Ollscoil na Gaillimhe
University of Galway

Bachelor of Science Degree
College of Science and Engineering
2025/2026

Bachelor of Science Degree

www.universityofgalway.ie/science-engineering/

Overview
Anatomy
Applied Mathematics
Biochemistry
Botany and Plant Science
Chemistry
Computing
Data Science
Earth and Ocean Sciences
Mathematics
Mathematics and Applied Mathematics
Mathematics and Computing
Mathematical Studies and Computing
Medicinal Chemistry
Microbiology
Pharmacology
Physics and Applied Physics
Physics and Climate Physics
Physiology
Plant and AgriBiosciences
Zoology
Year 2 Pathways
Year 2 Electives
Year 3 Streams

Overview

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[60 Credits]**	**[60 Credits]**	**[60 Credits]**
Choose four of the following modules: Each module is 15 Credits. At least one of: MP180 Applied Mathematics MA180 Mathematics MA161 Mathematical Studies At least two of: BO101 Biology CH101 Chemistry CS102 Computer Science PH101 Physics Eligibility to Year 2 pathways of study require certain combinations of Year 1 modules, see page 26, *Year 2 Pathways*.	Choose at least two pathways from: Anatomy Applied Mathematics Biochemistry Botany and Plant Science Chemistry Computing Data Science Earth and Ocean Sciences Mathematics Mathematics and Applied Mathematics Mathematics and Computing Mathematical Studies and Computing Medicinal Chemistry Microbiology Pharmacology Physics and Applied Physics Physics and Climate Physics Physiology Plant and AgriBiosciences Zoology Pathways will be allocated in accordance to student preferences with consideration to quota, timetable compatibility and satisfying a viable Year 3 programme of study. See page 3, *Pathway Selection*, and pages 30-31, *Year 3 Streams*. Electives: Where the total credit of modules allocated via pathways is less than 60, modules are selected from the Year 2 elective offerings, see pages 27-28, *Year 2 Electives*.	Choose up to two pathways from: Anatomy Applied Mathematics Biochemistry Botany and Plant Science Chemistry Computing Data Science Earth and Ocean Sciences Mathematics Mathematics and Applied Mathematics Mathematics and Computing Mathematical Studies and Computing Medicinal Chemistry Microbiology Pharmacology Physics and Applied Physics Physics and Climate Physics Physiology Plant and AgriBiosciences Zoology Select **OPTION A or B** **Option A – Dual Pathways, retaining two options for study in Year 4.** **Option B – Single Pathway.** OPTION A is REQUIRED if taking one of the following, Anatomy, Biochemistry, Botany and Plant Science, Microbiology, Pharmacology, Physiology, Plant and AgriBiosciences, or Zoology. Approved Year 3 study paths are provided on page 30, *Year 3 Streams*.	Choose your honours degree: Anatomy Applied Mathematics Biochemistry Botany and Plant Science Chemistry Computing Data Science Earth and Ocean Sciences Mathematics Mathematics and Applied Mathematics Mathematics and Computing Mathematical Studies and Computing Medicinal Chemistry Microbiology Pharmacology Physics and Applied Physics Physics and Climate Physics Physiology Plant and AgriBiosciences Zoology

Pathway Selection

Allocation of 2nd Year Pathway/Elective Places:

In 2nd Year, there is a capacity limit on the places available in each pathway/elective. Students are allocated their pathways based on their overall 1st Year results and submitted pathway preferences for 2nd Year.

Details on the Procedure/Guidelines for allocating places is in the Student Guide issued to all 1st Year students and available on the web:

https://www.universityofgalway.ie/media/collegeofscienceandengineering/First-Year-Academic-Booklet_print.pdf

https://www.universityofgalway.ie/science-engineering/studentinformation/undergraduatestudentinformation/studentinformationgy301science/

Module Descriptors:

Module descriptors are available at:
Years 1 and 2: https://www.universityofgalway.ie/course-information/programme/BS1
Year 3: https://www.universityofgalway.ie/course-information/programme/BS9
Year 4: https://www.universityofgalway.ie/course-information/programme/BS2

Module Options within Pathways:

Where module options are indicated within a pathway, these modules are highlighted in colour.

Module Codes

AN	Anatomy
BG	Biotechnology
BI	Biochemistry
BM	Biomedical Science
BO	Biology
BPS	Botany & Plant Science
CH	Chemistry
CS	Computer Science
EC	Economics
EOS	Earth & Ocean Sciences
EV	Environmental Science
FR	French
GR	German
HP	Occupational Health
IE	Engineering
MA	Mathematics / Mathematical Studies
MI	Microbiology
MP	Applied Mathematics
MR	Marine Science
PH	Physics & Applied Physics
PM	Pharmacology
SI	Physiology
PAB	Plant and AgriBiosciences
ST	Statistics
TI	Geography
ZO	Zoology

Anatomy Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[Core: 60 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]** PH101 **Physics [15]**	*Semester 1* AN2101 **Cells and Tissues [10]** *Semester 2* AN223 **Embryology & Development [5]** AN226 **Systems Histology [5]**	*Semester 1* AN3105 **Gross Anatomy I [10]** AN326 **Neuroanatomy [5]** *Semester 2* AN3106 **Gross Anatomy II [10]** AN3109 **Human Reproductive Anatomy [5]**	*Semester 1* AN4101 **Gross Anatomy III [10]** AN4103 **Microscopy and Imaging [10]** AN4109 **Research and Communication Skills in Anatomy [5]** AN441 **Physical Anthropology [5]** *Semester 2* AN4110 **Anatomy for Clinical Needs [5]** AN4107 **Anatomy of the Head and Neck [5]** AN444 **Research Project [20]**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Applied Mathematics Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[Core: 55 credits; Options: 5 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 MP180 **Applied Mathematics [15]**	*Semester 1* MP231 **Mathematical Methods I [5]** MP236 **Mechanics I [5]** *Semester 2* MP232 **Mathematical Methods II [5]** MP237 **Mechanics II [5]**	*Semester 1* MP345 **Mathematical Methods I [5]** MP366 **Electromagnetism [5] ^** MP494 **Partial Differential Equations [5] ^** *Semester 2* MP346 **Mathematical Methods II [5]** MP491 **Non Linear Systems [5]** MP365 **Fluid Mechanics [5] ^**	*Full Year - Semester 1 and Semester 2* MA4101 **Teaching and Learning in Mathematics [5]*** MM4000 **Final Year Project [10]** *Semester 1* MP403 **Cosmology And General Relativity [5]** MA3101 **Euclidean and Non-Euclidean Geometry [5]** MP305 **Modelling I [5]** MP366 **Electromagnetism [5] ^** MA385 **Numerical Analysis I [5]** MP494 **Partial Differential Equations [5] ^** MA4102 **Algebraic Foundations of Quantum Computing [5]*** MA3343 **Groups [5]*** ST313 **Applied Regression Models [5]*** ST311 **Applied Statistics I [5]*** PH466 **Astrophysics [5]*** MA302 **Complex Variable [5]*** PH334 **Computational Physics [5]*** MA3343 **Groups [5]*** ST417 **Introduction to Bayesian Modelling [5]*** MA313 **Linear Algebra I [5]*** CS3304 **Logic [5]*** MA490 **Measure Theory [5]*** MA341 **Metric Spaces [5]*** PH328 **Physics of the Environment I [5]*** MA416 **Rings [5]*** PH422 **Solid State Physics [5]*** ST413 **Statistical Modelling [5]*** *Semester 2* MP307 **Modelling II [5]** MA378 **Numerical Analysis II [5]** MP365 **Fluid Mechanics [5] ^** *Continued...*

Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Applied Mathematics Pathway

Year 1	Year 2	Year 3	Year 4
			Semester 2 MA4344 Advanced Group Theory [5]* ST312 Applied Statistics II [5]* CS402 Cryptography [5]* MA3491 Fields and Applications [5]* MA482 Functional Analysis [5]* PH329 Physics of the Environment II [5]* CS319 Scientific Computer [5]* ST4120 Causal Inference [5]* MA342 Topology [5]*
		^ These modules are only available every 2nd Year. Alternative modules are offered next academic year.	* Select one 5-credit module. ^ These modules are only available every 2nd Year. Alternative modules are offered next academic year.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

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Biochemistry Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 Credits]**	**[Core: 60 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]** PH101 **Physics [15]**	*Semester 1* BO201 **Molecular and Cellular Biology (MCB) [5]** BI208 **Protein Structure and Function [5]** *Semester 2* BI206 **Gene Technologies and Molecular Medicine [5]** BI207 **Metabolism and Cell Signalling [5]**	*Semester 1* BI309 **Cell Biology [5]** BO3101 **Developmental Biology [5]** BI319 **Molecular Biology [5]** *Semester 2* BI313 **Cell Signalling [5]** BI317 **Human Molecular Genetics [5]** BI321 **Protein Biochemistry [5]**	*Full Year - Semester 1 and Semester 2* BI453 **Biochemistry Research Project [15]*** BG4101 **Advanced skills and Employability for Biotechnologists [15]*** BI446 **Current Topics in Bioscience [5]** BI447 **Literature Review and Presentation [10]** BI451 **Research Paper Analysis [5]** *Semester 1* BI452 **Biochemistry Principles and Experimental Design [5]** BI445 **Biomolecules [5]** BI448 **Modern Biotechnologies [5]** *Semester 2* BI429 **Advanced Chromosome Biology [5]** BI449 **Molecular and Cellular Biology [5]**
			Assigned one of BI453 or BG4101.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Botany and Plant Science Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 25 Credits, Options: 5 Credits]**	**[Core: 45 credits; Options: 15 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]**	*Semester 1* BO202 **Evolution and the Tree of Life [5]** BPS202 **Fundamentals in Aquatic Plant Science [5]** BO201 **Molecular and Cellular Biology (MCB) [5]** *Semester 2* BPS203 **Plant Diversity, Physiology and Adaptation [5]**	*Full Year - Semester 1 and Semester 2* BPS3101 **Techniques in Field Ecology and Conservation [5]*** *Semester 1* ZO415 **Biometry [5]** BPS3102 **Plant Resources and Ecosystems [5]** BPS3103 **Plant Function [5]** *Semester 2* BPS3107 **Plants, Atmosphere and Environment throughout Earth History [5]** BPS3104 **Plant Interactions [5]**	*Full Year - Semester 1 and Semester 2* BPS4101 **Major Research Project [20]** ZO414 **Advanced Zoology Topics [5]*** ZO418 **Phylogenetics & Conservation [5]*** *Semester 1* BPS4106 **Botany and Plant Science Literature Review and Presentation [5]** BPS402 **Current Topics in Algal Research [5]** BPS4107 **Plant Cell Biology and Biochemistry [5]** EOS418 **Applied Field Hydrogeology [5]*** BI445 **Biomolecules [5]*** ZO4102 **Biostatistics for Natural Sciences [5]** BI448 **Modern Biotechnologies [5]*** *Semester 2* BPS405 **Ecology and Conservation Issues [5]** BPS4104 **Primary Productivity and Global Change [5]** AR347 **Palaeoecology - Reconstructing Past Environments [5]*** EOS409 **Biophysical Interactions in the Ocean [5]*** EOS407 **History of Life [5]*** ZO416 **Integrative Zoology [5]*** BI449 **Molecular and Cellular Biology [5]*** EOS422 **Sedimentary Basins [5]***
			* Select remaining modules to a value of 15 credits.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Chemistry Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 40 Credits]**	**[Core: 60 credits]**
Full Year – Semester 1 and Semester 2 CH101 **Chemistry [15]**	*Semester 1* CH204 **Inorganic Chemistry [5]** CH203 **Physical Chemistry [5]** *Semester 2* CH205 **Analytical and Environmental Chemistry [5]** CH202 **Organic Chemistry [5]**	*Semester 1* CH326 **Analytical Chemistry & Molecular Structure [5]** CH333 **Experimental Chemistry I [5]** CH311 **Organic Chemistry [5]** *Semester 2* CH3101 **Computers and Chemical Research [10]** CH334 **Experimental Chemistry II [5]** CH307 **Inorganic Chemistry [5]** CH313 **Physical Chemistry [5]**	*Semester 1* CH451 **Practical Skills Development [5]** CH4101 **Research Investigation [20]** CH448 **Spectroscopic and Physical Methods and Applications [5]** *Semester 2* CH445 **Advanced Inorganic Chemistry [5]** CH446 **Bioinorganic and Inorganic Medicinal Chemistry [5]** CH438 **Bioorganic Chemistry [5]** CH4113 **Organic Chemistry [5]** CH429 **Physical Chemistry 1 [5]** CH432 **Physical Chemistry 2 [5]**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Computing Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 20 credits; Options: 10 credits]**	**[Core: 40 credits; Options: 20 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 CS102 **Computer Science [15]**	*Semester 1* CT2101 **Object Oriented Programming 1 [5]** CS2101 **Programming for Science and Finance [5]** *Semester 2* CT2102 **Object Oriented Programming 2 [5]** CS211 **Programming and Operating Systems [5]**	*Semester 1* CS3304 **Logic [5]** CT3535 **Object Oriented Programming [5]** CT511 **Databases [5]*** MA215 **Mathematical Molecular Biology I [5]*** MP305 **Modelling I [5]*** CT331 **Programming Paradigms [5]*** *Semester 2* CT2108 **Networks and Data Communications I [5]** CS319 **Scientific Computing [5]** MA216 **Mathematical Molecular Biology II [5]*** MP307 **Modelling II [5]*** CT411 **Multimedia Development [5]***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** *Semester 1* CS4102 **Geometric Foundations in Data Analysis I [5]** CT336 **Graphics And Image Processing [5]** CT4101 **Machine Learning [5]** MA4102 **Algebraic Foundations of Quantum Computing [5]*** CT318 **Human Computer Interaction [5]*** MP305 **Modelling I [5]*** CT4100 **Information Retrieval [5]*** MA385 **Numerical Analysis I [5]*** CT331 **Programming Paradigms [5]*** *Semester 2* CS402 **Cryptography [5]** CS4103 **Geometric Foundations in Data Analysis II [5]** CS4423 **Networks [5]** CT414 **Distributed Systems and Cooperative Computing [5]*** CT421 **Artificial Intelligence [5]*** MP307 **Modelling II [5]*** MA378 **Numerical Analysis II [5]*** CT548 **Object Oriented Software Design & Development [5]***
		* Select two 5-credit modules	*** Select four 5-credit modules**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Data Science Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 30 credits; Options: 30 credits]**	**[Core: 50 credits; Options: 10 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 MA180 **Mathematics [15]** CS102 **Computer Science [15]**	*Statistics– Semester 1* ST1111 **Probability Models [5]** *Statistics– Semester 2* ST1112 **Statistical Methods [5]** *Computing - Semester 1* CS2101 **Programming for Science and Finance [5]** CT2101 **Object Oriented Programming 1 [5]** *Computing - Semester 2* CT2102 **Object Oriented Programming 2 [5]** *Mathematics - Semester 1* MA284 **Discrete Mathematics [5]** MA2286 **Differential Forms [5]** *Mathematics - Semester 2* MA283 **Linear Algebra [5]**	*Statistics– Semester 1* ST311 **Applied Statistics [5]** ST2003 **Random Variables [5]** *Statistics– Semester 2* ST312 **Applied Statistics 2 [5]** ST2004 **Statistical Inference [5]** *Computing - Semester 1* CT511 **Databases [5]** CS3304 **Logic [5] *** CT3535 **Object Oriented Programming [5]*** CT331 **Programming Paradigms [5] *** *Computing– Semester 2* CS319 **Scientific Computing [5]** CT411 **Multimedia Development [5]*** CT2108 **Networks and Data Communications [5]*** CS211 **Programming and Operating Systems [5]*** *Mathematics - Semester 1* MA215 **Mathematical Molecular Biology [5]*** MP305 **Modelling I [5]*** *Mathematics - Semester 2* MA2287 **Complex Variables [5] *** MA216 **Mathematical Molecular Biology II [5] *** MP307 **Modelling II [5] ***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** *Statistics– Semester 1* ST413 **Statistical Modelling [5]** ST417 **Bayesian Modelling [5]** *Statistics– Semester 2* ST4120 **Causal Inference [5]*** ST4140 **Modern Statistical Methods [5]** *Computing - Semester 1* CT4101 **Machine Learning [5]** MA4102 **Algebraic Foundations of Quantum Computing [5]*** CS4102 **Geometric Foundations of Analysis I [5]*** CT336 **Graphics and Image Processing [5]*** CT318 **Human Computer Interaction [5]*** CT4100 **Information Retrieval [5]*** *Computing - Semester 2* CS402 **Cryptography [5]** CS4423 **Networks [5]** CT421 **Artificial Intelligence [5] *** CT414 **Distributive and Cooperative Systems [5]** CS4103 **Geometric Foundations of Analysis II [5]*** MA461 **Probabilistic Models for Molecular Biology [5] ***
		*Select remaining modules to the value of 30 credits.	* Select remaining modules to a value of 10 credits.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Earth and Ocean Sciences Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 35 credits: Options: 10 credits]**	**[Core: 40 credits; Options: 20 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]** PH101 **Physics [15]**	*Semester 1* EOS213 **Introduction to Ocean Science [10]** *Semester 2* EOS2102 **The Earth: From Core to Crust [10]**	*Semester 1* EOS305 **Introduction to Applied Field Hydrology [5]** EOS3107 **Minerals, magmas and Metamorphism [10]*** EOS3103 **Palaeontology and Evolution [5]** EOS323 **Sediments and the Sedimentary Record [5]** *Semester 2* EOS3104 **Fieldskills Training [5]** EOS3101 **Geological Structures and Maps [5]** EOS304 **Aquatic Geochemistry [5]*** EOS3102 **Environmental and Marine Geophysical Remote Sensing [5]** EOS303 **Ocean Dynamics [5]**	*Full Year – Semester 1 and Semester 2* EOS4106 **Fieldskills in Oceanography [5]*** *Semester 1* EOS4107 **Advanced Fieldskills [5]** EOS418 **Applied Field Hydrogeology [5]** EOS402 **Global Change [5]** EOS4102 **EOS Minor Final Year Project [10]*** EOS403 **Final Year Project [20]*** BPS402 **Current Topics in Algal Research [5]*** BPS4107 **Plant Cell Biology and Biochemistry [5]*** PAB4103 **Climate Change, Plants & Agriculture [5]*** ZO418 **Phylogenetics & Conservation [5]*** *Semester 2* EOS409 **Biophysical Interactions in the Ocean [5]** EOS4101 **Earth Observation and Remote Sensing [5]** EOS407 **History of Life [5]** EOS422 **Sedimentary Basins [5]** BPS3107 **Plants, Atmosphere and Environment throughout Earth History [5]*** BPS4104 **Primary Productivity and Global Change [5]*** EOS4105 **Economic Geology: principles, practice and sustainability [5]***
			* Assigned one project module: EOS403 [20] or EOS4102 [10] If allocated EOS4102, select elective modules to a value of 10 credits.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Mathematics Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits; Options: 10 credits]**	**[Core: 30 credits; Options: 30 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 MA180 **Mathematics [15]**	*Semester 1* MA284 **Discrete Mathematics [5]** MA2286 **Differential Forms [5]** *Semester 2* MA283 **Linear Algebra [5]** MA2287 **Complex Analysis [5]**	*Semester 1* MA3101 **Euclidean and Non-Euclidean Geometry [5]** MA3343 **Groups [5]** MA341 **Metric Spaces [5]** *One of:* ST2001 **Statistics for Data Science I [5]*** ST2003 **Random Variables [5]*** ST311 **Applied Statistics I [5]*** *Semester 2* MA3491 **Fields and Applications [5]** MA378 **Numerical Analysis II [5]** MA342 **Topology [5]** *One of:* ST2002 **Statistics for Data Science II [5]*** ST2004 **Statistical Inference [5]*** ST312 **Applied Statistics II [5]***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** MA4101 **Teaching and Learning in Mathematics [5]*** *Semester 1* MA490 **Measure Theory [5]** MA416 **Rings [5]** MA4102 **Algebraic Foundations of Quantum Computing [5]*** ST313 **Applied Regression Models [5]*** ST311 **Applied Statistics [5]*** MP403 **Cosmology and General Relativity [5]*** CS4102 **Geometric Foundations in Data Analysis I [5]*** ST417 **Introduction to Bayesian Modelling [5]*** MA437 **Introduction to Mathematical Research Topics I [5]*** CS3304 **Logic [5]*** MP345 **Mathematical Methods I [5]*** MP305 **Modelling I [5]*** MP366 **Electromagnetism [5]** MA385 **Numerical Analysis I [5]*** ST413 **Statistical Modelling [5]*** *Semester 2* MA482 **Functional Analysis [5]** MA4344 **Advanced Group Theory [5]** MA495 **Actuarial Mathematics: Life Contingencies II [5]*** ST312 **Applied Statistics II [5]*** CS402 **Cryptography [5]*** MA418 **Differential Equations with Financial Derivatives [5]*** CS4103 **Geometric Foundations in Data Analysis II [5]***

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Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Mathematics Pathway

Year 1	Year 2	Year 3	Year 4
			MA438 Introduction to Mathematical Research Topics II [5]* MP346 Mathematical Methods II [5]* MP307 Modelling II [5]* ST4140 Modern Statistical Methods [5]* CS4423 Networks [5]* MP491 Nonlinear Systems [5]* MA461 Probabilistic Models for Molecular Biology [5]* CS319 Scientific Computer [5]* ST4120 Causal Inference [5]*
			* Select optional modules to a value of 30 credits.

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Year 2 Electives
Year 3 Streams

Mathematics and Applied Mathematics Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 50 credits; Options: 10 credits]**	**[Core: 60 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 MP180 **Applied Mathematics [15]** MA180 **Mathematics (Honours) [15]**	*Mathematics – Semester 1* MA2286 **Differential Forms I [5]** MA284 **Discrete Mathematics [5]** *Mathematics – Semester 2* MA283 **Linear Algebra [5]** MA2287 **Complex Analysis [5]** *Applied Mathematics – Semester 1* MP231 **Mathematical Methods I [5]** MP236 **Mechanics I [5]** *Applied Mathematics – Semester 2* MP237 **Mechanics II [5]** MP232 **Mathematical Methods II [5]**	*Semester 1* MA3101 **Euclidean and Non-Euclidean Geometry [5]** MA3343 **Groups [5]** MP345 **Mathematical Methods I [5]** MP366 **Electromagnetism [5] ^** MP494 **Partial Differential Equations [5] ^** *One of:* ST2001 **Statistics for Data Science I [5]*** ST2003 **Random Variables [5]*** ST311 **Applied Statistics I [5]*** *Semester 2* MA3491 **Fields and Applications [5]** MP346 **Mathematical Methods II [5]** MP491 **Non Linear Systems [5]** MA342 **Topology [5]** MP365 **Fluid Mechanics [5] ^** *One of:* ST2002 **Statistics for Data Science II [5]*** ST2004 **Statistical Inference [5]*** ST312 **Applied Statistics II [5]***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** *Semester 1* MP366 **Electromagnetism [5] ^** MA490 **Measure Theory [5]** MP305 **Modelling I [5]** MP494 **Partial Differential Equations [5] ^** MA416 **Rings [5]** *Semester 2* MA4344 **Advanced Group Theory [5]** MA482 **Functional Analysis [5]** MP307 **Modelling II [5]** MA378 **Numerical Analysis II [5]** MP365 **Fluid Mechanics [5] ^**
		* Select modules to a value of 10 credits. ^ These modules are only available every 2nd Year. Alternative modules are offered next academic year.	^ These modules are only available every 2nd Year. Alternative modules are offered next academic year.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Mathematics and Computing Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 40 credits; Options: 20 credits]**	**[Core 55 credits; Options: 5 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 MA180 Mathematics [15] CS102 Computer Science [15]	*Mathematics – Semester 1* MA2286 Differential Forms I [5] MA284 Discrete Mathematics [5] *Mathematics – Semester 2* MA283 Linear Algebra [5] MA2287 Complex Analysis [5] *Computing – Semester 1* CT2101 Object Oriented Programming 1 [5] CS2101 Programming for Science and Finance [5] *Computing – Semester 2* CT2102 Object Oriented Programming 2 [5] CS211 Programming and Operating Systems [5]	*Semester 1* MA3101 Euclidean and Non-Euclidean Geometry [5] MA3343 Groups [5] CS3304 Logic [5] CT3535 Object Oriented Programming [5] CT511 Databases [5]* CT331 Programming Paradigms [5]* *One of:* ST2001 Statistics for Data Science I [5]* ST2003 Random Variables [5]* ST311 Applied Statistics I [5]* *Semester 2* MA3491 Fields and Applications [5] CT2108 Networks and Data Communications I[5] CS319 Scientific Computing [5] MA342 Topology [5] CT411 Multimedia Development [5]* *One of:* ST2002 Statistics for Data Science II [5]* ST2004 Statistical Inference [5]* ST312 Applied Statistics II [5]*	*Full Year – Semester 1 and Semester 2* MM4000 Final Year Project [10] *Semester 1* CS4102 Geometric Foundations in Data Analysis I [5] CT4101 Machine Learning [5] MA490 Measure Theory [5] MA416 Rings [5] MA4102 Algebraic Foundations of Quantum Computing [5]* CT318 Human Computer Interaction [5]* MA437 Introduction to Mathematical Research [5]* CT4100 Information Retrieval [5]* MA385 Numerical Analysis I [5]* CT331 Programming Paradigms [5]* *Semester 2* MA4344 Advanced Group Theory [5] CS402 Cryptography [5] MA482 Functional Analysis [5] CS4103 Geometric Foundations in Data Analysis II [5] MA378 Numerical Analysis II [5] CT421 Artificial Intelligence [5]* CT414 Distributed Systems and Cooperative Computing [5]* CS4423 Networks [5]* CT548 Object Oriented Software Design and Development [5]* MA461 Probabilistic Methods in Bioinformatics [5]*
		* Select modules to the value of 20 credits	* Select remaining modules to a value of 5 credits.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

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Physics and Climate Physics
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Mathematical Studies and Computing Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 50 credits; Options: 10 credits]**	**[Core 50 credits; Options: 10 credits]**
Optional Modules to be chosen in consultation with the School of Mathematical and Statistical Sciences			
Full Year – Semester 1 and Semester 2 CS102 **Computer Science [15]** MA161 **Mathematical Studies [15]** or MA180 **Mathematics [15]**	*Mathematical Studies – Semester 1* MA211 **Calculus I [5]** MA284 **Discrete Mathematics [5]** *Mathematical Studies – Semester 2* MA283 **Linear Algebra [5]** MA212 **Calculus II [5]** *Computing – Semester 1* CT2101 **Object Oriented Programming 1 [5]** CS2101 **Programming for Science and Finance [5]** *Computing – Semester 2* CT2102: **Object Oriented Programming 2 [5]** CS211 **Programming and Operating Systems [5]**	*Semester 1* MA3343 **Groups [5]** MA302 **Complex Variable [5]** MA313 **Linear Algebra I [5]** CS3304 **Logic [5]** CT3535 **Object Oriented Programming [5]** ST2001 **Statistics for Data Science I [5]** CT511 **Databases [5]*** CT331 **Programming Paradigms [5]*** *Semester 2* CT2108 **Networks and Data Communications I[5]** CS319 **Scientific Computing [5]** CS3101 **Software for Mathematical Scientists and Educators [5]** ST2002 **Statistics for Data Science II [5]** CT411 **Multimedia Development [5]***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** *Semester 1* MA3101 **Euclidean and Non-Euclidean Geometry [5]** CS4102 **Geometric Foundations in Data Analysis I [5]** MA3343 **Groups [5]** CT4101 **Machine Learning [5]** ST311 **Applied Statistics I [5]*** CT318 **Human Computer Interaction [5]*** CT4100 **Information Retrieval [5]*** MA341 **Metric Spaces [5]*** MA385 **Numerical Analysis I [5]*** CT331 **Programming Paradigms [5]*** *Semester 2* MA4344 **Advanced Group Theory [5]** CS402 **Cryptography [5]** CS4103 **Geometric Foundations in Data Analysis II [5]** MA342 **Topology [5]** CT421 **Artificial Intelligence [5]*** ST312 **Applied Statistics II [5]*** CT414 **Distributed Systems and Cooperative Computing [5]*** CS4423 **Networks [5]*** MA378 **Numerical Analysis II [5]*** CT548 **Object Oriented Software Design and Development [5]***
		* Select modules to the value of 10 credits	* Select remaining modules to a value of 10 credits.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Medicinal Chemistry Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 60 credits]**	**[Core 55 credits; Options: 5 credits]**
Full Year – Semester 1 and Semester 2 BO101 Biology [15] CH101 Chemistry [15] PH101 Physics [15]	*Semester 1* BO201 Molecular and Cellular Biology (MCB) [5] CH204 Inorganic Chemistry [5] CH203 Physical Chemistry [5] PM209 Applied Concepts in Pharmacology [5] PM208 Fundamental Concepts in Pharmacology [5] *Semester 2* CH2101 Medicinal Chemistry [5] CH202 Organic Chemistry [5] CH205 Analytical and Environmental Chemistry [5]	*Semester 1* CH326 Analytical Chemistry & Molecular Structure [5] CH333 Experimental Chemistry I [5] CH311 Organic Chemistry [5] CH332 Drug Design & Drug Discovery [10] PM311 Introduction to Toxicology [5] *Semester 2* CH3101 Computers and Chemical Research [10] CH334 Experimental Chemistry II [5] CH307 Inorganic Chemistry [5] CH313 Physical Chemistry [5] CH3103 Validation in the Pharmaceutical and Medical Device Industry [5]	*Semester 1* CH451 Practical Skills Development [5] CH4101 Research Investigation [20] CH448 Spectroscopic and Physical Methods and Applications [5] Semester 2 CH446 Bioinorganic and Inorganic Medicinal Chemistry [5] CH438 Bioorganic Chemistry [5] CH4114 Current Topics in Medicinal Chemistry [10] CH4113 Organic Chemistry [5] CH445 Advanced Inorganic Chemistry [5]* CH429 Physical Chemistry 1 [5]* CH432 Physical Chemistry 2 [5]*
			* Select one 5 credit module

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Microbiology Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[Core 50 credits; Options: 10 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]**	*Semester 1* MI202 **Laboratory Skills in Microbiology I [5]** BO201 **Molecular and Cellular Biology (MCB) [5]** *Semester 2* MI203 **Laboratory Skills in Microbiology II [5]** MI204 **Microbes and the Environment [5]**	*Semester 1* MI323 **Food and Industrial Microbiology [5]** MI3101 **Microbial Genomics [5]** MI326 **Microbial Metabolic and Molecular Systems [5]** *Semester 2* MI322 **Environmental Microbiology [5]** MI324 **Immunology and Recombinant Techniques [5]** MI325 **Microbial Infectious Diseases [5]**	*Semester 1* MI405 **Project [20]** MI4104 **Scientific Communication [5]** Semester 2 MI4103 **Environmental Biotechnology [5]** MI437 **Bacterial Pathogenesis [5]** MI4105 **Problem Solving Paper [5]** MI4106 **Glycosciences and Recombinant Protein Production [5]** MI439 **The Meaning of Life: Bioinformatics [5]** MI4101 **Host Microbe Interactions [5]*** MI4102 **Microbial Ecosystems & Systems Biology [5]*** MI4107 **Microbiomes Underpinning Agriculture [5]***
			* Select two 5 credit modules

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Pharmacology Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[Core 60 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]** PH101 **Physics [15]**	*Semester 1* PM209 **Applied Concepts in Pharmacology [5]** PM208 **Fundamental Concepts in Pharmacology [5]** *Semester 2* PM210 **Molecular Pharmacology and Signalling [10]**	*Semester 1* PM309 **Drugs and Disease I [10]** PM311 **Introduction to Toxicology [5]** *Semester 2* PM3103 **Advanced Pharmacology [5]** PM3102 **Neuropharmacology [5]** PM3101 **Pharmacology in Practice [5]**	*Semester 1* PM431 **Research Project [20]** PM432 **Experimental Pharmacology [10]** Semester 2 PM435 **Advanced Technologies for Therapeutics [5]** PM436 **Advanced Toxicology [5]** PM433 **Drug Development and Emerging Therapies [10]** PM434 **Molecular Pharmacology and Therapeutics [10]**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Physics and Applied Physics Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 40 credits]**	**[Core: 55 credits; Options: 5 credits]**
Full Year – Semester 1 and Semester 2 PH101 **Physics [15]**	*Semester 1* PH2113 **Energy, Forces and Motion in Physics [5]** PH2114 **Modern Physics [5]** *Semester 2* PH2115 **Electricity and Magnetism [5]** PH2116 **Computational Physics [5]**	*Full Year – Semester 1 and Semester 2* PH3101 **Experimental and Computational Physics [15]** *Semester 1* PH338 **Properties of Materials [5]** PH333 **Quantum Physics [5]** PH331 **Wave Optics [5]** *Semester 2* PH335 **Nuclear and Particle Physics [5]** PH337 **Thermal Physics [5]**	*Full Year – Semester 1 and Semester 2* PH4102 **Final Year Project [20]** PH4101 **Physics Problem Solving** *Semester 1* PH424 **Electromagnetism and Special Relativity [5]** PH421 **Quantum Mechanics [5]** PH422 **Solid State Physics [5]** PH428 **Atmospheric Physics & Climate Change [5]*** PH430 **Biophotonics [5]*** *Semester 2* PH423 **Applied Optics & Imaging [5]** PH425 **Lasers & Spectroscopy [5]** PH429 **Nanotechnology [5]** PH4109 **Exoplanets and Planet Formation [5]***
			* Select one 5-credit module

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Physics and Climate Physics Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits; Options: 20 credits]**	**[Core: 60 credits]**	**[Core: 55 credits, Options: 5 credits]**
Full Year – Semester 1 and Semester 2 CH101 Chemistry [15] PH101 Physics [15]	*Semester 1* PH2113 Energy, Forces and Motion in Physics [5] PH2114 Modern Physics [5] MP231 Mathematical Methods I [5] MG3113 Megatrends [5] *Semester 2* PH2115 Electricity and Magnetism [5] PH2116 Computational Physics [5] BSS2104 Introduction to Sustainability I [5] MP232 Mathematical Methods II [5] ***Chemistry**** *Semester 1* CH204 Inorganic Chemistry [5] CH203 Physical Chemistry [5] *Semester 2* CH202 Organic Chemistry [5] CH205 Analytical and Environmental Chemistry [5] ***Earth and Ocean Sciences**** *Semester 1* EOS213 Introduction to Ocean Science [10] *Semester 2* EOS2102 The Earth: From Core to Crust [10]	*Full Year – Semester 1 and Semester 2* PH3101 Experimental and Computational Physics [15] *Semester 1* MP345 Mathematical Methods I [5] PH328 Physics of the Environment I [5] PH338 Properties of Materials [5] PH333 Quantum Physics [5] PH331 Wave Optics [5] *Semester 2* MP346 Mathematical Methods II [5] PH329 Physics of the Environment II [5] PH335 Nuclear and Particle Physics [5] PH337 Thermal Physics [5]	*Full Year – Semester 1 and Semester 2* PH4102 Final Year Project [20] PH4101 Physics Problem Solving [5] *Semester 1* PH428 Atmospheric Physics & Climate Change [5] PH424 Electromagnetism and Special Relativity [5] PH421 Quantum Mechanics [5] PH422 Solid State Physics [5] *Semester 2* PH425 Lasers & Spectroscopy [5] EOS4101 Remote Sensing [5] PH4105 Ocean Climate Physics [5] * TI2108 Introduction to Palaeoclimatology [5] *
	*Students can pursue this pathway in year 2 by choosing the above modules in either Chemistry, or in Earth and Ocean Sciences		* Students select one of PH4105 or TI2108

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Physiology Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[Core: 60 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]** CH101 **Chemistry [15]** PH101 **Physics [15]**	*Semester 1* SI2101 **Introductory Physiology [10]** *Semester 2* SI2102 **Systems Physiology [10]**	*Full Year – Semester 1 and Semester 2* SI3104 **Experimental Physiology [10]** *Semester 1* SI3103 **Endocrinology & Reproduction [5]** SI311 **Neurophysiology [5]** *Semester 2* SI3105 **Cardio-respiratory Physiology [5]** SI3106 **Immunology [5]**	*Semester 1* SI4103 **Integrative Physiology [10]** SI4104 **Pathophysiology of Disease [10]** SI4105 **Communication Skills [10]** *Semester 2* SI4106 **Therapeutics of Disease [10]** SI435 **Project [20]**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Plant and AgriBiosciences Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 20 credits; Options: 10 credits]**	**[Core: 50 credits; Options: 10 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]**	*Semester 1* BO202 **Evolution and the Tree of Life [5]** BO201 **Molecular and Cellular Biology(MCB) [5]** *Semester 2* PAB2101 **AgriBiosciences [5]** MI204 **Microbes and the Environment [5]**	*Semester 1* PAB3102 **AgriBiosciences for Sustainable Global Development [5]** PAB3101 **Soil Sciences [5]** BSS2103 **Introduction to Sustainability 1 [5] *** *Semester 2* PAB3103 **Plant and Agricultural Genetics [5]** PAB3104 **Systems Biology of Plant-Environment Interactions [5]** AG2105 **Farming for a Circular Bioeconomy [5] *** BSS2104 **Introduction to Sustainability 2 [5] ***	*Full Year – Semester 1 and Semester 2* PAB4106 **Current Topics in Plant and AgriBiosciences [5]** PAB4105 **AgriBiosciences Internship Project[20]**** PAB4101 **PAB Research Project [20]**** *Semester 1* PAB4103 **Climate Change, Plants & Agriculture [5]** PAB4102 **Plant Genetics and Systems Biology [5]** PAB4108 **Food and Climate Change [5]** PAB4109 **Research Training Placement [5] *** *Semester 2* PAB4104 **Plant and Agri-Biotechnologies [5]** MI4107 **Microbiomes Underpinning Agriculture [5]** AG2105 **Farming for a Circular Bioeconomy [5] *** BSS2104 **Introduction to Sustainability 2 [5] ***
		*Select options to a value of 10 ECTS	**Assigned one project module: PAB4101 [20] or PAB4105 [20] *Select remaining modules to a value of 15 Credits – list provided by PAB.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

Zoology Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	[Core: 20 credits; Options: 10 credits]	**[55 credits; Options: 5 credits]**
Full Year – Semester 1 and Semester 2 BO101 **Biology [15]**	*Semester 1* BO202 **Evolution and the Tree of Life [5]** BO201 **Molecular and Cellular Biology(MCB) [5]** *Semester 2* ZO208 **Invertebrate Biology [5]** ZO209 **Vertebrate Zoology [5]**	*Semester 1* ZO317 **Evolutionary Biology [5]** ZO415 **Biometry [5]*** BO3101 **Developmental Biology [5]*** EOS3103 **Palaeontology and Evolution [5]*** ZO3101 **Marine Habitat [5]*** *Semester 2* ZO315 **Applied Ecology [5]** ZO320 **Concepts in Population and Community Ecology [5]** AN223 **Embryology & Development [5]*** ZO318 **Geographic Information Systems and Biostatistics [5]***	*Full Year – Semester 1 and Semester 2* ZO418 **Phylogenetics & Conservation [5]** *Semester 1* ZO4102 **Biostatistics for Natural Sciences [5]** ZO417 **Marine & Coastal Ecology [5]** ZO4101 **Research Project in Zoology [20]** BI445 **Biomolecules [5]*** BPS402 **Current Topics in Algal Research [5]*** EOS402 **Global Change [5]*** BI448 **Modern Biotechnologies [5]*** BPS4107 **Plant Cell Biology and Biochemistry [5]*** *Semester 2* ZO4103 **Animals in Captivity [5]** ZO416 **Integrative Zoology [5]** ZO425 **Literature Review and Presentation [10]** MI4103 **Environmental Biotechnology [5]*** MI437 **Bacterial Pathogenesis [5]*** BPS405 **Ecology and Conservation Issues [5]*** EOS407 **History of Life [5]*** MI4102 **Microbial Ecosystems & Systems Biology [5]*** BI449 **Molecular and Cellular Biology [5]*** ZO419 **Practical Skills in Zoology [5]*** BPS4104 **Primary Productivity and Global Change [5]*** ZO4104 **Zoonotic Diseases [5]*** MI4106 **Glycosciences and Recombinant Protein Production [5]***
		* Select two 5-credit modules *ZO415 is a required module for students not having ST2002 in Year 2.	*Select remaining modules to a value of 5 credits

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline
Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.

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Year 2 Pathways and their pre-requisite modules

Year 2 Pathway	Pathway Prerequisite	Pathway Credits
Anatomy (AN)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	20
Pharmacology (PM)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	20
Physiology (SI)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	20
Medicinal Chemistry(MDCH)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	40
Chemistry (CH)	CH101 and [at least one of MA161/MA180/MP180]	20
Biochemistry(BI)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	20
Microbiology (MI)	BO101 and CH101 and [at least one of MA161/MA180/MP180]	20
Plant and AgriBiosciences (PAB)	BO101 and [at least one of MA161/MA180/MP180]	20
Botany and Plant Science (BPS)	BO101 and [at least one of MA161/MA180/MP180]	20
Earth and Ocean Science (EOS)	BO101 and CH101 and PH101 and [one of MA161/MA180/MP180]	20
Zoology (ZO)	BO101 and [at least one of MA161/MA180/MP180]	20
Physics and Climate Physics (PHCP)	PH101 and CH101 and [at least one of MA161/MA180/MP180] *(Taken with either CH pathway or EOS pathway. If taken with EOS pathway, BO101 required)*	40
Physics and Applied Physics (PHAP)	PH101 and [at least one of MA161/MA180/MP180]	20
Mathematics (MA)	MA180	20
Applied Mathematics (MP)	MP180	20
Computing (CS)	CS102 and [at least one of MA161/MA180/MP180]	20
Data Science (DS)	CS102 and MA180	40
Mathematical Studies and Computing (MSCS)	[MA161 or MA180] and CS102	40

For details on allocation procedures, refer to Overview, page 2, and Pathway Selection, page 3.

Year 2 Electives and their pre-requisite modules

Module	Module Name	Credits	Semester	Pre-Requisites	Notes
BO201	Molecular and Cellular Biology	5	Sem 1	BO101	
BO202	Evolution and the Tree of Life	5	Sem 1	BO101	
BPS202	Fundamentals in Aquatic Plant Science	5	Sem 1	BO101	See Note 1)
EOS213	Introduction to Ocean Science	10	Sem 1	BO101 & CH101 & PH101	See Note 1)
BO2101	Scientific Writing Skills	5	Sem 1	BO101	
ST2001	Statistics for Data Science 1	5	Sem 1	none	
ST1111	Probability Models	5	Sem 1	MA180	
MA211	Calculus I	5	Sem 1	At least one of MA161, MA180 or MP180	
MA215	Mathematical Molecular Biology I	5	Sem 1	At least one of MA161 or MA180	
MA284	Discrete Mathematics	5	Sem 1	At least one of MA161, MA180 or MP180	
MP231	Mathematical Methods I	5	Sem 1	At least one of MA161, MA180 or MP180	
MP236	Mechanics I	5	Sem 1	MP180	
PM208	Fundamental Concepts in Pharmacology	5	Sem 1	BO101 & CH101 & PH101	See Note 2)
PM209	Applied Concepts in Pharmacology	5	Sem 1	PM208	See Note 2)
PH2111	Makerspace Creative Technologies I	5	Sem 1	none	
PS3108	Design Thinking	5	Sem 1	none	
PS3109	Vertically Integrated Project	5	Sem 1	none	See Note 3)
MG3117	Intercultural Encounters	5	Sem 1	none	
LN2210	Scileanna Gaeilge don Eolaíocht 1	5	Sem 1	none	

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Year 2 Electives and their pre-requisite modules

Module	Module Name	Credits	Semester	Pre-Requisites	Notes
PS3123	Exploring Routes to Wellbeing	5	Sem 2	none	
BPS203	Plant Diversity, Physiology & Adaptation	5	Sem 2	BO101	See Note 1)
EOS2102	The Earth: From Core to Crust	10	Sem 2	BO101 & CH101 & PH101	See Note 1)
PAB2101	AgriBiosciences	5	Sem 2	BO101	See Note 1)
ST2002	Statistics for Data Science 2	5	Sem 2	ST2001	
ST1112	Statistical Methods	5	Sem 2	MA180	
MA1993	Mathematics of Finance	5	Sem 2	MA180	
MA2111	Anailís	5	Sem 2	MA180	
MA2104	Matamaitic don Inbhuanaitheacht (Mathematics for Sustainability)	5	Sem 2	none	
MA283	Linear Alegbra	5	Sem 2	At least one of MA161, MA180 or MP180	
MA212	Calculus II	5	Sem 2	At least one of MA161, MA180 or MP180	
MA216	Mathematical Molecular Biology II	5	Sem 2	At least one of MA161 or MA180	
MP232	Mathematical Methods II	5	Sem 2	At least one MA161, MA180, or MP180	
MP237	Mechanics II	5	Sem 2	MP180	
PH2108	Scaling Big Ideas	5	Sem 2	none	
SP3211	Empathy in Action	5	Sem 2	none	
LN2211	Scileanna Gaeilge don Eolaíocht 2	5	Sem 2	none	

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Year 2 Electives and their pre-requisite modules

Module	Module Name	Credits	Semester	Pre-Requisites	Notes
BI3103	Career Development and Employability Skills	5	Sem 1 and Sem 2	none	
FR252	French	10	Sem 1 and Sem 2	none	
GR224	Beginner's German for Science	10	Sem 1 and Sem 2	none	
GR252	German	10	Sem 1 and Sem 2	none	
GR353	German	10	Sem 1 and Sem 2	none	

Module	Module Name	Credits	Semester	Pre-Requisites	Notes
BSS2103/BSS2104	Introduction to Sustainability	5	Sem 1 or Sem 2	none	
MG3113/ MG3115	Megatrends	5	Sem 1 or Sem 2	none	
ED2103/ ED2104	Design Your Life	5	Sem 1 or Sem 2	none	

Note 1). Some modules are offered as electives but subject to limited places.
Note 2). While PM208 and PM209 are offered as electives, only students assigned to the Pharmacology Pathway take the semester 2 module PM210.
Conversely, students taking PM208 and/or PM209 alone without PM210 will not progress to study the Pharmacology pathway.
Note 3). Registration to Vertically Integrated Projects, is subject to a call for expression of interest.

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Year 3 Configurations and Year 4 progression options

Approved Year 3 Configuration		Year 2 Pre-requisites	Year 4 progression mapping options [each 60 credits]
Anatomy & Physiology	60-credits core modules	AN [20]+SI [20]	Choose between Anatomy [60] or Physiology [60]
Pharmacology & Physiology	60-credits core modules	PM [20]+SI [20]	Choose between Pharmacology [60] or Physiology [60]
Biochemistry & Microbiology	60-credits core modules	BI [20]+MI [20]	Choose between Biochemistry [60] or Microbiology [60]
Biochemistry & PlantAgriBioSciences	50-credits core modules+options	BI [20]+PAB[20]	Choose between Biochemistry [60] or PlantAgriBioSc. [60]
Microbiology & PlantAgriBioSciences	50-credits core modules+options	MI [20]+PAB [20]	Choose between Microbiology [60] or PlantAgriBioSc. [60]
Chemistry	40-credits core modules+options	CH [20]	Chemistry [60]
Medicinal Chemistry	60-credits core modules	MedCH [35]	Medicinal Chemistry [60]
Biochemistry & Chemistry	60-credits core modules	BI[20]+CH[20]	Choose between Biochemistry [60] or Chemistry [60]
Microbiology & Chemistry*	60-credits core modules	MI[20]+CH[20]	Choose between Microbiology [60] or Chemistry [60]
Anatomy & Biochemistry	60-credits core modules	AN[20]+BI[20]	Choose between Anatomy [60] or Biochemistry [60]
Anatomy & Microbiology	60-credits core modules	AN[20]+MI[20]	Choose between Anatomy [60] or Microbiology [60]
Chemistry & Pharmacology	60-credits core modules	CH[20]+PM[20]	Choose between Chemistry [60] or Pharmacology [60]
Biochemistry & Pharmacology	60-credits core modules	BI[20]+PM[20]	Choose between Biochemistry [60] or Pharmacology [60]
Biochemistry & Physiology	60-credits core modules	BI[20]+SI[20]	Choose between Biochemistry [60] or Physiology [60]
Microbiology & Physiology	60-credits core modules	MI[20]+SI[20]	Choose between Microbiology [60] or Physiology [60]
Botany and Plant Science & Zoology	40-credits core modules+options	BPS[20]+ZO[20]	Choose between Botany and Plant Sc. [60] or Zoology [60]
Earth and Ocean Sciences	50-credits core modules+options	EOS [20]	Earth and Ocean Sciences [60]
Earth and Ocean Sciences & Zoology	60-credits core modules	EOS[20]+ZO[20]	Choose between Earth and Ocean Sciences [60] or Zoology [60]
Earth and Ocean Sciences & Botany and Plant Science	60-credits core modules	BPS[20]+EOS[20]	Choose between Botany and Plant Sc. [60] or Earth and Ocean Sciences [60]
Physics and Applied Physics	40-credits core modules+options	PHAP[20] or PHCP[40]	Physics and Applied Physics [60]
Physics and Climate Physics	60-credits core modules	PHCP[40]	Choose between Physics and Climate Physics [60] or Physics and Applied Physics [60]
Anatomy & Botany and Plant Science	50-credits core modules+options	AN[20]+BPS[20]	Choose between Anatomy [60] or Botany and Plant Sc.[60]

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Overview
Anatomy
Applied Mathematics
Biochemistry
Botany and Plant Science
Chemistry
Computing
Data Science
Earth and Ocean Sciences
Mathematics
Mathematics and Applied Mathematics
Mathematics and Computing
Mathematical Studies and Computing
Medicinal Chemistry
Microbiology
Pharmacology
Physics and Applied Physics
Physics and Climate Physics
Physiology
Plant and AgriBiosciences
Zoology
Year 2 Pathways
Year 2 Electives
Year 3 Streams

Year 3 Configurations and Year 4 progression options

Approved Year 3 Configuration		Year 2 Pre-requisites	Year 4 progression mapping options [each 60 credits]
Physiology & Zoology	50-credits core modules+options	SI[20]+ZO[20]	Choose between Physiology [60] or Zoology [60]
Biochemistry & PlantAgriBioSciences	50-credits core modules+options	BI[20]+BPS[20]	Choose between Biochemistry [60] or Botany and Plant Sc. [60]
Biochemistry & Zoology	50-credits core modules+options	BI[20]+ZO[20]	Choose between Biochemistry [60] or Zoology [60]
Microbiology & Zoology	50-credits core modules+options	MI[20]+ZO[20]	Choose between Microbiology [60] or Zoology [60]
Botany and Plant Science & PlantAgriBioSciences	40-credits core modules+options	BPS[20]+PAB[20]	Choose between Botany and Plant Sc.[60] or PlantAgriBioSc.[60]
Mathematics & Applied Mathematics	60-credits core modules	MA[20]+MP[20]	Mathematics and Applied Mathematics [60]
Mathematics & Computing	50-credits core modules+options	MA[20]+CS[20]	Choose between Mathematics and Computing [60] or Mathematics [60] or Computing [60]
Mathematical Studies and Computing	60-credits core modules	MSCS[40]	Choose between Math.Studies and Computing [60] or Computing [60]
Data Science	30-credits core modules+options	DS[40]	Data Science [60]
Applied Mathematics	30-credits core modules+options	MP[20]	Applied Mathematics [60]
Mathematics	40-credits core modules+options	MA[20]	Mathematics [60]
Computing	25-credits core modules+options	CS[20]	Computing [60]

Access to Year 3 pathways require relevant pre-requisites from Year 2.
*** Microbiology & Chemistry: this configuration will not be available to Year 2 2025/26 cohort.**
For module listings within each Approved Year 3 Configuration, please refer to the supplementary Year 3 Guide, issued separately.