



Maynooth University Department of Biology

Second Year Handbook 2023-2024



**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.

Please read this 2nd year Information Handbook carefully and keep a copy readily to hand, so that you can refer to the information in the handbook if required during the year. This handbook also contains a lot of practical information to support you during your studies this 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 2023-2024

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 2023– 2024

FIRST SEMESTER

Tuesday 5th September
Monday 25th September
Monday 30th October to Friday 3rd November
Monday 6th November
Friday 22nd December
Monday 25th December to Friday 5th January
Monday 8th January to Thursday 11th January
Not before Friday 12th 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 6th February
Monday 25th March to Friday 29th March
Monday 1st April to Friday 5th April
Monday 8th April
Friday 10th May
Monday 13th to Thursday 16th May
Not before Friday 17th 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 9th 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 | paul.moynagh@mu.ie | Monday 14.00-16.00 |
| 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 | Teams | 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 | 6844 | 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 | Mon & Wed 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 |
| Prof. Bernard Mahon | 3835 | B2.15 | bernard.mahon@mu.ie | Monday 09.00-11.00 |
| 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 | Friday 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 |
| | | | (Sem 1) | |
| Dr. Mark Robinson | 3860 | 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 |

*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 the Programme Coordinators and/or Head of Department may be contacted in their rooms at any time. Please contact biology.department@mu.ie to make an appointment.

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 | Conor Meade | conor.meade@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 | Marion Butler | marion.butler@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

Written assignments in the following 2nd Year modules will be assessed within the framework of the 7 Skills writing programme:

BI201

BI210

BI220 (*Biological and Geographical Sciences only*)

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 is the *Technical Description of the 7 Writing Skills* document, in which each of the targeted skills are discussed in detail. This and other supporting documents are available on the **Year 2** tab in the dedicated Moodle page '[MU Biology 7 Skills Home 2024](#)'.

Note: 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'. You will notice that the proportion of marks for the 2nd Year written assignments will change compared to 1st Year, with greater allocation for criteria in *Critical Engagement*. Further details and specific guidelines are provided in the documentation for each module assignment.

The 7 Skills framework is also used - in a similar way to assignments - for learning and assessment of selected practical write-ups, which will be notified to you by your module co-ordinators.

Note: a key aspect of the 7 Skills programme is the use of **grading rubrics**. For each assignment, students are 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. All relevant information will be provided to you before you begin each assignment.

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 2024](#) This page is also used for recording absence and submitting supporting documentation.
- [MU Biology 7 Skills Home 2024](#)

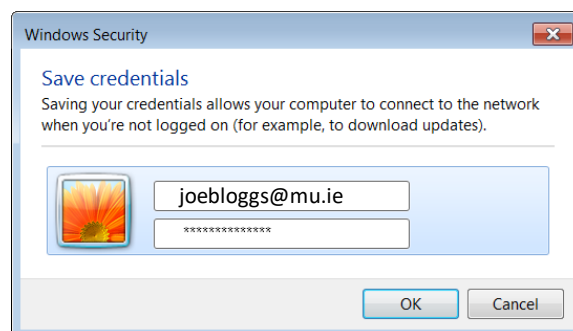
You should become familiar with the essentials of MOODLE as soon as possible.

Notices: Information for students will be posted on MOODLE and can also be notified by e-mail to your mumail address. These 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 AI-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.

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

2023/24

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](#)

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](#)

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

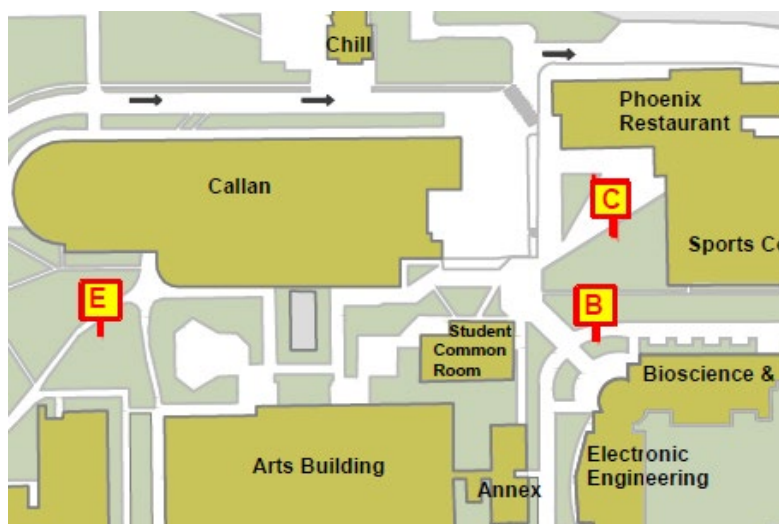
For the protection of yourself and others please read the following notes carefully and obey the instructions implicitly.

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/>) and University guidance (<https://www.maynoothuniversity.ie/coronavirus/response>).

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

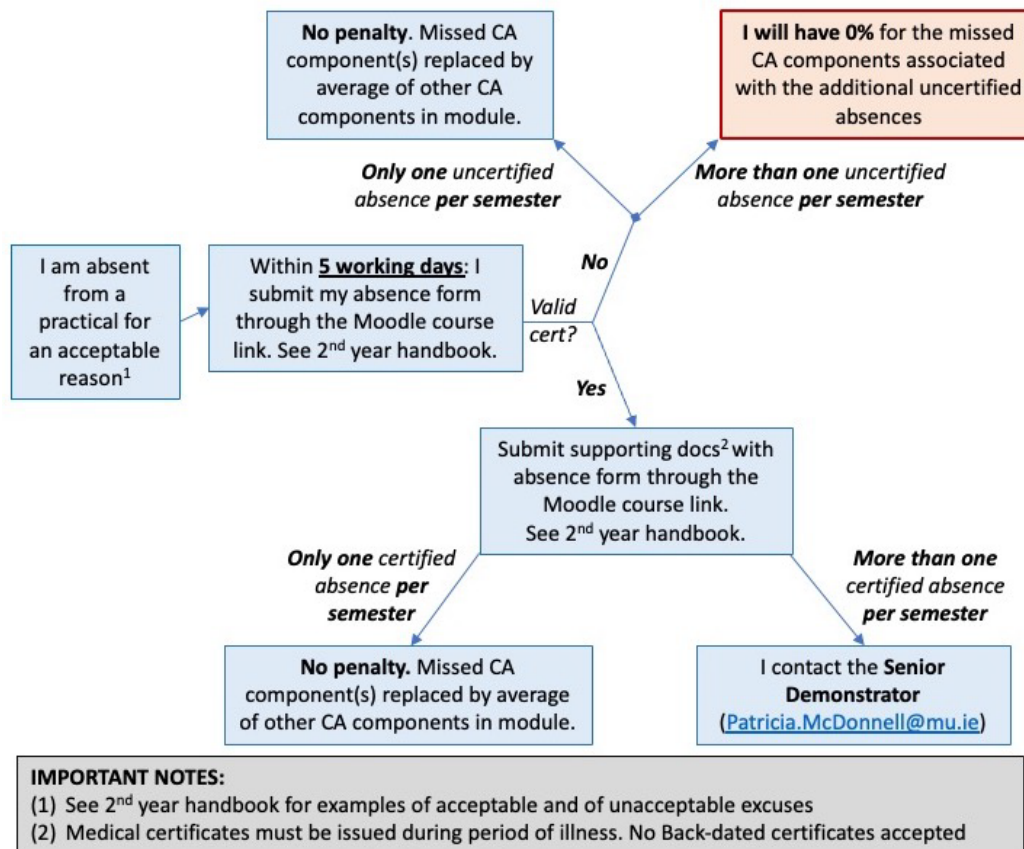
deemed acceptable or unacceptable. If the absence should be deemed as unacceptable it will be recorded as such and count against the minimum attendance level.

- 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 2024](#) 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.

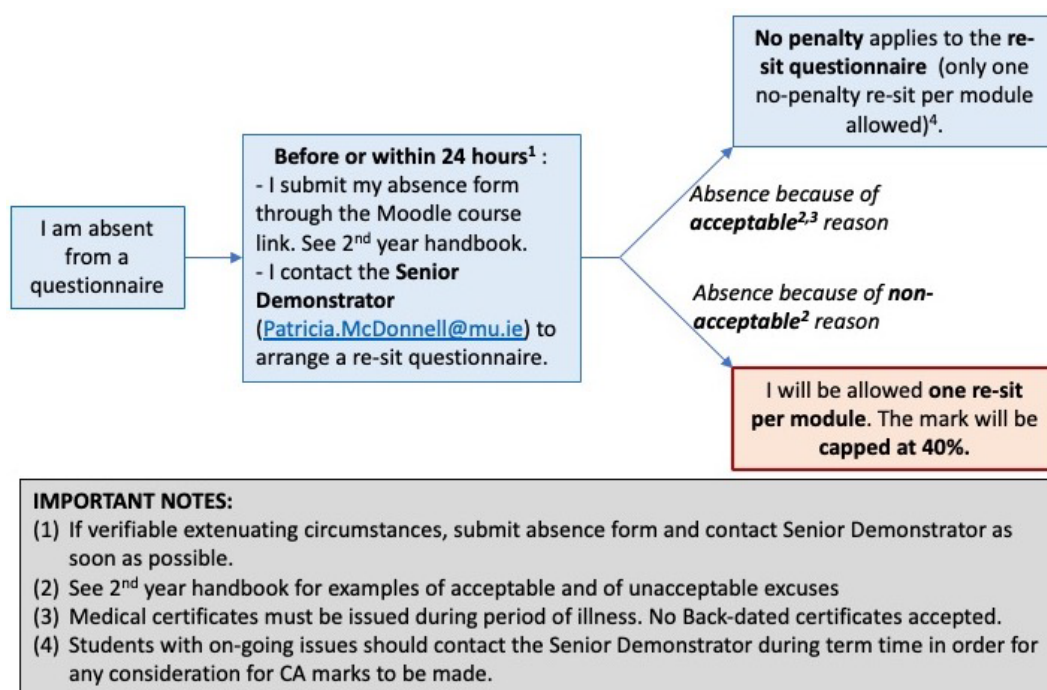


Questionnaires - absences:

- 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 2024](#) 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.



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 |
|---|---|

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 **Artificial Intelligence (AI) 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 Artificial Intelligence (AI) 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. **Be cautious when using AI tools for assignments.**

The key to appropriate use of large language model (LLM) tools (eg 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 AI 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 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 does not "know" the material it presents is fake and if you do not understand the output, then neither do you.

LLM tools do not verify material scientifically but do incorporate all the biases inherent in the interpretations of the material of others. Thus, ChatGPT 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 an AI 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 AI tools in your Biology assignments if specifically stated by your lecturer for a particular module or assignment.
- Before using an AI 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 LLM/AI 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 AI based LLM such as ChatGPT or Quillbot 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 ([An Introduction to Marks and Standards, a guide for Students \(Ver 03April2020\).pdf \(maynoothuniversity.ie\)](#)).

You must NOT:

- **Use AI tools of any kind for any aspect of your 2nd year writing assignments (in BI201, BI210 and BI220) or in your lab reports and write-ups (unless explicitly approved by your module lecturer)**
- Use AI tools to create blocks of text (including single paragraphs to complete assignments) and/or submit these as your own work
- Use AI tools 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.
- Use AI tools to support your preparation of an assignment without declaring which tools and/or how they were used.
- Use AI-generated 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 AI 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 AI 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.

**Biology Dept Academic Integrity Committee
May 2023**

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](#)

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 2023/24: 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. The Programme Advisory Office consists of the Programme Advisor, Caitriona McGrattan, who is supported by a team of PG students during peak times.

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!

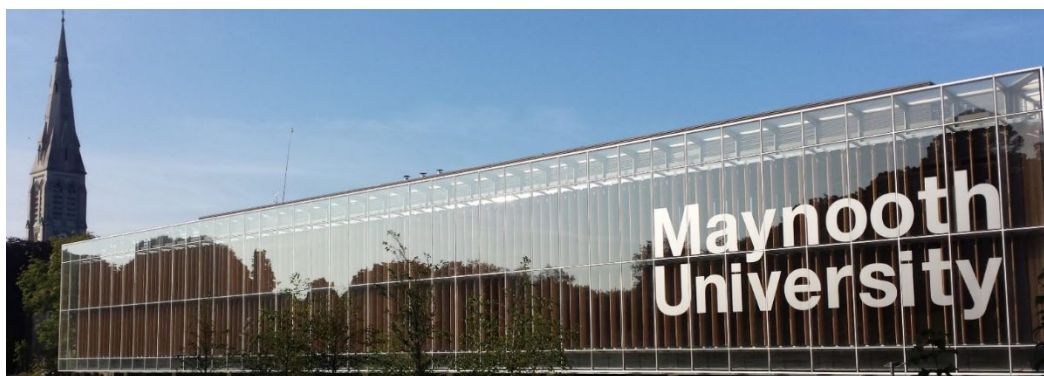


Fig. 1: Exterior of MU Library

Our library homepage is: <https://www.maynoothuniversity.ie/library>

It's a great place to start, covering:

- up-to-date information about accessing the library,
- information on using all our services, including when off-campus, and accessing classes, and
- advice on connecting with us to get the support you need for your studies and assignments.

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.

If you have any **queries about finding material**, whether it is online, or on the shelf, library staff are here to help you. If you are off-campus, use the live-chat, anonymous "Library Chat" box on our homepage, or email your queries to library.information@mu.ie. We love to help you find and use what you need in your studies.

If you are visiting the library in person, staff are available at the desk to answer your queries and get you started with everything you need.

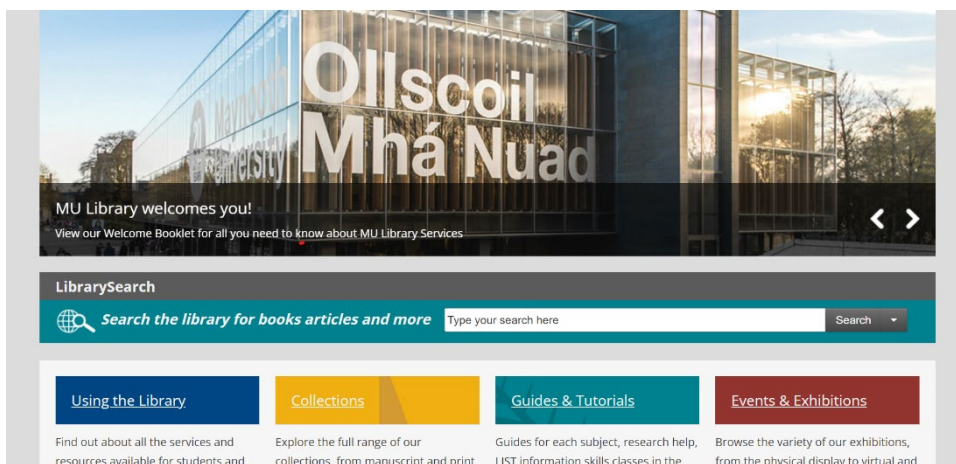


Fig. 2: MU Library Homepage

MU Library is on the South Campus beside the Kilcock road. You can choose different study spaces*: from the open-access area on the ground floor (where food, drink and chat are allowed) with access to over 50 laptops and print facilities*, to the quieter areas on levels 1 and 2, with training rooms and meeting rooms*, or use the [bookable group study-rooms \(See links at the end of this piece\) for your group and project-work*](#).

Using the correct information source is key to success in your studies. Every subject has a **dedicated Subject Guide** on our website that we recommend you look at. The range of subject guides is here: https://nuim.libguides.com/guides_tutorials and have sections on getting started, recommended books, databases, and links, as chosen by your lecturers. It also has information about reference styles, online tutorials and quizzes, a chance to email your query direct to a Teaching & Learning librarian, and lots of more useful information.

Use **LibrarySearch** (see Fig. 3) on the library homepage to search for specific books or articles, or even to see the range of material that we hold on your topic. The results give you details of e-books and e-journals you can read on your devices (on or off-campus) as well as information about where to find the print books on the library shelves.



Fig. 3: “LibrarySearch” searches the entire collection in MU Library- millions of free eBooks, articles and databases.

You can borrow a laptop from the laptop-bank (opposite the library desk) to use within the library, or you can log on to one of the library PCs to do your essays, or you can use your own laptop in the library too. We have a 3D printer available (ask us at the library desk) as well as a colour photocopier, in addition to many black and white photocopiers. You use your MyCard to load it with credit for printing. **IT Services** have a dedicated space at the main library desk where you can go if you need IT help.

Make sure to follow us on **Instagram** @library_mu, **Facebook** @MaynoothUniLibrary or on **Twitter** @mu_library.

[Contact us](#) with your **queries** about

- using the library, finding locations within it, student services,
- finding information for your studies, or
- how to use any of our online content.

We all know it can be a lot to take in when you start in university, but we are here to help you. The library wishes you *every* success in your studies.

USEFUL LINKS AND CONTACTS:

Links:

- Library homepage: <https://www.maynoothuniversity.ie/library>
- A-Z of our Subject Guides: <https://nuim.libguides.com/>
- Book a group study room*: https://nuim.libcal.com/booking/MU_GroupStudyRooms
- Online tutorials (LIST online): <http://nuim.libguides.com/list-online>

Contact:

- Undergraduates' contact: library.information@mu.ie

DEPARTMENT OF BIOLOGY STAFF RESEARCH INTERESTS

| Name & Qualifications | Key Words | Research Interests |
|----------------------------------|--|---|
| Dr O. Bayram, MSc PhD | Secondary metabolism, Mycotoxins, Fungal development, Cell signalling, Epigenetics, Gene expression, Protein-protein interactions | https://www.maynoothuniversity.ie/biology/our-people/ozgur-bayram#2 |
| Dr M.P. Butler BSc PhD | Cancer, 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, Bumblebees, Crop-pest Interactions | https://www.maynoothuniversity.ie/biology/our-people/james-carolan#2 |
| Dr Noreen Curran BSc PhD | Plant Biology | https://www.maynoothuniversity.ie/people/noreen-curran |
| 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 | |
| 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> , 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, Genomics, Transcriptomics, Proteomics, Fungi, Metabolic pathways, Genome sequencing, 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 | https://www.maynoothuniversity.ie/biology/our-people/andrew-hogan#2 |
| Dr. G. Hoysted BSc PhD | Fungal biology, Microbial Ecology, Mycorrhizal Interactions, Plants, Bacteria, Above-below ground interactions, Sustainability | |

| | | |
|---|---|---|
| Professor K.A. Kavanagh BSc PhD | <i>Aspergillus</i> , <i>Candida</i> , Fungi, Innate immunology, Insect, Medical mycology, metal-cell interactions, 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 | Ecology, Molecular Ecology, Sustainability, Biogeography | https://www.maynoothuniversity.ie/biology/our-people/conor-meade#1 |
| Dr S. Miggin MSc PhD | Innate immunity, toll-like receptors, inflammation, Type-2-Diabetes, Osteoarthritis | https://www.maynoothuniversity.ie/biology/our-people/sinead-miggin#2 |
| Dr. D. Movia BSc PhD | Alternatives to animal modes, non-animal preclinical research, lung cancer, nanomedicine | |
| Professor P. Moynagh BA(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. Ohlndieck DipBiol PhD DSc | Skeletal muscle biology, protein biochemistry, proteomics, biomarker discovery | https://www.maynoothuniversity.ie/biology/our-people/kay-ohlndieck#3 |
| 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 | Natural killer cells, liver disease and cirrhosis, tissue-resident immune cells, immunosenescence | 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.



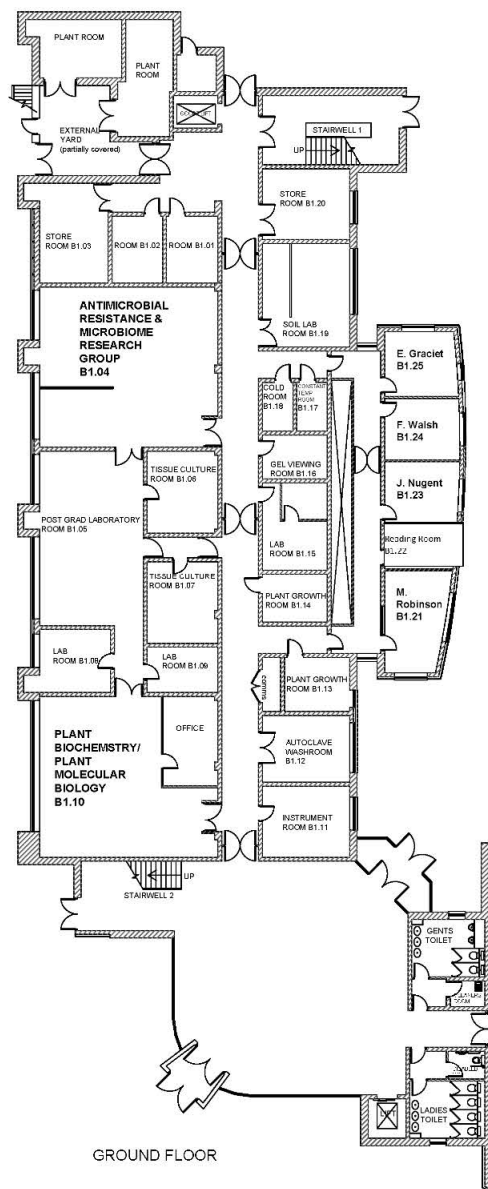
The Maynooth University Biology department is committed to equality, diversity and inclusion. We are proud to have been the first department in the University to receive an externally validated Athena Swan Bronze Department Award for our work toward promoting gender equality, diversity and inclusion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

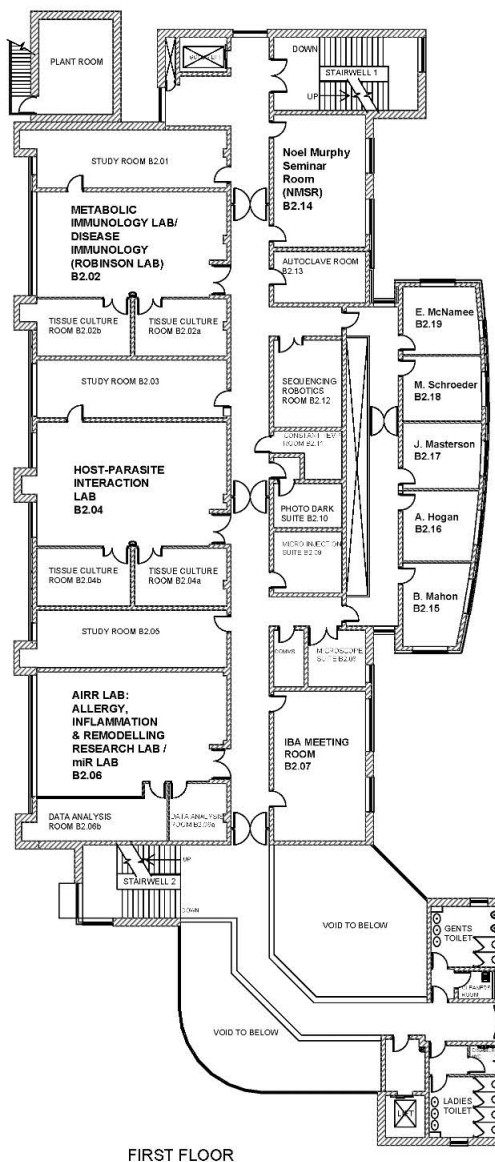
For more information on the Department of Biology's Gender Equality Action Plan, please see <https://www.maynoothuniversity.ie/biology/athena-swan> or contact:

Mark Robinson (Biology Athena SWAN Committee Chair): Mark.Robinson@mu.ie
Gavin Fanning (UG Committee Member)
Louis McCabe (UG Committee Member)
Kirti Achanta (UG Committee Member)

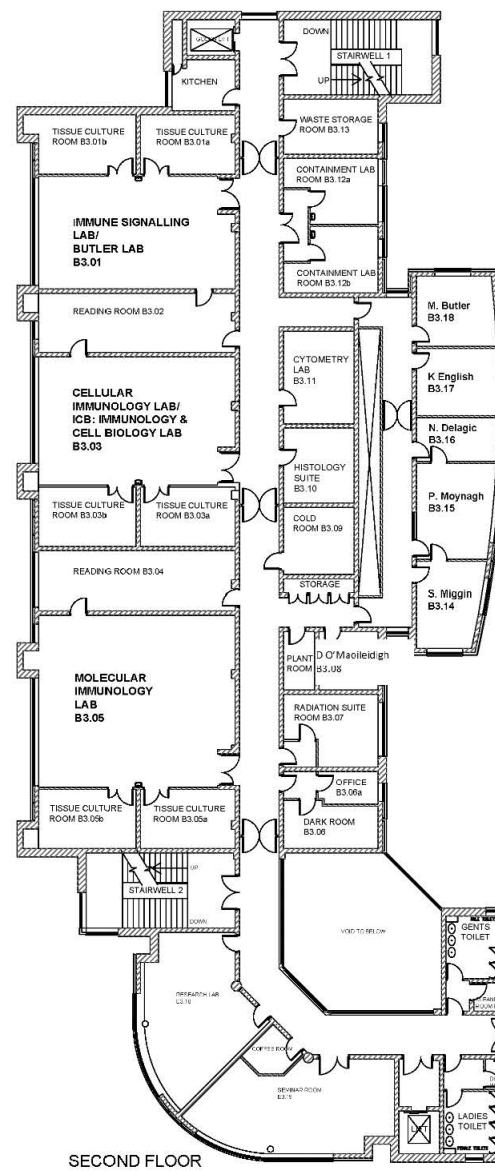
**Biology Department Athena SWAN Committee
September 2023**



BIOSCIENCE BUILDING



BIOSCIENCE BUILDING



BIOSCIENCE BUILDING