

# Mathematics

CAO code: DN200 Option: Mathematical, Physical & Geological Sciences (MPG)



- Master the language and concepts of modern mathematical thinking
- Develop a high level of competence in its applications

## Sample pathway for a degree in Mathematics \*

### YEAR 1 ENGAGE WITH THE PRINCIPLES

- MATHEMATICS**  
Topics include:
- Calculus in the Mathematical and Physical Sciences
  - Numbers & Functions
  - Linear Algebra in the Mathematical and Physical Sciences
  - Mathematical Analysis
  - Introduction to Applications of Differential Equations
  - Introduction to Statistical Modelling
- Two Elective modules
  - One Small-Group Project

### YEAR 2 CHOOSE YOUR SUBJECTS

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|---|---|---|--|
| <p><b>MATHEMATICS</b><br/>Topics include:</p> <ul style="list-style-type: none"> <li>- Linear Algebra 2</li> <li>- Calculus of Several Variables</li> <li>- Groups, Rings &amp; Fields</li> </ul> | <p><b>APPLIED &amp; COMPUTATIONAL MATHEMATICS (OPTIONAL)</b><br/>Topics include:</p> <ul style="list-style-type: none"> <li>- Computational Science</li> <li>- Vector Integral and Differential Calculus</li> <li>- Oscillations and Waves</li> <li>- Classical Mechanics and Special Relativity</li> </ul> | <p><b>STATISTICS (OPTIONAL)</b><br/>Topics include:</p> <ul style="list-style-type: none"> <li>- Probability Theory</li> <li>- Stochastic Models</li> </ul> | <ul style="list-style-type: none"> <li>- Two Elective modules</li> </ul> |
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### YEAR 3 FOCUS ON YOUR CHOSEN SUBJECT

- MATHEMATICS** – Topics include:
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|---|---|--|
| <ul style="list-style-type: none"> <li>- Field and Galois Theory</li> <li>- Functions of One Complex Variable</li> <li>- Cryptography</li> <li>- Number Theory</li> </ul> | <ul style="list-style-type: none"> <li>- Metric Spaces</li> <li>- Algorithms</li> <li>- Set Theory</li> <li>- Mathematical Logic</li> </ul> | <ul style="list-style-type: none"> <li>- Two Elective modules</li> </ul> |
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### YEAR 4 REFINE YOUR KNOWLEDGE

- MATHEMATICS** – Topics include:
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|--|--|--|
| <ul style="list-style-type: none"> <li>- Differential Geometry</li> <li>- Combinatorics</li> </ul> | <ul style="list-style-type: none"> <li>- Numerical Analysis</li> <li>- Measure Theory</li> </ul> | <ul style="list-style-type: none"> <li>- Ring Theory</li> <li>- Functional Analysis</li> </ul> |
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## BSc (Honours) Mathematics

MSc (Taught)	PhD	Industry	Conversion Courses
<ul style="list-style-type: none"> <li>- MSc Mathematics</li> <li>- MSc Mathematical Sciences</li> <li>- MSc Actuarial Science</li> </ul>	<ul style="list-style-type: none"> <li>- Students can pursue a PhD in universities in Ireland or abroad</li> </ul>	<ul style="list-style-type: none"> <li>- Banking &amp; Finance</li> <li>- Mathematical Modelling</li> <li>- Information and Communications Technology</li> <li>- Actuarial Science</li> </ul>	<ul style="list-style-type: none"> <li>- Professional Master of Education (PME)</li> <li>- Masters in Actuarial Science</li> <li>- MSc Business Analytics</li> <li>- MSc Quantitative Finance</li> </ul>

“ Maths requires a lot of critical thinking and rigorous understanding, and the lecturers in UCD certainly encourage this. Lecturers here are very good at transmitting their enthusiasm for their subject to the students. What’s really great about UCD is that the maths lecturers are approachable, and are both willing and keen to answer any questions you may have. ”

Caitríona Byrne, Student

\*See page 42 for more information on subject choices. Potential combinations shown here are examples only and are not guaranteed by UCD. Topics are subject to change each year.

**i** Dr Christopher Boyd  
UCD School of Mathematics and Statistics

christopher.boyd@ucd.ie  
+353 1 716 2573  
facebook.com/UCDSchool  
twitter.com/ucdscience