



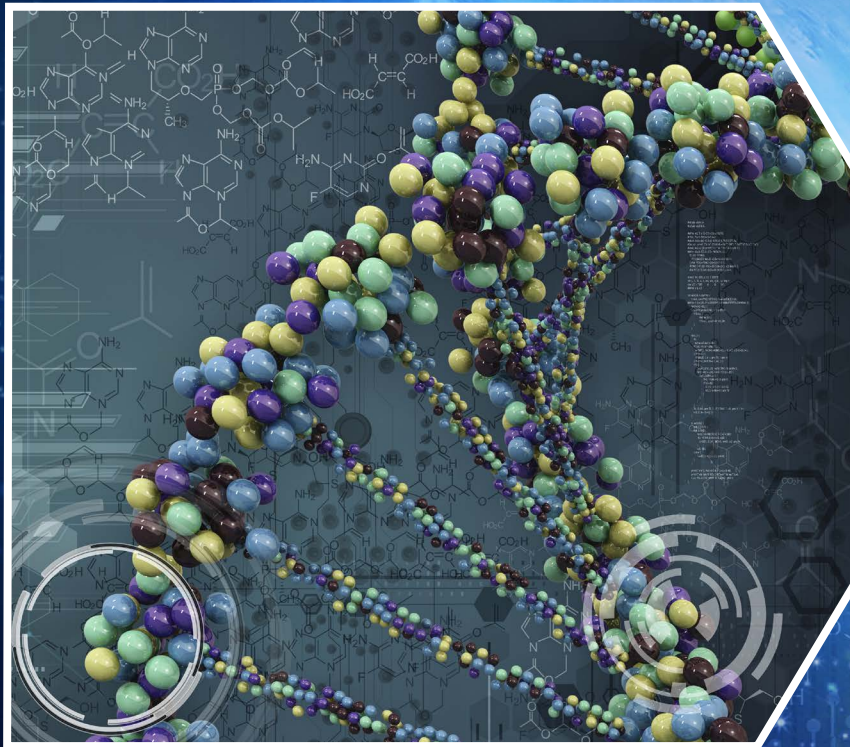
NUI Galway  
OÉ Gaillimh

College of Science

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# BSc MATHEMATICAL SCIENCE



[www.nuigalway.ie/science](http://www.nuigalway.ie/science)

## Overview

Year 1	Year 2	Year 3	Year 4
<b>[60 Credits]</b>	<b>[60 credits]</b>	<b>[60 credits]</b>	<b>[60 credits]</b>
<p>There are 45 credits of Core modules.</p> <p>Choose one module to a value of 15 credits:</p> <ul style="list-style-type: none"> <li>Biology</li> <li>Chemistry: The World of the Molecule</li> <li>Physics</li> </ul>	<p>There are 30 credits of Core modules.</p> <p>Choose a minimum of 10 credits of Core Option modules:</p> <ul style="list-style-type: none"> <li>MA2286: Differential Forms and</li> <li>MA2287: Complex Analysis</li> <li>or</li> <li>MP231: Mathematical Methods I and</li> <li>MP232: Mathematical Methods II</li> </ul> <p>Students must take [MA2286 and MA2287] or [MP231 and MP232], but are encouraged to take all 4 modules.</p> <p>Choose 1 Pathway or Electives to a total value of 10 or 20 Credits (depending on value of Core Option modules taken above).</p>	<p>Choose a minimum of 40 Credits from the Core Options list.</p> <p>Choose a maximum of 20 Credits from the Electives list.</p>	<p>There are 10 Credits of Core modules.</p> <p>Choose a minimum of 30 Credits from the Core Options list.</p> <p>Choose a maximum of 20 Credits from the Electives list.</p>
<p>Module Descriptors for Years 1 to 4 are available at: <a href="http://www.nuigalway.ie/science/undergraduate-courses/mathematical-science.html#course_outline">http://www.nuigalway.ie/science/undergraduate-courses/mathematical-science.html#course_outline</a></p>			

## BSc Mathematical Science

Year 1	Year 2	Year 3	Year 4
[Core: 45 credits; Electives: 15 credits]	[Core: 30 credits; Core options: 10 or 20 credits; Electives: 10 or 20 credits]	[Core options: minimum of 40 credits; Electives: maximum of 20 credits]	[Project: 10 credits; Core options: min of 30 credits; Electives: max of 20 credits]
<p><i>Full Year – Semester 1 and Semester 2</i></p> <p>MP180 Applied Mathematics [15]</p> <p>MA180 Mathematics (Honours) [15]</p> <p><u>Semester 1</u></p> <p>CS103 Computer Science [5]</p> <p>ST1111 Probability Models [5]</p> <p>-----</p> <p><u>Semester 2</u></p> <p>ST1112 Statistical Methods [5]</p>	<p><u>Semester 1</u></p> <p>MA2286 Differential Forms [5]*</p> <p>MA284 Discrete Mathematics [5]</p> <p>MP231 Mathematical Methods I [5]*</p> <p>MP236 Mechanics I [5]</p> <p>ST2003 Random Variables [5]</p> <p>-----</p> <p><u>Semester 2</u></p> <p>MA283 Linear Algebra [5]</p> <p>MA2287 Complex Analysis [5]*</p> <p>MP237 Mechanics II [5]</p> <p>• Written Paper</p> <p>MP232 Mathematical Methods II [5]*</p> <p>ST2004 Statistical Inference [5]</p> <p>• Written Paper</p>	<p><u>Semester 1</u></p> <p>ST313 Applied Regression Models [5]*</p> <p>MP366 Electromagnetism [5]^</p> <p>MA3101 Euclidean and Non-Euclidean Geometry [5]*</p> <p>MA3343 Groups [5]*</p> <p>MP345 Mathematical Methods I [5]*</p> <p>MA341 Metric Spaces [5]*</p> <p>MA385 Numerical Analysis I [5]*</p> <p>MP494 Partial Differential Equations [5]^</p> <p>-----</p> <p><u>Semester 2</u></p> <p>MA3491 Fields and Applications [5]*</p> <p>MP365 Fluid Mechanics [5]^</p> <p>MP346 Mathematical Methods II [5]*</p> <p>MP491 Non Linear Systems [5]*</p> <p>MA378 Numerical Analysis II [5]*</p> <p>ST412 Stochastic Modelling [5]^</p> <p>MA342 Topology [5]*</p>	<p><i>Full Year – Semester 1 and Semester 2</i></p> <p>MM4000 Final Year Project [10]</p> <p><u>Semester 1</u></p> <p>MP403 Cosmology and General Relativity [5]*</p> <p>MP366 Electromagnetism [5]^</p> <p>MA3101 Euclidean and Non-Euclidean Geometry [5]*</p> <p>ST417 Introduction to Bayesian Modelling [5]*</p> <p>MA490 Measure Theory [5]*</p> <p>MP305 Modelling I [5]*</p> <p>MA385 Numerical Analysis I [5]*</p> <p>MP494 Partial Differential Equations [5]^</p> <p>MA416 Rings [5]*</p> <p><u>Semester 2</u></p> <p>MP3491 Fields and Applications [5]*</p> <p>MP365 Fluid Mechanics [5]^</p> <p>MA482 Functional Analysis [5]*</p> <p>MP307 Modelling II [5]*</p> <p>MA378 Numerical Analysis II [5]*</p> <p>ST412 Stochastic Modelling [5]^</p>
	* Select a minimum of two 5-credit modules	* Select a minimum of eight 5-credit modules. ^ These modules run on a two-year cycle. Alternative modules are offered next academic year.	* Select a minimum of six 5-credit modules ^ These modules run on a two-year cycle. Alternative modules are offered next academic year.

Module Descriptors for Years 1 to 4 are available at: [http://www.nuigalway.ie/science/undergraduate-courses/mathematical-science.html#course\\_outline](http://www.nuigalway.ie/science/undergraduate-courses/mathematical-science.html#course_outline)

## BSc Mathematical Science – Electives

Year 1	Year 2	Year 3	Year 4
<b>[Electives: 15 credits]</b>	<b>[Electives: maximum of 20 credits]</b>	<b>[Electives: maximum of 20 credits]</b>	<b>[Electives: maximum of 20 credits]</b>
<i>Full Year – Semester 1 and Semester 2</i>	<i>Semester 1</i>	<i>Semester 1</i>	<i>Semester 1</i>
BO101 <b>Biology</b> [15]	BO201 <b>Molecular and Cellular Biology</b> [5]	CS3304 <b>Logic</b> [5]	CS3304 <b>Logic</b> [5]
CH130 <b>Chemistry: The World of the Molecule</b> [15]	BI208 <b>Protein Structure and Function</b> [5]	CT3535 <b>Object Oriented Programming</b> [5]	CS424 <b>Object Oriented Programming/ Internet Programming</b> [5]
PH101 <b>Physics</b> [15]	CS2101 <b>Programming for Science and Finance</b> [5]	CT511 <b>Databases</b> [5]	CT336 <b>Graphics And Image Processing</b> [5]
	CT2101 <b>Object Oriented Programming I</b> [5]	MA215 <b>Mathematical Molecular Biology I</b> [5]	CT4101 <b>Machine Learning</b> [5]
	MA215 <b>Mathematical Molecular Biology I</b> [5]	MA2286 <b>Differential Forms</b> [5]	CT865 <b>Human Computer Interaction</b> [5]
	-----	MP231 <b>Mathematical Methods I</b> [5]	MA437 <b>Introduction to Mathematical Research Topics I</b> [5]
	<i>Semester 2</i>	MP305 <b>Modelling I</b> [5]	MA495 <b>Actuarial Mathematics: Life Contingencies II</b> [5]
	CS211 <b>Programming and Operating Systems</b> [5]	PH222 <b>Astrophysical Concepts</b> [5]	-----
	CT2102 <b>Object Oriented Programming II</b> [5]	PH328 <b>Physics of the Environment I</b> [5]	<i>Semester 2</i>
	MA216 <b>Mathematical Molecular Biology II</b> [5]	PH341 <b>Measurement of Health Hazards at Work</b> [5]	CS319 <b>Scientific Computing</b> [5]
	MP211 <b>Modelling, Analysis &amp; Simulation</b> [5]	-----	CS402 <b>Cryptography</b> [5]
	<b>BIOCHEMISTRY PATHWAY</b> 20 credits	<i>Semester 2</i>	CS4423 <b>Networks</b> [5]
	<i>Semester 1</i>	CS319 <b>Scientific Computing</b> [5]	CT548 <b>Object Oriented Software Design and Development</b> [5]
	BO201 <b>Molecular and Cellular Biology</b> [5]	CT2108 <b>Networks and Data Communications I</b> [5]	MA334 <b>Geometry</b> [5]
	BI208 <b>Protein Structure and Function</b> [5]	CT411 <b>Multimedia Development</b> [5]	MA418 <b>Differential Equations with Financial Derivatives</b> [5]
	-----	MA216 <b>Mathematical Molecular Biology II</b> [5]	MA438 <b>Introduction to Mathematical Research Topics II</b> [5]
	<i>Semester 2</i>	MA2287 <b>Complex Analysis</b> [5]	MA461 <b>Probabilistic Models for Molecular Biology</b> [5]
	BI206 <b>Gene Technologies and Molecular Medicine</b> [5]	MA461 <b>Probabilistic Models for Molecular Biology</b> [5]	ST4020 <b>Causal Inference</b> [5]
	BI207 <b>Metabolism and Cell Signalling</b> [5]	MP232 <b>Mathematical Methods II</b> [5]	
		MP307 <b>Modelling II</b> [5]	
		PH329 <b>Physics of the Environment II</b> [5]	
		PH362 <b>Stellar Astrophysics</b> [5]	
		ST4020 <b>Causal Inference</b> [5]	
	<i>Continued...</i>		

	<p><b>CHEMISTRY PATHWAY</b> 20 credits</p> <p><u>Semester 1</u></p> <p>CH204 Inorganic Chemistry [5]</p> <p>CH203 Physical Chemistry [5]</p> <p>-----</p> <p><u>Semester 2</u></p> <p>CH205 Analytical and Environmental Chemistry [5]</p> <p>CH202 Organic Chemistry [5]</p> <p><b>COMPUTING PATHWAY</b> 20 credits</p> <p><u>Semester 1</u></p> <p>CT2101 Object Oriented Programming I [5]</p> <p>CS2101 Programming for Science and Finance [5]</p> <p>-----</p> <p><u>Semester 2</u></p> <p>CT2102 Object Oriented Programming II [5]</p> <p>CS211 Programming and Operating Systems [5]</p> <p><b>PHYSICS AND APPLIED PHYSICS PATHWAY</b> 20 credits</p> <p><u>Semester 1</u></p> <p>PH2101 Mechanics and Electromagnetism [5]</p> <p>PH2102 Physics Laboratory and Problem Solving I [5]</p> <p>-----</p> <p><u>Semester 2</u></p> <p>PH2103 Thermodynamics &amp; Atomic Physics [5]</p> <p>PH2104 Physics Laboratory and Problem Solving II [5]</p>		
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