Ollscoil na Gaillimhe
University of Galway

Bachelor of Science Degree
College of Science and Engineering
2023/2024

Bachelor of Science Degree

www.universityofgalway.ie/science-engineering/

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: Applied Mathematics Mathematics Mathematical Studies At least two of: Biology Chemistry Computer Science Physics	Choose pathways from: (Please refer to Page 3 for instructions on Pathway Selection) 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 Electives: A variety of electives are offered.	Choose pathways from: (Please refer to Page 3 for instructions on Pathway Selection) 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	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

Overview
Pathway selection
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
Electives

Pathway Selection

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[60 Credits]**	**[60 Credits]**	**[60 Credits]**
Choose **four** 15-credit modules. 4 × 15 = 60 Credits.	Choose **three** 20-credit 2nd Year degree pathways 3 × 20 = 60 Credits **OR** Choose **two** 20- (or 35- or 40-) credit 2nd Year degree pathways **plus** electives 2 × 20 + 20 = 60 Credits / 1 × 20 + 1 × 35 + 5 = 60 Credits / 1 × 20 + 1 × 40 = 60 Credits **Electives Notes:** 1. Some pathways share modules (eg, BO201, BO202). These shared modules can only be counted once in credit accumulation. When choosing two or more pathways containing these shared modules, please select additional elective(s) to compensate for this double counting. 2. Similarly, credit cannot be accumulated for elective modules that are also included as part of a pathway. 3. Electives that are offered in both 2nd and 3rd year can only be taken once. Credit cannot be obtained again for a module previously taken and passed.	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	Choose one 60-Credit degree pathway (single degree option or a joint degree option) 1 × 60 = 60 Credits Joint Degree Options: Mathematics and Computing; Mathematical Studies and Computing; Mathematics and Applied Mathematics Single Degree Options: Anatomy, Applied Mathematics, Biochemistry, Botany and Plant Science, Chemistry, Computing, Data Science, Earth and Ocean Sciences, Mathematics, Medicinal Chemistry, Microbiology, Pharmacology, Physics and Applied Physics, Physics and Climate Physics, Physiology, Plant and AgriBiosciences, Zoology
	Module Options within Pathways: Where module options are indicated within a pathway, these modules are highlighted in colour.		

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/science-engineering/studentinformation/undergraduatestudentinformation/undergraduatestudenthandbooks/

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 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

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* MP365 **Fluid Mechanics [5] ^** MP346 **Mathematical Methods II [5]** MP491 **Non Linear Systems [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]*** MA335 **Algebraic Structures [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...*

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

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

Botany and Plant Science Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 25 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]**	*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]***
		BPS3101 is recommended for students taking the 3rd Year Botany and Plant Science pathway.	* 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

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

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

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

Earth and Ocean Sciences Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 40 credits]**	**[Core: 10 credits; Options: min 30 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* 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* EOS4103 **Advanced Fieldskills [5]** 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

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 **Statisitical 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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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.

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline

Overview
Pathway selection
Anatomy
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Botany and Plant Science
Chemistry
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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
Electives

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]** MP365 **Fluid Mechanics [5] ^** MA342 **Topology [5]** *One of:* ST2002 **Statistics for Data Science II [5]*** ST2004 **Statisitical Inference [5]*** ST312 **Applied Statistics II [5]***	*Full Year – Semester 1 and Semester 2* MM4000 **Final Year Project [10]** *Semester 1* MP494 **Partial Differential Equations [5] ^** MA490 **Measure Theory [5]** MP305 **Modelling I [5]** MP366 **Electromagnetism [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

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

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* MA203 **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* MA335 **Algebraic Structures [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

Medicinal Chemistry Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 35 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]	*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

Microbiology 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]**	*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]** MI442 **Bioprocessors and Recombinant Protein Production [5]** MI413 **Problem Solving Papers I & II [5]** MI4102 **Microbial Ecosystems & Systems Biology [5]** MI439 **The Meaning of Life: Bioinformatics [5]** MI4101 **Host Microbe Interactions [5]**

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline

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

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* PH2105 **Mechanics and Thermodynamics [5]** PH2102 **Physics Laboratory and Problem Solving I [5]** *Semester 2* PH2106 **Atomic Physics and Electromagnetism [5]** PH2104 **Physics Laboratory and Problem Solving II [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]** PH466 **Astrophysics [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

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: 60 credits]**
Full Year – Semester 1 and Semester 2 CH101 Chemistry [15] PH101 Physics [15]	*Semester 1* PH2105 Mechanics and Thermodynamics [5] PH2102 Physics Laboratory and Problem Solving I [5] MP231 Mathematical Methods I [5] MG3113 Megatrends [5] *Semester 2* PH2106 Atomic Physics and Electromagnetism[5] BSS2104 Introduction to Sustainability I [5] PH2104 Physics Laboratory and Problem Solving II [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]
	*Students can pursue this pathway in year 2 by choosing the above modules in either Chemistry, or in Earth and Ocean Sciences		

Module Descriptors for Years 1 to 4 are available at: https://www.universityofgalway.ie/science-engineering/undergraduateprogrammes/science-undenominated.html#course_outline

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* SI329 **Laboratory Methods in Physiology [5]** *Semester 1* SI326 **Advanced Cardiovascular Physiology[5]** SI312 **Endocrinology [5]** SI311 **Neurophysiology [5]** *Semester 2* SI328 **Exercise Physiology [5]** SI331 **Renal Physiology [5]**	*Semester 1* SI438 **Advanced GIT [5]** SI422 **Advanced Neurophysiology [5]** SI408 **Immunology [5]** SI437 **Reproduction and Aging [5]** SI4102 **Science Communication Skills [5]** SI436 **Therapeutics [5]** *Semester 2* SI4101 **Case Based Physiology [5]** SI432 **Pathophysiology [5]** 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

Plant and AgriBiosciences Pathway

Year 1	Year 2	Year 3	Year 4
[60 Credits]	**[Core: 20 credits]**	**[Core: 30 credits]**	**[40 credits; Options: 20 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]** *Semester 2* PAB3103 **Plant and Agricultural Genetics [5]** PAB3104 **Systems Biology of Plant-Environment Interactions [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]** *Semester 2* PAB4104 **Plant and Agri-Biotechnologies [5]**
			**Assigned one project module: PAB4101 [20] or PAB4105 [20] *Select remaining modules to a value of 20 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

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]** ZO3102 **Behaviour in Social Insects [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]*** MI442 **Bioprocessors and Recombinant Protein Production [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]***
		* 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

Electives

Year 1	Year 2	Year 3	Year 4
	Full Year – Semester 1 and Semester 2 BI3103 Career Development and Employability Skills [5] FR252 French [10] GR224 Beginner's German for Science [10] GR252 German [10] GR353 German [10] *Semester 1* BO201 Molecular and Cellular Biology (MCB) [5] BO202 Evolution and the Tree of Life [5] BO2101 Scientific Writing Skills [5] BPS202 Fundamentals in Aquatic Plant Science [5] BSS2103 Introduction to Sustainability I [5] DT2114 Fail Better: Taking Risks and Developing Resilience [5] ED2103 Design Your Life [5] EOS213 Introduction to Ocean Science [10] HI2155 Cultural Heritage & Public History [5] LN2210 Scileanna Gaeilge don Eolaíochta 1 [5] MA284 Discrete Mathematics [5] MA211 Calculus I [5] MG3113 Megatrends [5] MA215 Mathematical Molecular Biology I [5] MP231 Mathematical Methods I [5] MP236 Mechanics I [5] PH2108 Scaling Big Ideas [5] PM208 Fundamental Concepts in Pharmacology [5] PM209 Applied Concepts in Pharmacology [5] PS3108 Design Thinking [5] ST1111 Probability Models [5] ST2001 Statistics for Data Science I [5] ZO2101 Entomology [5] *Semester 2* AJ2114 Communicating Through Storytelling [5] BPS203 Plant Diversity, Physiology & Adaptation [5] BSS2104 Introduction to Sustainability 2 [5] ED2104 Design Your Life [5] EOS2102 The Earth: From Core to Crust [10]	*Full Year – Semester 1 and Semester 2* BI3103 Career Development and Employability Skills [5] BPS3101 Techniques in Field Ecology and Conservation [5] FR365 Advanced French for Science [10] GR224 Beginner's German for Science [10] GR252 German [10] GR353 German [10] *Semester 1* BO3101 Developmental Biology [5] BPS3102 Plant Resources and Ecosystems [5] BPS3103 Plant Function [5] BSS2103 Introduction to Sustainability I [5] DT2114 Fail Better: Taking Risks and Developing Resilience [5] ED2103 Design Your Life [5] CH311 Organic Chemistry [5] CH326 Analytical Chemistry & Molecular Structure [5] CH332 Drug Design & Drug Discovery [10] EOS3107 Minerals, magmas and Metamorphism [10] EOS305 Introduction to Applied Field Hydrology [5] EOS323 Sediments and the Sedimentary Record [5] EOS3103 Palaeontology and Evolution [5] HI2155 Cultural Heritage & Public History [5] LN2210 Scileanna Gaeilge don Eolaíochta 1 [5] MA215 Mathematical Molecular Biology I [5] MA302 Complex Variable [5] MA313 Linear Algebra I [5] MA335 Algebraic Structures [5] MA3992 Actuarial Mathematics: Life contingencies 1, pricing and reserving[5] MG3113 Megatrends [5] MP231 Mathematical Methods I [5] MP305 Modelling I [5] MP345 Mathematical Methods I [5] PAB3101 Soil Sciences [5] PAB3102 AgriBiosciences for Sustainable Global Development [5] PH222 Astrophysical Concepts [5]	

Electives

Year 1	Year 2	Year 3	Year 4
	HI2156 Revolutionary Technologies, From Steam To Green [5] LN2211 Scileanna Gaeilge don Eolaíochta 2 [5] MA203 Linear Algebra [5] MA212 Calculus II [5] MA216 Mathematical Molecular Biology II [5] MA1993 Mathematics of Finance [5] MG3115 Megatrends [5] MG3117 Intercultural Encounters [5] MP232 Mathematical Methods II [5] MP237 Mechanics II [5] PAB2101 AgriBiosciences [5] SP3212 Navigating the Digital World [5] ST1112 Statistical Methods [5] ST2002 Statistics for Data Science II [5]	PH2108 Scaling Big Ideas [5] PH328 Physics of the Environment I [5] PH341 Measurement of Health Hazards at Work [5] PM208 Fundamental Concepts in Pharmacology [5] PM209 Applied Concepts in Pharmacology [5] PM311 Introduction to Toxicology [5] PS3108 Design Thinking [5] SI3102 Endocrinology [5] SI317 Human Body Function [10] ST2001 Statistics for Data Science I [5] ST2003 Random Variables [5] ST311 Applied Statistics I [5] *Semester 2* AJ2114 Communicating Through Storytelling [5] AN3109 Human Reproductive Anatomy [5] BPS3104 Plant Interactions [5] BPS3107 Plants, Atmosphere and Environment throughout Earth History [5] BSS2104 Introduction to Sustainability 2 [5] ED2104 Design Your Life [5] CH307 Inorganic Chemistry [5] CH3103 Validation in the Pharmaceutical and Medical Device Industry [5] CH313 Physical Chemistry [5] CS3101 Software for Mathematical Scientists and Educators [5] EOS303 Ocean Dynamics [5] EOS304 Aquatic Geochemistry [5] EOS3102 Environmental and Marine Geophysical Remote Sensing [5] HI2156 Revolutionary Technologies, From Steam To Green [5] LN2211 Scileanna Gaeilge don Eolaíochta 2 [5] MA216 Mathematical Molecular Biology II [5] MA334 Geometry [5] MA461 Probabilistic Models for Molecular Biology [5] MG3115 Megatrends [5] MG3117 Intercultural Encounters [5] MP232 Mathematical Methods II [5] MP307 Modelling II [5] MP346 Mathematical Methods II [5] MP491 Non Linear Systems [5]	

Electives

Year 1	Year 2	Year 3	Year 4
		PAB3103 Plant and Agricultural Genetics [5] PAB3104 Systems Biology of Plant-Environment Interactions [5] PH329 Physics of the Environment II [5] PH362 Stellar Astrophysics [5] SI328 Exercise Physiology [5] SP3212 Navigating the Digital World [5] ST2002 Statistics for Data Science II [5] ST2004 Statistical Inference [5] ST312 Applied Statistics II [5]	