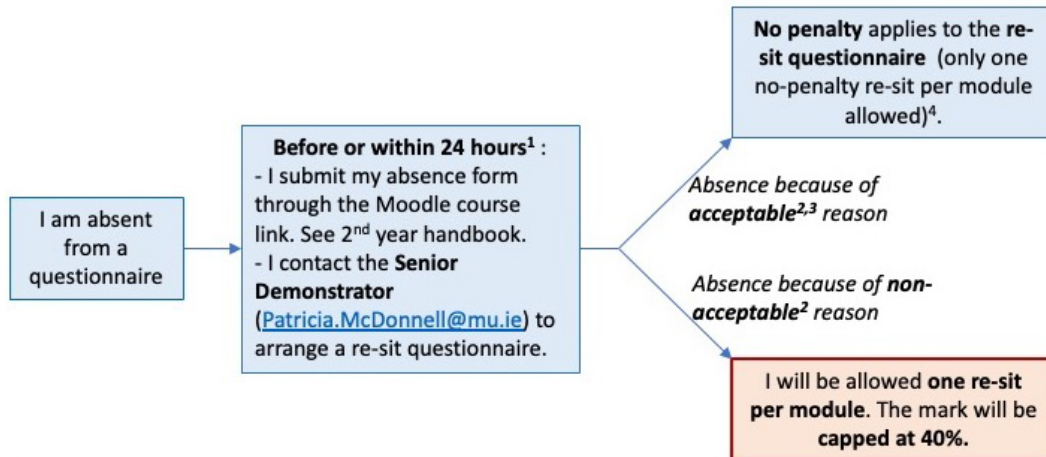


Questionnaires - absences:

- Attendance at **ALL** questionnaires in a module is compulsory.
- If you are unable to attend a module questionnaire for **ANY** reason you must advise the Department of Biology by submitting an on-line **Absence Form** through the Moodle course [All Biology Students 2025](#) either before your non-attendance or within **24 hours** of the non-attendance. When submitting the absence form you will be able to upload copies of medical certificates and/or other relevant supporting documentation to justify your non-attendance. Full instructions on how to do this are available on the Moodle page indicated above. **Failure to do this may result in the absence being counted as unacceptable and you will not be offered a no-penalty, re-sit opportunity for the missed questionnaire.**
- If you are submitting a medical certificate, **the cert must be issued during the period of illness.**
NOTE: BACK-DATED MEDICAL CERTIFICATES WILL NOT BE ACCEPTED FOR ANY REASON.
- Arrangements to take a no-penalty, re-sit, questionnaire must be made through the **Senior Demonstrator** (Patricia.McDonnell@mu.ie) either **before** the questionnaire **or within 24 hours** of the scheduled questionnaire, unless there are extenuating circumstances that can be verified. In this case, you should still contact the **Senior Demonstrator** as soon as possible.
- Only one** no-penalty, re-sit, questionnaire opportunity will be **allowed per module**, unless there are continuing and verifiable circumstances.
- Students can avail of the opportunity to re-sit **ONE** missed questionnaire at the end of a semester. The marks for this re-sit questionnaire will be **capped at 40%**.
- It is up to you, the student, to request this re-sit opportunity.

8. Arrangements to take this capped, re-sit, questionnaire must be made through the **Senior Demonstrator before the end of a semester** (Patricia.McDonnell@mu.ie).

Questionnaires are exams and Maynooth University Exam policies and regulations apply during both. These can be viewed at the [Maynooth University Examinations Office](#) webpage.



IMPORTANT NOTES:

- (1) If verifiable extenuating circumstances, submit absence form and contact Senior Demonstrator as soon as possible.
- (2) See 2nd year handbook for examples of acceptable and of unacceptable excuses
- (3) Medical certificates must be issued during period of illness. No Back-dated certificates accepted.
- (4) Students with on-going issues should contact the Senior Demonstrator during term time in order for any consideration for CA marks to be made.

Notification of Absence Forms

Reason for absence	Documentation required (<i>all to be submitted online through Moodle</i>)
Illness up to and including 5 consecutive term-time days (excluding Saturdays and Sundays)	Absence Form Only one uncertified absence allowed per semester
Illness for more than 5 consecutive term-time days (excluding Saturdays and Sundays)	Absence Form plus formal Medical Certification <u>issued and dated during the period of illness</u> and signed by the Medical Centre, your GP or hospital consultant
Unrelated to sickness	Absence Form plus supporting evidence

Supporting evidence

The following table gives examples of the kind of supporting evidence that you may be required to provide as justification of absence.

Absence	Evidence
Illness of LESS THAN FIVE consecutive term time days	Self-certification – Absence Form which must be submitted to the department through Moodle within 5 working days of the end of the period of absence . Should students submit repeated self-certifications, the department will require students to produce formal Medical Certification. Note that alternative arrangements for a missed test will normally only be made if a medical certificate is supplied.
Illness of MORE THAN FIVE consecutive term time days	Formal Medical Certification issued and dated during the period of illness and signed by the Health Centre or your GP or hospital consultant
Outpatient's appointment	Letter from outpatients or appointment card
Doctor or dental appointment	Appointment card
Documented personal problems	Letter from someone, e.g. counsellor, who has direct knowledge of the problem and/or is involved in supporting you
Illness of dependent or family member	Medical certification and statement explaining illness and why personal attention is necessary
Bereavement	Formal certificate or note from family member who can vouch for the situation
Severe transport problem	A copy of online or newspaper reports on the problem to be submitted to the department within 5 working days of the problem having occurred
Court attendance	Official correspondence from the Court confirming attendance requirement
Victim of crime	Statement of events, police report and crime reference number
Involvement in a significant/prestigious event	Letter of invitation from the relevant organising body

Sport commitment at national/county level	Official correspondence from the relevant sporting body confirming the requirement to be available on specified dates
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The following table gives examples of the kind of circumstances where absence **may** be deemed as 'acceptable' and 'unacceptable' for non-attendance. This is for general guidance; it does not represent an exhaustive list. All absences will be reviewed on a case-by-case basis. ***If possible, you should try to arrange to attend a different session rather than be absent for a lab session.***

Acceptable	Unacceptable
<ul style="list-style-type: none"> • Illness • Hospitalisation • Outpatients appointment (where possible you should try to make any appointment outside of your class commitments) • Doctor or dental appointment (you should try to make any appointments outside of your class commitments) • Documented personal problems • Illness of dependent or family member (until other arrangements can be made) • Bereavement • Severe transport problems (e.g. severe disruption of train travel due to signalling failure or track problems or major traffic incident on motorways, which can be verified by online or newspaper reports) • Court attendance or victim of crime • Representing College/county/country at significant or prestigious event or sport commitment or involvement in such an event 	<ul style="list-style-type: none"> • Oversleeping • Misreading the timetable • Paid employment and voluntary work • IT and/or computer problems • Minor transport problems, e.g. being stuck in normal rush hour traffic, not permitting enough time in travel plans for minor unanticipated delays, missed public transport • Holidays • Family celebrations • Weddings • Accommodation issues, e.g. moving house • Extra-curricular sports activities • Driving test • Lack of awareness of attendance requirements and College Regulations in this regard

INFORMATION ON EXAMINATIONS IN BIOLOGY

Definition of Plagiarism

Plagiarism involves an attempt to use an element of another person's work, without appropriate acknowledgement in order to gain academic credit. It may include the unacknowledged verbatim reproduction of material, unsanctioned collusion, but is not limited to these matters; it may also include the unacknowledged adoption of an argumentative structure, or the unacknowledged use of a source or of research materials, including computer code or elements of mathematical formulae in an inappropriate manner.

The policies of the University apply within the Department of Biology, as contained on the Maynooth University website (<https://www.maynoothuniversity.ie/university-policies/rules-regulations-students>). Plagiarism is a form of academic dishonesty and will be treated with the utmost seriousness wherever discovered.

This policy will be implemented in the following manner:

1. Dealing with Suspected Cases of Plagiarism: Assignment markers will refer suspected cases of plagiarism to the Module Coordinator (or in the case of practical assignments, in first instance to the Academic in charge of practical module). Any student submitting written work for continuous assessment can be asked by the marker or the department to take a further test. This may take the form of an oral examination on the assignment in question and related issues, or the writing of a test paper in controlled conditions. Requiring a student to take such a test does not necessarily imply that plagiarism is suspected.

2. Dealing with Proven Cases of Plagiarism: If there is evidence of plagiarism, the matter will be turned over to the Course Coordinator, who will determine the disciplinary consequences following the guidelines outlined below. **In each case the student may be invited to explain in person** to the Course Coordinator the origin of the material contained in the piece in question.

Procedures

1. Where a marker (**or course coordinator**) believes that a case of plagiarism has been identified, the matter shall be referred to the Head of Department with a written report outlining the reasons for suspecting that the work has been plagiarised.
2. The Head of Department shall then make an initial finding as to whether or not plagiarism has occurred, taking account of factors including, but not confined to, the extent of the plagiarism, indications of intent to deceive, the student's prior history in this regard, practice within the discipline, and the level at which the student has submitted the work. The Head of Department will not take account of extenuating medical or personal circumstances in making a decision.
3. If the Head of Department is the marker who suspects plagiarism has occurred, he or she shall delegate responsibility to a nominee in that department to follow the procedures laid down in this policy
4. Where the Head of Department determines that plagiarism has not occurred but there are indications of incorrect citation, the work shall be awarded a grade that takes account of the failure to cite sources correctly, within the overall context of the work as a whole.
5. Where it is considered right to do so, the Head of Department shall confirm the determination that plagiarism has occurred by making a record of the decision setting out the reasons. At

this point, the Head of Department shall consult the Registrar's Office, informing the Registrar of the finding, and requesting any information on previous findings in relation to the student. Should prior findings exist, the procedures in xi and xii shall apply.

6. Where the Head of Department determines that plagiarism has occurred, a meeting with the student shall be convened to inform the student of the finding.
7. The student shall be advised of the determination by the Head of Department and of the consequences that may unfold and that a response should be received by the Head of Department from the student within ten working days from the date the determination was confirmed.
8. The student shall be advised that failure or refusal to respond within the designated period of time, or failure or refusal to attend for any meeting requested by the Head of Department, will result in the matter being referred to the **Academic Discipline Board of Maynooth University** in like manner as if the student had chosen not to accept the findings of the report.
9. Where the student chooses not to accept the findings of the report, the matter shall be referred to the **Academic Discipline Board of Maynooth University** together with all relevant documentation and reports.
10. Where the student accepts the findings of the report, the student shall be asked to sign the report. The Head of Department shall then countersign the report. The Head of Department will then give the work a mark of 0. The student will be allowed to redo the assignment before a designated deadline prior to the next Examination Board meeting, if it is practical to do so. The mark for the resubmitted work will be capped at 40%. A record shall be kept in the Department of the incident, and this shall be forwarded to the Registrar's Office.
11. In the case of a second finding of plagiarism in relation to a student, the matter is automatically referred to the Academic Discipline Board, who shall notify the student that the matter has been brought to its attention.
12. A "second finding" in this regard may refer to findings made in the current academic year or in previous academic years, and it may refer to findings made by more than one Department."
(Maynooth University Policy on Plagiarism)

2a. Minor Plagiarism: In cases of minor plagiarism, the following will apply:

In instances where an element forming part of an assignment (from a phrase or sentence up to a paragraph or two) is found to be plagiarised, marks will be deducted for that assignment, there will be no possibility of submitting a 'make-up' assignment, and previous and subsequent work submitted in connection with the course may be subject to particular scrutiny. While the amount of marks deducted will be proportionate to the extent of the plagiarised material, the deduction may be severe.

2b. Major Plagiarism: In cases of major plagiarism, the following University statutes will apply:

In instances where a significant part or all of an assignment is found to be plagiarised, the Department will "award a mark of zero in the assignment, with no chance to resubmit in the current academic year" (***Maynooth University Policy on Plagiarism***), and previous and subsequent work submitted in connection with the course may be subject to particular scrutiny. In serious cases the plagiarism will be referred to the **Academic Discipline Board**.

2c. Postgraduate Students: Instances of postgraduate plagiarism will be referred directly to the project supervisor or member of faculty responsible for the relevant postgraduate programme. "Instances of plagiarism among postgraduate research students will be treated as being particularly serious. The Board will not take into account extenuating medical or personal circumstances in making its decision." (***Maynooth University Policy on Plagiarism***).

3. Recording: All cases of plagiarism will be recorded by the Course Coordinator on the student's permanent record card. All members of the Department providing a reference for a student **may be obliged to mention an instance of major plagiarism**, or two or more instances of minor plagiarism, when providing a reference for the student.

The Maynooth University policy on Academic Integrity is stated below and breaches of this will lead to academic misconduct procedures.

Academic Integrity

Where a student is required to produce work for assessment, it is expected that **the work is the student's own work** and is produced in a fair and honest manner. Students are required to be aware of and comply with the subject-specific requirements set by the individual Departments or module leaders on different assessments and need to be aware that these may differ not only by subject, but also by assessment.

Breaches of academic integrity include:

1. A student **falsifies data or information** in an assessment.
2. A student **submits the same content** for more than one assessment without appropriate acknowledgement (self-plagiarism).
3. **Using Generative Artificial Intelligence (GenAI) tools** or other computer-generated material to complete all or part of an assessment **without acknowledgement** and outside the terms of Departmental policies or requirements for individual assignments.
4. A student gets another person or service to complete all or part of an assessment.
5. Using any tools explicitly forbidden by the Department or within the programme.

Responsible use of Generative Artificial Intelligence (GenAI) tools for assignments submitted to the Biology Department.

This section lays out the **departmental advice and policies on how to use artificial intelligence (AI)** ethically and responsibly to support your learning. It details when AI may or may not be used in your assignments. **Where permitted, be cautious when using AI tools for assignments.** You should also refer to Maynooth University's guidelines: <https://www.maynoothuniversity.ie/centre-teaching-and-learning/hub/academic-integrity-and-artificial-intelligence>. Updates to the Biology Department guidelines and policies on the use of GenAI will be posted on the Moodle course page [All Biology Students 2025](#). **It is important that you keep yourself up-to-date with this information.**

The key to appropriate use of GenAI tools (e.g. ChatGPT or others) is to use these tools **cautiously, critically, and reflectively** to support you in your learning, research and writing in Biology. They should **not** be a replacement for your critical reading in a topic and should build on your understanding of Biology (not replace it). Using clear, limited, and accurate prompts when interrogating GenAI based tools will certainly help you. However, tools such as ChatGPT do not verify or even discover information, these tools analyse text to give a most probable pattern that approximates to an answer to your prompt. In other words, they simply spit out the most likely next word. This is an important consideration: ChatGPT (or equivalent) can give you a very well-structured essay which is completely false! **This is why AI tools must not be used in any written**

assignment (this also includes lab reports and write-ups). ChatGPT (or equivalent) does not “know” the material it presents is fake and if you do not understand the output, then neither do you.

GenAI tools do not verify material scientifically but do incorporate all the biases inherent in the interpretations of the material of others. Thus, ChatGPT (or equivalent) can deliver overtly or covertly racist, sexist or other discriminatory material as apparent fact, when in reality, these have no scientific basis. It can be trained to “support” these outputs with fabricated references or misrepresented material of others. Such outputs should not be used in your work, but *can you tell the difference between real or fake material?* Using a GenAI tool properly takes more effort than you might expect, as you will need to check the veracity, and sources of the returned material, evaluate it critically and rewrite it before use. Be aware of the implicit and explicit biases in any text produced by AI tools and take steps to mitigate this in the work you submit.

What are the acceptable uses of AI tools for Biology department assignments?

- It is only acceptable to use GenAI tools in your Biology assignments **if specifically stated by your lecturer** for a particular module or assignment.
- Before using a GenAI tool, make sure you understand the basics of your topic, then use prompts that are clear, limited/focused, and accurate;
- Spend time verifying the material returned, including the sources used, by your query or prompt;
- Remember that GenAI tools generate text without understanding the output, they generate, summarise and predict text, no matter how unscientific or false.

What are unacceptable uses of AI tools for Biology department assignments?

If you attempt to present the outputs of GenAI software such as ChatGPT, Quillbot or other as your own work, then you are attempting to present material that is not the result of your academic judgement or authorship. If you use these tools in the following ways, then you have breached the Department and University standards of academic integrity and will be subject to the disciplinary procedures of the Department and/or University.

You must NOT use any GenAI tools of any kind:

- **for any aspect of your 2nd year writing assignments or in your lab reports and write-ups (unless explicitly approved by your module lecturer)**
- to create blocks of text (including single paragraphs to complete assignments) and/or submit these as your own work
- to create diagrams, figures or tables and submit these as your own work. Instead learn to use BioRender, Power Point or Excel to create diagrams and graphs, using your judgement.
- to support your preparation of an assignment without declaring which tools and/or how they were used.
- with false, or inaccurate references or submit AI-generated false, biased or discriminatory claims.

Consequences of unacceptable AI use in course material submitted to the Biology Department could be large and impact you in many years' time.

Think of your future career. Future tools in the University may detect GenAI much more accurately than at present. **These may be deployed retrospectively and you could face loss of your degree**

qualification, public embarrassment, and even loss of a job. Students presenting content that has been generated using GenAI are subject to the **same disciplinary procedures as plagiarism**. This can potentially result in denial of a reference, or a permanent notice on your student academic transcript, with career-long negative implications. Where a marker (or detection software) of submitted material suspects the inappropriate use of AI tools, the following procedure applies: if the module coordinator considers the use to be non-trivial, the issue will be referred to the departmental academic integrity committee who will assess the case and have the option to perform a **verification assessment** in the form of a face-to-face interview as detailed in the University's Marks and Standards. Where a student does not engage fully with the departmental process or in the most serious instances, the case will be referred directly to the University's Academic Discipline Board without further consideration by the department.

You should also consider how using GenAI tools prevents you from actually engaging with the material and assessments that your lecturers have designed to help you have a deeper understanding of your subject. Using GenAI tools also prevents you from developing important transferrable skills which you need for your future professional life.

Biology Dept Academic Integrity Committee

EXAMINATIONS

Second year of a 4-year degree will contribute **10% towards your final degree mark**. It is therefore essential that you engage with all the continuous assessment components of each of your modules and that you study carefully for your theory exams.

Please see the Examinations Office webpage for information (under Policies & Regulations) for Marks and Standards for programmes at Maynooth University:

<https://www.maynoothuniversity.ie/exams>.

Continual Assessment & Theory Exam

Second year modules have a continual assessment component and a theory exam. Details for each module can be found on the [Course Finder](#) webpage.

PREPARATION FOR EXAMINATIONS

- **Preparation for examinations should begin from the first day of the first term.** Steady work throughout the semester is more likely to bring success than cramming for a few weeks before the exams.
- Make absolutely sure that you have a good set of lecture notes, as the lectures provide the framework for the course and exams will be based on them. You **must understand all the lecture material**. If you understand everything as you go along you will find it much easier to learn it during revision.
- Make use of the library or the books recommended by the lecturer, to fill out the lecture material, and make supplementary notes from these. Lecturers, who will also be setting and marking the exams, are usually more impressed by an answer with evidence of extra reading than one which merely restates the lecture notes. This is especially important for entry into honours.
- Begin your final revision for examinations in good time. If you leave it too late you will set yourself an impossible workload, leading to panic or undesirable practices, such as question spotting or omitting sections of the course.
- Make sure that you go into the examinations **having learned the whole course**. It is the only way to be sure of being able to answer any of the questions set. If you wish to "spot" questions do so only after you have got a good grasp of the course as a whole, then it may be worth giving **extra** attention to the areas that you guess may come up in the examination.

You might find it helpful to practice answering previous exam questions under examination conditions (without texts or notes and in the time allowed in an exam).

- Make sure that you have everything that you might need in the examination well before. You require pens, pencils, rubber, ruler and perhaps some coloured pens or pencils.

In the examination:

- Read the paper carefully - including the rubric (instructions above the list of questions). Make a preliminary decision as to which questions you are going to answer.
- Start with a question you feel confident about. Think carefully about what the question is asking for and answer **the question as set** - not one that you think should have come up. You might find it helpful to begin by making **short** notes on your answer. Also, if you think of something, whilst you are writing your answer, that you want to include later, keep a note of it so that you don't forget. Complete your answers making sure that you follow instructions.
- **ANSWER THE CORRECT NUMBER OF QUESTIONS. This cannot be too strongly emphasised.**

If you answer less than this you greatly reduce your chances of passing or doing well.

- There is no set length for examination answers. In general, you should expect your answers to reflect the amount of writing time.
- It is often helpful to illustrate your answers. Diagrams can give a clearer and much more economical presentation of some points though they will often need to be complemented by text. Where you are asked to give an illustrated account, drawings are essential.
- It is important that you record exactly the numbers of the questions you have answered on the front of your examination paper, as well as at the start of each question.

ADDITIONAL INFORMATION

Academic Advisory Office

The Academic Advisory Office offers a convenient first point of contact for students who wish to seek advice or assistance with their general experience of University life. The office provides an ombudsman-like role for students who may be encountering difficulties in their programme of study.

[Academic Advisory Office](#)

Examination Office

The Examinations Office is part of the University Registry and administers the examination timetable. It is responsible for the central administration of the University written examinations. The academic year is semesterised with examinations held in Semester One (January) and Semester Two (May) with a Supplemental/Resit autumn session in August.

[Examination Office](#)

Student Health Centre

The Student Health Centre is an acute care/advisory service. The service is envisaged as an addition to the student's own family doctor or specialist medical service. It operates within resource constraints so certain service limitations apply. Students should continue to attend their own general practitioner.

[Student Health Centre](#)

Student Services

Student Services is an integral part of the University community, enabling the promotion and development of its educational mission. Using a holistic approach, we offer a range of clearly defined services to support and empower students to achieve their personal and academic potentials and so enhance their life's journey. We strive to create a community which is open and caring and where diversity is expected and respected."

[Student Services](#)

Maynooth Access Programme

The Maynooth University Access Programme (MAP) encourages under-represented groups to enter third level and provides these groups with support through their time at Maynooth. These groups include [under-represented school leavers](#), [mature students](#), [students with disabilities](#) and members of the Irish Traveller community.

[Maynooth University Access Programme](#)

FSE Equality, Diversity and Inclusion (Committee)

The Faculty of Science and Engineering Equality, Diversity and Inclusion (EDI) Committee, are delighted to announce a series of EDI online training opportunities that are available to all students. EDI training is a potent tool for increasing awareness, enhancing comprehension, and equipping individuals with the skills required to both implement and advocate for fairness, respect, and the celebration of our differences.

How to Get Involved:

Participation in online EDI training initiatives is open to all students. The [Equality Office](#) has shared a helpful list of EDI-related online courses / training sessions at Maynooth University and highlighted who they are available to.

Training	Location	Staff / Students?
EDI in HE & Let's Talk About Race	Moodle	Available to staff and students at MU
Consent at MU – Preventing Sexual Violence & Harassment	Moodle	Available to staff and students at MU
Sexual Health Maynooth University (Student link) Staff Courses Maynooth University (Staff link)	Moodle	Available to staff and students at MU
Disability Awareness Training – National Disability Authority	Online	Open access

If you have any questions or require additional information, please do not hesitate to contact the Universities EDI Committee at (fse.admin@mu.ie).

Map of Campus

Campus Maps

Programme Advisory Office

The Programme Advisory Office is available to advise you on any choices you might have to make related to your programme including subject choice.

Programme Advisory Office

Timetables 2024/25: See link [Timetables | Maynooth University](#)

EXPERIENTIAL LEARNING AT MAYNOOTH

Experience More During Your Time at MU

The routes available to Maynooth students to experience more from their degree programme are diverse, enabling the development of rich learning experiences that connect classroom content with real-world experience. The Experiential Learning Office connects Maynooth students to a range of opportunities in the following areas.

Professional Development and Employability

Experiential learning professional development and employability modules are available to eligible second year students. The key purpose of these modules, involving a number of employers, is to facilitate students in their academic, personal and professional career development, so that they will be well equipped to secure internships and to successfully enter the graduate labour market. See Skills for Success EX201 and EX202 for more details

MU SPUR (Summer Programme for Undergraduate Research)

An active research based and paid experiential learning programme for successful undergraduate pre-final year student applicants who **wish to learn more about the postgraduate experience, by** working closely with faculty mentors on research projects across a range of disciplines.

Community Based Service Learning

Community Based Service Learning presents a credit-bearing academic experience that empowers students to engage with their surrounding communities, which often results in enhancing student's academic, civic, social and personal development, whilst they contribute to the common good. The experiential learning office facilitates academic staff in offering community based service learning experiences with their students.

For further information, refer to:

Website: <https://www.maynoothuniversity.ie/experiential-learning-office>

Email: explearning@mu.ie

For Programme choices and options information

The Programme Advisory Office, within the Office of the Dean of Teaching and Learning, is available to advise you on any choices you might have to make related to your programme including subject choice. The Programme Advisory Office acts as a guide to students as you navigate your own way through your programme options.

Continuing second year students may also avail of the service if you are unsure about your programme options, for example if you have any questions about the difference in major/minor pathways or whether or not to choose to take an Elective.

The Programme Advisory Office can be contacted via

Email: programme.choices@mu.ie

Telephone: 01 474 7428

In person: please see their website for information about meeting a member of the Programme Advisory Team: [Programme Advisory Office](#)

MU LIBRARY: UNDERGRADUATE GUIDE

Welcome to Maynooth University! We look forward to meeting you during your studies, whether that's online or in-person. Library staff will help you with any questions you have about accessing books and reading material.

MU Library will be essential to you for:

- finding the right **e-books** and **online material** to help you study & write your assignments and essays,
- borrowing physical **books**,
- short, free **online tutorials & quizzes** that will help you improve your information skills,
- approachable **library staff** who will help you find what you are looking for, and
- booking a [group study room](#) when you are working on projects with fellow-students.

Best thing of all? All the resources above are **FREE to use** when you are a student in MU!



Fig. 1: Exterior of MU Library

Start Here: Our Library Homepage



Visit our library homepage at <https://www.maynoothuniversity.ie/library>. It's a great starting point for:

- Up-to-date library access information
- Details on using our services, both on and off-campus
- Information skills training classes (LIST & other sessions)
- Support for your studies and assignments

IMPORTANT! Use your MyCard (student card) to access the library and borrow books.



For more information, look at our guide "Using the Library" here <https://bit.ly/3LOsIGU> or ask us for a demo.

Your **MyCard** (student card) entitles you to access the library and to borrow books. Click the "Using the Library" tab (see Fig. 2) on the library homepage, for more information.

Need Help? We're Here for You!



If you're having trouble finding what you need, our library staff are ready to help. *[Photo by Daniel Balteanu]*

Whether you're on campus or off, you can:

- Visit the **Library Information Desk** on the ground floor of the library
- Use the live “Library Chat” box on our homepage
- Fill out our “[Online Enquiry Form](#)” on the left side of our homepage

Explore Our Study Spaces

The MU Library, located on the South Campus, across the road from the TSI building, offers various study spaces to suit your needs:

- **Ground Floor:** Open-access area before the turnstiles, where you can eat, drink, and chat, with over 50 laptops and print facilities.
- **Levels 1 and 2:** Quieter areas with [bookable group study rooms](#), a flexible learning space and a silent study room.



Check out our spaces ahead of time with our VR Tours and Exhibitions here: <https://bit.ly/3WLU41>

Find the Right Resources



Using the correct information source is crucial for your success. Each subject has a dedicated *Subject Guide* on our website. These guides, available here:

<https://bit.ly/3SuB84D> include recommended books, databases, reference styles, online tutorials, and more. There's contact information for our *Teaching & Learning Librarians*, if you need more information on your topic.

Tech and Tools at the Library

We offer various technological resources, including:

- **Laptop Loans:** Borrow a laptop from the laptop-bank opposite the library desk.
- **Ground Floor Print Hub:** Multifunction printers available for all your print jobs.
- **3D Printing:** Available for free student and staff use; ask at the Information Desk.
- **Charging Stations:** For recharging your devices quickly.
- **Short Story Dispenser:** For a quick, fun read.
- **Wellness Zone:** Try out our 3 Energy Pods & Cubbie on Level 1, for rest and relaxation.



You can also suggest up to 5 books a year for the library to order here: <https://bit.ly/4dcxLYj>

IT Services

IT Services are available at the Library Information Desk during service hours to help with any IT issues, including photocopying.

Refreshments

There is a Starbuck's Café found on the ground floor of the library, plus vending machines and water fountains available in the library.

Stay Connected and Informed

Keep an eye on the screens in the library for events. Follow us on social media for updates, tips and events throughout the year:

- **Instagram:** @library_mu
- **Facebook:** @MaynoothUniLibrary
- **X:** @mu_library

We wish you every success in your studies and look forward to seeing you soon!

Useful Links and Contacts

- **Library Homepage:** <https://www.maynoothuniversity.ie/library> 
- **Using the Library:** <https://nuim.libguides.com/library-services/usingthelibrary> 
- **A-Z Subject Guides:** <https://nuim.libguides.com/> 
- **Book a Group Study Room:** https://nuim.libcal.com/booking/MU_GroupStudyRooms 
- **Online Tutorials:** <http://nuim.libguides.com/list-online>

DEPARTMENT OF BIOLOGY STAFF RESEARCH INTERESTS

Name & Qualifications	Key Words	Research Interests
Dr O. Bayram, MSc PhD	Secondary metabolism, Fungal foods, Mycotoxins, Fungal development, Cell signalling, Epigenetics, Environmental remediation	https://www.maynoothuniversity.ie/biology/our-people/ozgur-bayram#2
Dr M.P. Butler BSc PhD	Ovarian Cancer, Mechanistic insight into diseases, Toll-like Receptor Signalling, sex differences in immune responses.	https://www.maynoothuniversity.ie/biology/our-people/marion-butler#2
Dr J.C. Carolan B.A. (Mod) PhD	Proteomics, Mass Spectrometry, Genomics, Molecular Biology, Sustainable Agriculture, Aphids, Bumblebees, Crop-pest Interactions, Pesticides	https://www.maynoothuniversity.ie/biology/our-people/james-carolan#2
Dr J. Devaney BSc PhD	Ecology, Forest Ecology, Climate Change, Biodiversity-Ecosystem Function, Invasive species	https://www.maynoothuniversity.ie/biology/our-people/john-devaney#2
Dr. T. Dirilgen BSc PhD	Ecology, Biodiversity (aboveground and belowground), Soil-Plant-Pollinator interactions, Soil biology and ecology, Sustainability	https://www.maynoothuniversity.ie/people/tara-dirilgen
Dr P. Dowling BSc PhD	Oncoproteomics, Biomarkers, Detection, Biofluids, Mass Spectrometry	https://www.maynoothuniversity.ie/biology/our-people/paul-dowling#3
Professor S. Doyle BSc PhD	Disease diagnosis, Antimicrobial resistance, <i>Aspergillus fumigatus</i> , protein mass spectrometry, proteomics, nonribosomal peptide synthesis, Disease diagnosis, immunoassays and enzymology.	https://www.maynoothuniversity.ie/biology/our-people/sean-doyle#2
Professor K. English MSc PhD	Cellular therapy, mesenchymal stem cells, immune modulation, pre-clinical models of inflammatory disease, organ transplantation, acute respiratory distress syndrome, asthma, gene therapy, muscular dystrophy	https://www.maynoothuniversity.ie/biology/our-people/karen-english#2
Dr D.A. Fitzpatrick BSc PhD	Computational Biology, Bioinformatics, Genome Evolution, Phylogenomics, Comparative genomics, Genomics, Transcriptomics, Proteomics, Genome sequencing, Fungi, oomycetes.	https://www.maynoothuniversity.ie/biology/our-people/david-fitzpatrick#2
Dr E. Graciet MSc PhD	Protein degradation, biochemistry, plant molecular biology, plant-pathogen interactions, abiotic stresses, crop improvement	https://www.maynoothuniversity.ie/biology/our-people/emmanuelle-graciet#2
Dr A. Hogan BSc PhD	Immunology, obesity, cancer, metabolism, immunometabolism, immunotherapy	https://www.maynoothuniversity.ie/biology/our-people/andrew-hogan#2
Dr. G. Hoysted BSc PhD	Fungal Ecology, Microbial Ecology, Mycorrhizal fungi, Plants, Bacteria, Above-below ground interactions, Plant-insect interactions, Sustainability	https://www.maynoothuniversity.ie/people/grace-hoysted

Professor K.A. Kavanagh BSc PhD	<i>Aspergillus</i> , <i>Candida</i> , Fungi, Metal-cell interactions, Innate immunology, Insects, Proteomics	https://www.maynoothuniversity.ie/biology/our-people/kevin-kavanagh#3
Dr L.M. Lopez BA PhD	Genomics, Human Health, Circadian Rhythms, Sleep, Neurodevelopmental Conditions.	https://www.maynoothuniversity.ie/biology/our-people/lorna-lopez#2
Dr A.M. Maher BSc PhD	Entomopathogenic nematode, microbes, symbiosis, biodiversity	https://www.maynoothuniversity.ie/biology/our-people/abigail-maher#2
Professor B.P. Mahon BSc PhD	Cell Biology, Immunology, microbiome/immune interaction	https://www.maynoothuniversity.ie/biology/our-people/bernard-mahon#2
Dr J. Masterson BSc PhD	Allergy, Inflammation, Epithelial Cell Biology, Stem Cells, Fibrosis, Mucosal Barrier, Cellular Metabolism	https://www.maynoothuniversity.ie/biology/our-people/joanne-masterson#2
Dr E. McNamee BSc MSc PhD	Autoimmunity, Mucosal Immunology, Translational Immunology, Chemokines, microRNAs	https://www.maynoothuniversity.ie/biology/our-people/eoin-mcnamee#2
Dr C. Meade BSc PhD	Plant & Soil Ecology; Molecular Ecology; Phylogeography, Biogeography & Population Genetics; Sustainability	https://www.maynoothuniversity.ie/biology/our-people/conor-meade#1
Dr S. Miggin MSc PhD	Innate immunity, toll-like receptors, inflammation, Type-2-Diabetes, bovine reproduction	https://www.maynoothuniversity.ie/biology/our-people/sinead-miggin#2
Dr D. Movia MSc PhD	In vitro alternatives to animal models, non-animal preclinical research, new approach methodologies, lung cancer, respiratory research, nanomedicine	https://www.maynoothuniversity.ie/faculty-science-engineering/our-people/dania-movia
Professor P. Moynagh B.A.(Mod) PhD	Molecular Immunology, Inflammation, Inflammatory Diseases, Signal Transduction,	https://www.maynoothuniversity.ie/biology/our-people/paul-moynagh#3
Dr J.M. Nugent MSc PhD	Plant molecular biology, evolution and development	https://www.maynoothuniversity.ie/biology/our-people/jackie-nugent#3
Dr S. O’Dea BSc PhD	Cell therapy, cell engineering, cancer research	Shirley O'Dea Maynooth University
Dr D. O’Maoileidigh BSc PhD	Plant development, flower development, fruit development, photosynthesis, transcription factors, genomics	https://www.maynoothuniversity.ie/people/diarmuid-omaoileidigh
Professor K. Ohlendieck DipBiol PhD DSc	Skeletal muscle biology, protein biochemistry, proteomics, biomarker discovery	https://www.maynoothuniversity.ie/biology/our-people/kay-ohlendieck#3
Dr N. Curran BSc PhD	Plant Biology	https://www.maynoothuniversity.ie/people/noreen-curran
Dr R. Owens BSc PhD	Pathogenic fungi, secondary metabolites, proteomics, antimicrobial agents, food proteins	https://www.maynoothuniversity.ie/biology/our-people/rebecca-owens#3
Dr M. Robinson BBioMedSc PhD	Cytotoxic natural killer cells, liver disease and cirrhosis, chronic inflammation, glycosylation of lymphoid immune cells	https://www.maynoothuniversity.ie/biology/our-people/mark-robinson#2
Dr M. Schroeder BSc PhD	Host-Pathogen interactions, Pattern recognition receptor signaling, Regulation of gene expression, RNA Biology	https://www.maynoothuniversity.ie/biology/our-people/martina-schroeder#2
Professor F. Walsh BSc PhD	Antibiotic resistance, microbiomes, infectious diseases, bacteriology, metagenomics	https://www.maynoothuniversity.ie/biology/our-people/fiona-walsh#2



<http://www.biochemicalc.com>

Students in the Department of Biology now have access to Biochemicalc™. This website, developed by Professor Sean Doyle (Biology) and Mr Dermot Kelly (Computer Science), allows students to:

1. Learn the fundamental concepts of biochemical calculations such as:

What are moles, nanomoles and micrograms? Why do I need to use moles in my calculations? How do I make up laboratory solutions such as buffers? What is molarity?

2. Use online calculators to help solve biochemical problems.

The online calculators allow students to calculate the weights (in mg or g) of reagents required for making up laboratory solutions of defined molarity, calculate the volume of stock solutions required for preparation of a more dilute reagent, carry out %(w/v) dilutions, work out how to do serial dilutions etc...

3. Practice online questions to test their understanding of biochemical calculations.

Biochemicalc™ offers a suite of pre-formatted questions to help students judge if they understand key concepts required for becoming proficient at undertaking laboratory calculations. These questions are of varying difficulty and style, and are designed for use in association with the online calculators on the Biochemicalc™ website.

Although primarily designed for students in the 3rd and 4th years of our degree programmes, it will also be of assistance to students at earlier stages of study. Indeed it may be of use to students taking Chemistry, or any subject requiring knowledge of laboratory calculations. Postgraduates may also find aspects of Biochemicalc™ beneficial to their own research projects and also find use of its functionalities a useful “double-check” for their own laboratory calculations.

We encourage you to use Biochemicalc™ and please tell others if you're happy with it. If not, please email: biochemicalc@gmail.com

Biochemicalc™ was funded by the NUI Maynooth CTL Fellowship Programme 2011

Our commitment to equality, diversity, and inclusion.

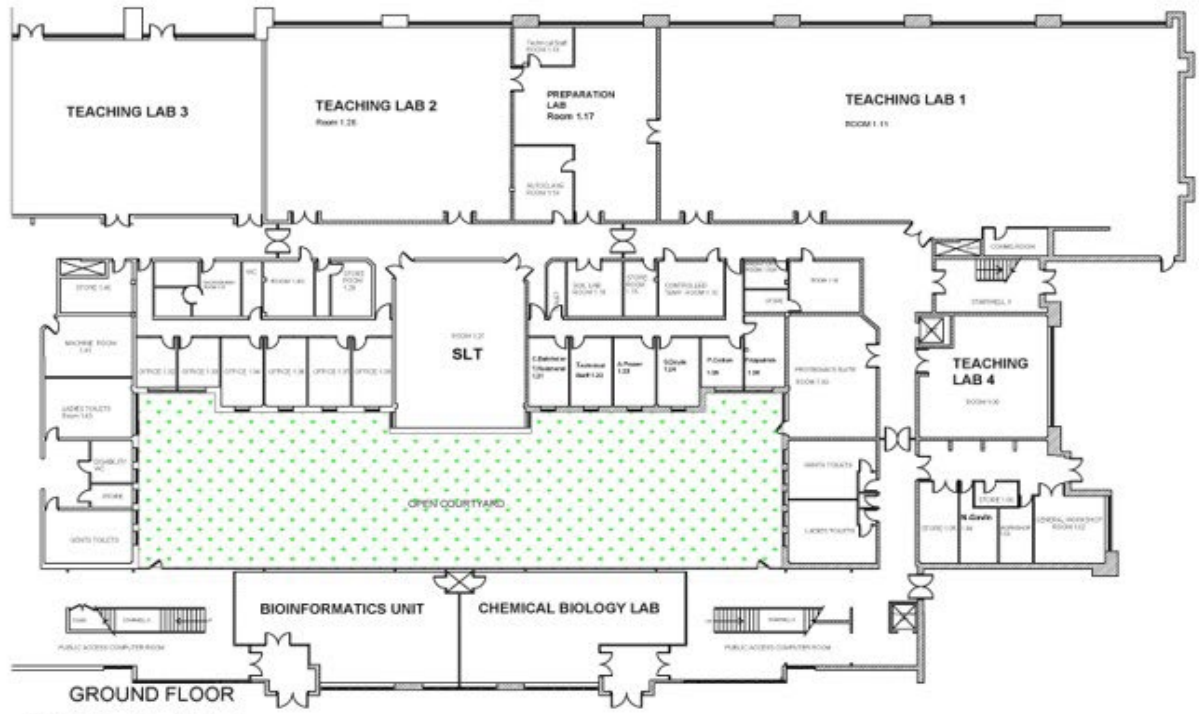


The Maynooth University Biology department is committed to equality, diversity and inclusion. We are proud to have been the first department in the University to receive an externally validated Athena Swan Silver Department Award for our work toward promoting gender equality, diversity and inclusion within the Department of Biology.

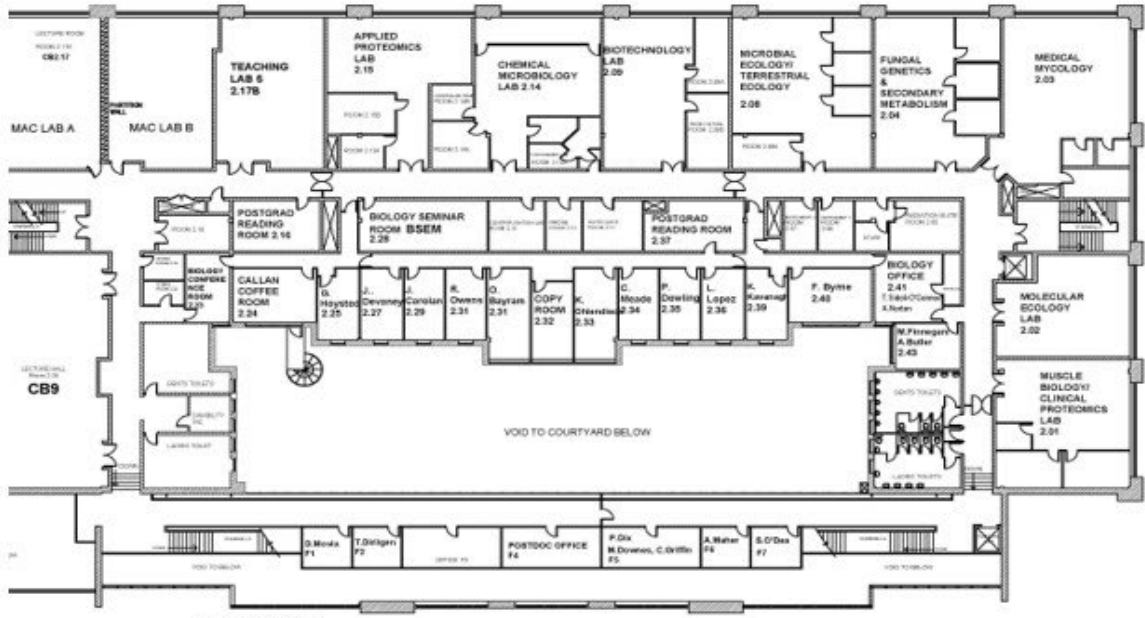
Our goals in this area include supporting and advancing women's careers in Biology, promoting work-life balance in the department and address any gender equity or diversity issues within the department. We look forward to engaging with all members (students and staff) of the department as we implement our Gender Equality Action Plan. As part of this we will continue to seek input from the student population (through surveys and focus groups) and will endeavor to keep you informed of our progress in this area.

For more information on the Department of Biology's Gender Equality Action Plan, please see <https://www.maynoothuniversity.ie/biology/athena-swan> or contact Dr Mark Robinson (Biology Athena Swan Chair): Mark.Robinson@mu.ie

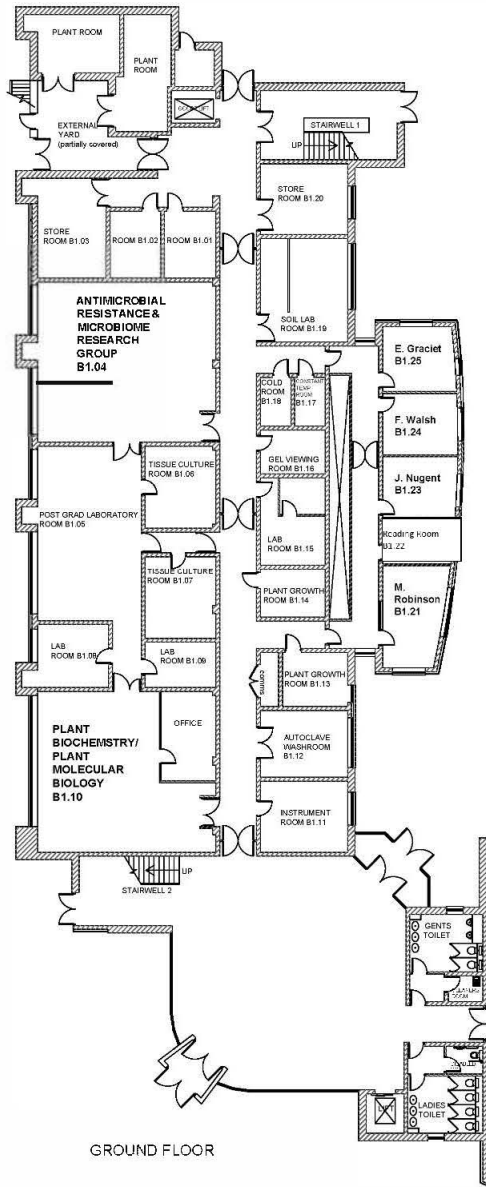
Biology Department Athena SWAN Committee.



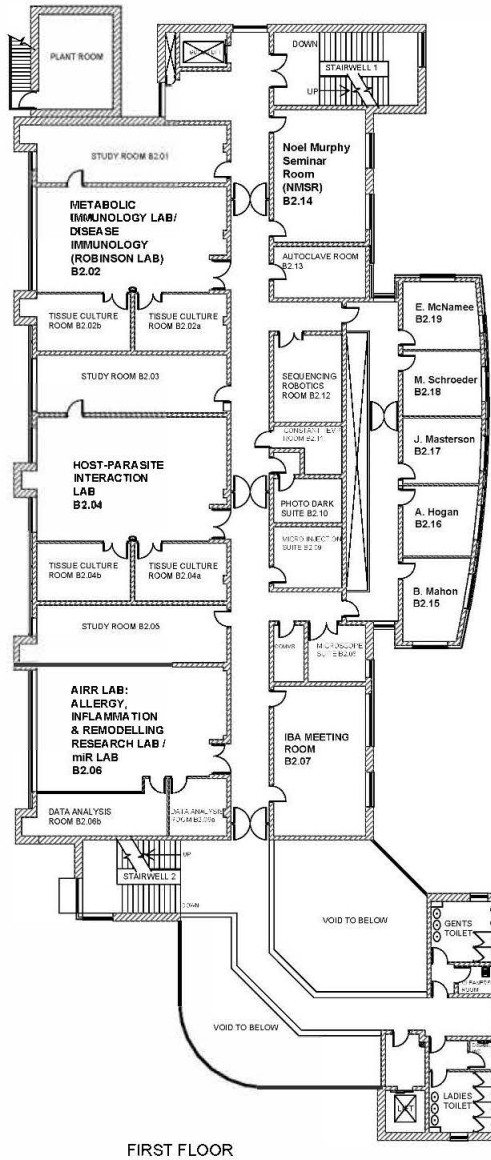
GROUND FLOOR
CALLAN



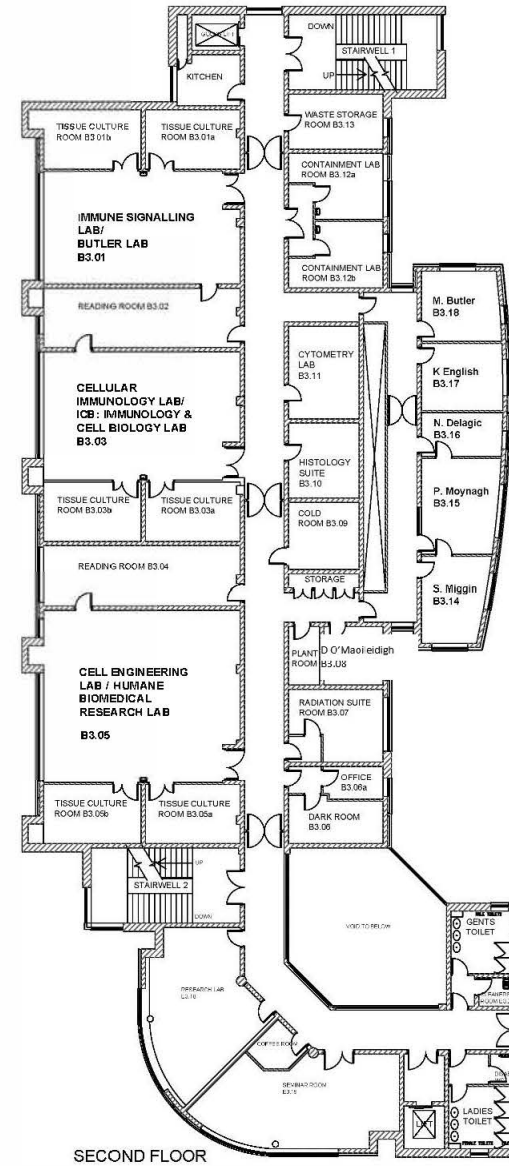
FIRST FLOOR
CALLAN



BIOSCIENCE BUILDING



BIOSCIENCE BUILDING



BIOSCIENCE BUILDING