College of Science

“A degree in Science equips you with the ability to think independently and critically, to solve problems and to adapt to situations.”

Professor Tom Sherry
Dean of the College of Science
What is the Bachelor of Science degree about?
The Bachelor of Science degree programme allows you to take a variety of subjects in the general scientific field before deciding to specialise in one scientific area for your four-year honours degree. It is the ideal choice for students who want to study Science, but are not yet ready to narrow their options to a specific topic. You can take subjects from the Physical Sciences, for example, and combine them with subjects from the Biological Sciences, the Mathematical Sciences or the Earth and Ocean Sciences. Opportunities exist to choose from the wide range of subjects offered in the college. Please note, however, that quotas apply to second year subjects in the BSc Science programme.

Why should I study the Bachelor of Science?
The Bachelor of Science will give you a solid foundation in general Science subjects during your first three years of study. These include subjects you may already have studied, like Chemistry, Physics, Biology and Mathematics, but also include Applied Mathematics, Computer Science, Biochemistry, Botany and Plant Science, Microbiology, Zoology, Pharmacology and the Earth and Ocean Sciences. With such a diverse range of scientific topics, students often find they need time to discover which specialism is for them.

How will I benefit from doing this programme?
As a Science graduate with critical thinking skills, your training will always stand to you, both in your professional career and in the personal interests you develop over your life. Research and development in industry and public sector bodies will continue to be a critical part of the development of knowledge economies. No matter what subject you decide to specialise in, there will be an R&D aspect to it in industry, academia or public sector bodies. In Ireland, industry leaders have repeatedly pointed to the need for more Science graduates to retain and build on the economy’s competitiveness. In addition, with climate change and ongoing food and energy resource challenges to sustainable development, the requirement for scientific solutions to the problems mankind faces is as great as ever.

What postgraduate options will I have?
Students who obtain either a BSc (General) or BSc (Honours) degree may apply to take a Higher Diploma in Applied Science. These diplomas are industry-orientated. Graduates with good honours degrees in appropriate subjects may be admitted to postgraduate study as MSc or PhD students. The MSc degree may be obtained by course work with a minor thesis or by research work with a major thesis.

What career prospects are there for a Bachelor of Science holder?
A degree in science provides you with the potential to develop a wide variety of skills. Students find employment in areas such as general industry, IT, government, regulatory affairs, investment banking, consulting, marketing, research, or third-level education. Some careers of past graduates include:

• Medical Devices
• Biodiversity Specialist
• Plant Biotechnologist
• National Parks and Wildlife Service
• Senior Inspector, EPA
• Meteorologist, Met Éireann
• Design Engineer
• Curator of Astronomy & Modern Physics
• Science Museum, London
• Functional Ecologist, Teagasc

Our science graduates are seen by industry as diligent, intelligent, hard-working and adaptable. Hence it is possible to undertake successful career changes. A Science degree equips you with the ability to learn, think independently and critically, and adapt to changing situations.
COURSE OUTLINE

Year One
Students must take four modules in first year. The modules are arranged in groups, and students must choose one group from the following:

- **Group A**: Mathematics, Applied Mathematics, Chemistry and Physics.
- **Group C**: Biology, Chemistry, Physics and Mathematics or Applied Mathematics.
- **Group D**: Biology, Chemistry, Introduction to Earth and Ocean Sciences and Mathematics or Applied Mathematics.
- **Group E**: Chemistry, Computer Science, Physics and Mathematics or Applied Mathematics.
- **Group F**: Introduction to Earth and Ocean Sciences, Physics, Computer Science and Mathematics or Applied Mathematics.

Year Two
All students take three pathways or two pathways plus electives.

Pathways
- Anatomy
- Applied Mathematics
- Biochemistry
- Botany and Plant Science
- Chemistry
- Computer Science
- Earth and Ocean Sciences
- Mathematics
- Mathematical Studies
- Microbiology
- Pharmacology
- Physics and Applied Physics
- Physiology
- Zoology

Electives: A variety of electives are offered

Year Three
Most students take two pathways.

Pathways
- Anatomy
- Applied Mathematics (Honours)
- Biochemistry
- Botany and Plant Science
- Chemistry
- Computer Science
- Earth and Ocean Sciences
- Mathematics (Honours)
- Mathematical Studies and Computer Science
- Microbiology
- Pharmacology
- Physics and Applied Physics
- Physiology
- Zoology

Year Four
Students choose their honours degree:

- Anatomy
- Applied Mathematics
- Biochemistry
- Botany and Plant Science
- Chemistry
- Computer Science
- Earth and Ocean Sciences
- Mathematics
- Mathematics and Applied Mathematics
- Mathematics and Computer Science
- Mathematical Studies and Computer Science
- Microbiology
- Pharmacology
- Physics and Applied Physics
- Physiology
- Zoology

Electives: A variety of electives are offered

What our students say

“I just finished my fourth year of undenominated science. I was always interested in science but I wasn’t sure what course I wanted to do. After much contemplation I decided to do undenominated science as it allowed me to explore all the different areas of science and then choose which area I wanted to specialise in. After first year I focused on health sciences and studied biochemistry, physiology and anatomy. I eventually narrowed my subject choice down to just physiology in fourth year. I really enjoyed my course and my time at NUI Galway. I met lots of lovely people and forged friendships that will last a lifetime. I will forever cherish my memories from my years in Galway.”

Angela McDonagh – Bachelor of Science

COURSE FACTS

CAO Code: GY301
Course Level: 8
Duration: 4 years
Minimum Entry Points 2012: 380
Minimum A-Level Grades: AAB (A-Level) or equivalent combination

Leaving Certificate Entry Requirements: Minimum Grade HC3 in two subjects and passes in four other subjects at H or O level in the Leaving Certificate, including Irish, English, Mathematics, a laboratory science subject (i.e. Chemistry, Physics, Biology, Physics with Chemistry (joint) or Agricultural Science) and any two other subjects recognised for entry purposes.

A-Level/GCSE Entry Requirements: See page 150 for matriculation entry requirements.
Average Intake: 300

Watch out for dates of our Science Summer School 2014. We will advise you of the details through local media, on the NUI Galway website and by direct contact with all schools.

Find out more:
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www.nuigalway.ie/science
Pathway Descriptions & Career Opportunities
Bachelor of Science Degree

**ANATOMY**

Why should I study Anatomy?

If you are interested in the mechanics of living beings, you will find Anatomy a fascinating subject. Anatomy deals with the structure of living organisms and how this is adapted to how they function. The course covers traditional gross anatomy, cell biology, histology, neuroanatomy, embryology and anthropology, as well as modern anatomical research techniques, such as scanning, transmission electron microscopy and confocal microscopy, neuroimaging and molecular imaging.

What careers does a degree in Anatomy lead to?

A degree in Anatomy provides a basis for careers based on the biomedical sciences, along with positions in education, research laboratories and the healthcare industries.

**BIOCHEMISTRY**

Why should I study Biochemistry?

As the science of the molecular basis of life, Biochemistry involves the study of the rich variety of molecules found in all types of living cells and organisms, and observing how they operate and interact. The exciting revolution underway, with the sequencing of the human and other genomes and the development of nano-scale technologies, is allowing biochemists to study life in ever more detail, advancing our understanding of the molecular choreography underlying growth and providing new openings for applying this knowledge in the diagnosis and treatment of many diseases.

What kind of careers does a biochemist have?

Graduates in Biochemistry find jobs in the biotechnology and pharmaceutical industries, biomedical and forensics laboratories, the agribusiness sector, the nutrition and food industry and scientific policy making. Many graduates also go on to further research for Master’s and PhD degrees, or to obtain other postgraduate qualifications.

**APPLIED MATHEMATICS**

Why should I study Applied Mathematics?

Applied Mathematics uses mathematical tools and models to address real-world problems. They help to explain and describe what we know and, possibly, to predict what we don’t know about a given set of objects and/or circumstances. Applied Mathematics at NUI Galway includes courses in advanced mathematical methods, modelling, mechanics, quantum mechanics, dynamical systems, nonlinear elasticity, cosmology and general relativity, electromagnetism, fluid mechanics, numerical analysis, all geared towards inter-disciplinary applications.

What careers does a degree in Applied Mathematics lead to?

Being able to develop mathematical models and apply them in practical settings will prove extremely useful career wise. Graduates have found employment in computer software and hardware companies, in the telecommunications sector, in financial and actuarial institutions, in teaching, and in pursuing research at postgraduate level in Ireland and abroad.

**BOTANY AND PLANT SCIENCE**

Why should I study Botany and Plant Science?

The advancement of the science of plant biology is critically important for meeting the resource needs of the growing human population and for future sustainable development on our planet. Plants play a fundamental role in maintaining the planet’s oxygen supply but are also the source of the food, feed, fuel (energy), textiles, biochemicals, medicines and structural materials that our existence relies upon. Botany and Plant Science covers all areas of study involving plants and other photosynthetic organisms. Plants are studied at many levels, including ecosystems, communities, species, individuals, tissues, cells and molecules (e.g. genetics, molecular biology and biochemistry).

What careers does a degree in Botany and Plant Science offer?

A Botany and Plant Science degree positions students to avail of emerging ‘green economy’ opportunities across a range of industries and sectors, including those involved in biotechnology, genetics, biochemistry, ecology, environmental monitoring, conservation, biodiversity, bioenergy, and agriculture, as well as in education, sustainable development, regulatory affairs and government policy sectors.
Earth and Ocean Sciences involve the study of the physical and chemical processes that affect planet Earth and its oceans, the management and conservation of resources, and the study of past and present environments. Four sub-disciplines are involved: Geology, Geophysics, Hydrogeology and Oceanography.

What is Geology?
Geology is the study of the earth beneath our feet, from the surface to the centre of our planet. It underpins hazard assessment, aggregate, mineral, oil and water resource prospecting, and civil engineering applications, serving the needs of our industrial and technological society while, at the same time, building awareness of the need to protect the natural environment.

What careers are available for Geology graduates?
Graduates in Geology will typically find employment in the petroleum and mineral exploration industries, national geological surveys, environmental organisations, consulting companies, remote-sensing firms and third-level teaching and research.

What is Geophysics?
Geophysics is the application of physics to the investigation of the earth and its surrounding planets. Geophysical techniques are used in the geological, hydrological, atmospheric, ocean and space sciences. In NUI Galway, Geophysics focuses on plate tectonics and the structure and dynamics of the seabed, on environmental geophysics (how cultural and natural processes affect one another), and on the commercial exploitation of subsurface physical properties, e.g. oil, gas and mineral resources.

What careers are available for Geophysics graduates?
Graduates in Geophysics will typically find employment in the petroleum and mineral exploration industries, national geological surveys, environmental organisations, consulting companies, remote-sensing firms and third-level teaching and research.

What is Hydrogeology?
Hydrogeology deals with the relationships between groundwater and geological materials and processes. Groundwater provides 98% of the earth’s readily available fresh water and is arguably our most important natural resource.
**MATHEMATICS**

**Why should I study Mathematics?**

Mathematics is the language for the logical study of the structure of our world. It has developed from counting, calculating and measurement through the use of abstraction and logical reasoning. It underpins many other disciplines, such as physics, economics and engineering, along with newer areas like molecular biology. In addition to the traditional areas of algebra, calculus and geometry, you will study courses in topology, statistics, numerical analysis, coding theory, real and complex analysis, and probability and number theory.

**What careers are available for Mathematics graduates?**

Studying Mathematics will give you the ability to think rationally and to process complex data clearly and accurately. Such skills will prove to be extremely useful to you and will be highly valued by your employer. Recent graduates are pursuing careers in the financial and banking sector, the actuarial profession, IT and computing, and teaching and research.

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**MICROBIOLOGY**

**Why should I study Microbiology?**

Microbiologists study microbes and their activities, including their growth, metabolism, genetics, diversity and evolution. Every aspect of life on Earth is affected by such organisms, and studying them provides insight into their roles in such areas as disease, food production and global environmental cycles, and their potential application for human, environmental and animal benefit.

**What careers are available for microbiologists?**

The food, pharmaceutical and biotechnological industries need microbiologists to develop new products and to monitor the production of existing ones. Microbiologists also devise processes for the treatment of waste and production of renewable energy. Hospitals and pharmaceutical companies offer work in diagnosis, prevention and treatment of diseases caused by microbes. Employment opportunities are also available in research and teaching.

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**EARTH AND OCEAN SCIENCES  continued**

**What is Oceanography?**

Oceanography is the study of the oceans, which cover more than two-thirds of the Earth’s surface. New technologies provide unprecedented access to the oceans, from satellites giving global coverage of sea surfaces to networks of monitoring equipment on the seabed. Scientific exploration of the oceans underpins advances in fisheries and aquaculture techniques, biodiversity, maritime transport, and in harnessing fossil and renewable energy resources. Oceanography is key to understanding the global climate system, and oceanographers are needed to monitor, model and mitigate marine pollution, to plan for sea-level rise, and to assess the risks posed by natural and man-made hazards in coastal areas.

**What careers are available in Oceanography?**

Oceanographers are needed to help survey our vast underwater territories, to help with the sustainable exploitation of our marine resources, to model our climate and to educate managers, policy makers and the public about the importance of the oceans in our lives.

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**What careers are available for Hydrogeology graduates?**

Hydrogeologists gain employment in the private and public sectors in assessing and devising management plans for groundwater – from mine and quarry water management to site suitability assessment for everything from wind farms to motorways to single houses. Climate change is likely to have a big impact on water resources across the world over the coming decades and hydrogeologists will be needed to help many countries and communities adapt.
# Physiology

What is Physiology?

Physiology is the study of the functions of the body and its component tissues, cells and fluids. It explains the mechanisms of movement and their control, as well as body secretions and their roles, the action of muscle, the constituents and activities of cells, the pumping action of the heart, digestion and the absorption of foodstuffs, respiration and metabolism, the regulation and control of bodily functions, and the roles of the brain.

What careers do graduates in Physiology have?

Graduates in Physiology normally find employment in the academic and teaching professions and in the pharmaceutical and biotechnological industries.

# Zoology

What is Zoology?

Zoology is the scientific study of animals at all levels, from the molecular and cellular to the organismic and ecological. It involves the study of all kinds of animals – there are more than a million known species, classified into about 35 large groups called phyla, which make up the animal kingdom. There are three important questions in Zoology that are emphasised:

First, how do animals develop from a fertilised egg through various embryonic (and in some cases larval) stages to arrive, ultimately, at their typical adult form?

Second, how does this short-term developmental process change, in the much longer term, through Darwinian evolution?

Third, how do animals interact with each other, with plants, with microbes and with their physical environment? Such ecological interactions provide the backdrop against which everything else happens, and they lead to much of the natural selection that determines the forms animals take.

What careers do Zoology graduates have?

Zoology graduates can pursue careers in research (academic and industry), teaching (at any level) or consultancy. Zoologists may also be employed by governmental bodies such as the Marine Institute, Bord Iascaigh Mhara or the Environmental Protection Agency.

# Physics

Why should I study Physics?

Physicists seek to understand the basic laws governing the structure of matter, the nature of energy and the physical forces that form our world. If you have an enquiring mind and are interested in discovering how things work at a fundamental level, then this could be the course for you. Understanding physics can also be very useful for those who may specialise in other science subjects, as it underpins many areas of science and technology, including nanotechnology, microelectronics, imaging, communications, renewable energy and environmental monitoring. It provides the foundation for many new technologies and advances across the biological and chemical sciences, engineering, computing and medicine.

What careers are available for Physics graduates?

A degree in Physics is an excellent training for employment in high technology industries (e.g. communications, electronics, optics and photonics, semiconductors and medical devices) and also within the second- and third-level education sectors, meteorology, the environmental and medical sciences, finance and software design. A Physics degree can also lead to an exciting career in research if you specialise in an aspect of the subject or in multidisciplinary areas such as nanotechnology, medical physics, biophysics, occupational health, or materials science.

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# Pharmacology

Why should I study Pharmacology?

Pharmacology is the study of how chemical substances, such as drugs, interact with the body to produce either beneficial or harmful effects. This course aims to provide an understanding of the challenges involved in the development of drugs to treat and prevent disease. The molecular, biochemical and physiological basis of disease and the mechanisms by which drugs act to produce their effects are studied in detail.

What careers are available in Pharmacology?

Pharmacology graduates often pursue postgraduate research or are engaged in research and development in academic, hospital or industrial settings. They are employed by companies such as Boston Scientific, Medtronic, Abbott, Oriflame and Allergan, working in a range of roles from research to drug regulation and marketing.

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Bachelor of Science (Biomedical Science)

What is Biomedical Science?
Biomedical Science is the study of life science subjects, which underpin our understanding of how the human body works. You will learn about the body’s structure and function, from the level of organs and tissues to the molecular level, as well as how drugs are used to treat disease. You will major in one of the following subjects: Anatomy, the science dealing with the form and structure of living organisms; Biochemistry, the science of the molecular basis of life; Pharmacology, the study of the effects of drugs on living organisms; or Physiology, the study of the functions of the body, and its component tissues, cells and fluids. The programme promotes small-group learning, allowing students to work in teams and interact with staff informally.

Why should I study Biomedical Science?
This degree is dedicated to producing top quality graduates with academic excellence in their chosen discipline. The incorporation into the programme of biomedical debates, presentations and research projects enhances the educational experience for each student and contributes to their personal growth as confident academic communicators – an invaluable life-long skill. Graduates have excellent opportunities for ongoing employment in the pharmaceutical, diagnostics, medical device and clinical trials sectors.

What further education opportunities are there?
A high proportion of graduates pursue higher degrees in areas such as molecular, cell and cancer biology, neuroscience, developmental biology and regenerative medicine.

What career prospects does Biomedical Science offer?
Galway is one five global hubs for Biomedicine and NUI Galway is Ireland’s leading university for Biomedical teaching and research. 9 of world’s top 10 Medtech companies are located in Galway which means that graduates have excellent employment prospects. Graduates are employed in healthcare, health and science management, in university or industrial laboratories, in a variety of areas in the diagnostic and pharmaceutical industry, including research and development, in clinical trials management, in regulatory affairs, in marketing, and in education.

Find out more:
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What our students say
“I’ve had a great experience studying Biomedical Science. The small class size is great as it allows you to get to know everyone within the first few days. First year is very general and gave me a strong base to continue my studies in more specialised subjects later. The general subjects covered gave me an advantage in picking what I was interested in before I had to make the commitment. My advice to anyone thinking about choosing this course is to be ready to try some interesting topics that will challenge you!”

Paul McTigue – BSc Biomedical Science
Bachelor of Science (Biotechnology)

What is Biotechnology?
Biotechnology is about using our knowledge of biology to solve real world problems. It is about using molecules, cells and organisms to provide medicines and foods, or for tasks such as forensics or detecting harmful substances.

Biotechnology has a long history in food and agriculture, using yeast to make beer and selective breeding of better crops. Technologies such as genetic engineering and genomics allow today’s biotechnologists to harness our rapidly growing knowledge of biology to innovate in areas such as biopharmaceuticals, the food industry and the environment.

Why should I study the BSc Biotechnology programme?
The Biotechnology programme focuses on giving students skills and knowledge for the many opportunities of biotechnology. Alongside a solid foundation of modern biology, there is close mentoring and tailored training in languages, business and communication skills. Languages done by all students provide a unique and distinctive feature. Students complete individual projects at NUI Galway’s highly active research laboratories, and have placement opportunities.

What placement options are there?
A unique highlight of the course is the opportunity to undertake a three-month laboratory placement as part of third year – generally in continental Europe – where students work on relevant projects under the direction of experienced researchers.

What postgraduate opportunities does this course offer?
Graduates frequently pursue advanced training and research in PhD, Masters and Graduate Diploma programmes at universities in Ireland and abroad, spanning areas as diverse as molecular biology, biomedical sciences, environmental science and teaching.

What are the career prospects?
Biotechnologists find employment in rewarding jobs across the growing ‘smart economy’, including industries such as biopharmaceuticals, diagnostics, healthcare, and the environment. Employment opportunities are also available in research and teaching. Graduates are equipped with a wide range of capabilities and practical experience, including business and language skills, which complement their knowledge of biology. This also allows them to move into areas such as management and marketing, where the biotech revolution continues to open doors.

COURSE OUTLINE

Year One
- Biology
- Chemistry
- Biotechnology concepts and skills
- Statistics and probability
- Language (French or German)

Year Two
- Biotechnology skills module
- Biochemistry
  - Molecular and cellular biology
  - Protein structure and function
  - Gene technology and molecular medicine
  - Metabolism and cell signalling
- Microbiology
  - Microbes and the environment
  - Microbiology lab skills
- Chemistry
  - Analytical and environmental chemistry
  - Organic chemistry
  - Physical chemistry
- Language (French or German)

Year Three
- Biotechnology skills module
- Biochemistry
- Cell biology
- Molecular biology

Year Three continued
- Protein biochemistry
- Microbiology
  - Food and industrial microbiology
  - Immunology and recombinant techniques
  - Microbial metabolic and molecular systems
- Placement option
  - Placement project
  - On-campus option
- Microbial metabolic and molecular systems
  - Immunology and recombinant techniques
  - Food and industrial microbiology

Year Four
- Individual laboratory research project
- Topical scientific literature review
- Biochemistry
  - Biomolecules
  - Molecular and cellular biology
  - Modern biotechnologies
  - Principles and experimental design
- Microbiology
  - Bioprocessing and recombinant proteins
  - Introduction to Business

What our students say

“Class sizes in Biotech are small which means we get to know each other quickly and interact with our lecturers. The subject variety gives us broad experience, and the language module helps us stand out from other science graduates.”

Louise Ward – BSc (Biotechnology)

COURSE FACTS

- CAO Code: GY304
- Course Level: 8
- Duration: 4 years
- Minimum Entry Points 2012: 445
- Minimum A-Level Grades: AAB (A-Level) & b (AS) or equivalent combination
- Leaving Certificate Entry Requirements: Minimum Grade HC3 in two subjects and passes in four other subjects at H or O level in the Leaving Certificate, including Irish, English, another language, Mathematics, a laboratory science subject (i.e. Chemistry, Physics, Biology, Physics with Chemistry (joint) or Agricultural Science), and any other subject recognised for entry purposes.
- A-Level/GCSE Entry Requirements: See page 150 for matriculation entry requirements.
- Average Intake: 28

Find out more:
College of Science
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www.nuigalway.ie/biotechnology
Bachelor of Science (Environmental Science)

What is Environmental Science?
Environmental Science is an interdisciplinary study which examines the interaction between humans and the environment, with specific reference to the effects of modern technological advances.

Why should I study Environmental Science?
Today the necessity to understand our environment has never been more urgent, and the need for environmental scientists to deal with increasingly complex issues is growing. The course provides a thorough grounding in the basic sciences in the first years followed by the application of this knowledge to current environmental problems in the later years. While studying a broad range of subjects, students are also given the opportunity to specialise in topics of their choice.

How will I benefit from studying this programme?
Understanding our environment has never been more important, and the need for environmental scientists is growing. As an Environmental Scientist, you will have a skills set that will be in demand in a variety of contexts for the foreseeable future.

What opportunities are there for further education?
Postgraduate research opportunities in the field of Environmental Science leading to MSc and PhD degrees are available within the college. Research areas currently include the fields of agri-environmental research, biodiversity, biological control, habitat management, protected species conservation and wetland studies.

What career prospects does Environmental Science offer?
Graduates of the programme have worked with such government bodies as the Environmental Protection Agency, Geological Survey of Ireland, the National Parks and Wildlife Service, Teagasc, the Regional Fisheries Boards, the National Biodiversity Records Centre and Waterways Ireland, as well as for local authorities, as environmental consultants, and for agri-environmental planning agencies. Opportunities also exist in the private and research sectors.

COURSE OUTLINE

Year One
- Biology
- Chemistry/Physics
- Introduction to Earth and Ocean Sciences
- Hot Topics in Environmental Science
- Irish Legal Systems
- Probability

Year Two
- Environmental Modules
  - Ecological Survey Techniques
  - Environmental Law
- Botany and Plant Science Modules
  - Fundamentals in Aquatic Plant Science
  - Plant Diversity, Physiology & Adaptation
- Earth and Ocean Sciences Modules
  - Ancient Earth Environments
  - Introduction to Palaeontology & Evolution
- Microbiology Modules
  - Microbes and the Environment
  - Laboratory Skills in Microbiology
- Zoology Modules
  - Invertebrate Biology
  - Vertebrate Zoology
  - Interdisciplinary Module
  - Evolution and the Tree of Life

Year Three
- Nature Conservation and Habitat Managements
- Field Course with Environmental Skills
- Habitat Management Planning
- Legislation for Environmental Scientists
- Environmental Microbiology
- Marine Microbiology
- Plant Ecology
- Statistics
- Plus four electives from a wide range of modules

Year Four
- Environmental Impact Assessment
- Environmental Science Seminars
- Marine Microbiology and Nutrient Cycling
- Advanced Field Course in Environmental Science
- Anaerobic Microbial Biotechnology & Systems Biology
- Project
- Plus two electives from a wide range of modules

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Bachelor of Science
(Financial Mathematics and Economics)

What is the BSc in Financial Mathematics and Economics programme about?
The BSc in Financial Mathematics and Economics (BSc in FME) is a four-year degree programme, consisting of courses in mathematics, economics, statistics/probability, applied mathematics, accounting and business finance, and computer science. The programme's aim is to equip students with expertise in quantitative subjects, with a particular focus on financial economics, actuarial mathematics and statistics. There is a high demand from financial institutions for well-qualified students with quantitative skills, and in an expanding market, highly numerate professionals are being sought, particularly in the areas of insurance, investment and finance. Typically in such employment, you would be predicting the long-term financial consequences of current and past decisions, taking account of various risk factors, and designing solutions to problems that involve financial risk or uncertainty.

Why should I study this programme?
The degree should appeal to people who enjoy mathematics and are interested in studying economics and other subjects in the financial area. (Please note that you do not have to study Economics for the Leaving Certificate to be admitted to this course.) This degree has an advantage over other programmes, including specialised actuarial programmes, as it is broad and suits students not yet ready to specialise. The course is administered jointly by the College of Science and the College of Business, Public Policy and Law. The entry requirements of either college may be applied, according to whichever is more advantageous to the applicant.

What special features does this programme have?
Since September 2005, the Institute and Faculty of Actuaries has recognised this programme for the purposes of obtaining exemptions in these professional actuarial subjects: CT1 Financial Mathematics, CT3 Probability and Mathematical Statistics and CT7 Business Economics. If you undertake a Masters or Higher Diploma in Actuarial Science, you may receive further exemptions from the CT level of actuarial exams. We may seek further exemptions in the future.

What opportunities for further education exist?
Honours graduates can pursue higher degrees in a range of related disciplines, including mathematics, actuarial science, financial economics, financial mathematics, applied mathematics, statistics and economics. Graduates have been accepted on to leading postgraduate programmes in Ireland and in prestigious universities overseas, including the University of Cambridge, Warwick University and the University of California, Berkeley, USA. Graduates can choose to become trainee actuaries and finish the professional exams while working or complete a Masters or Higher Diploma programme in Actuarial Science before starting as a trainee actuary. To become a qualified actuary, you must satisfy the professional education and work experience requirements of the Institute and Faculty of Actuaries, based in the UK. The Society of Actuaries in Ireland is responsible for the professional conduct of actuaries in Ireland but is not an examining body.

What career prospects does this programme offer?
There are excellent employment opportunities for graduates. The demand from employers for well-qualified students with knowledge of how financial markets operate and how to use quantitative techniques to make informed investment decisions is substantial. The employment prospects from this degree programme are excellent, with challenging and financially rewarding opportunities in many different areas. These include:
Financial services – opportunities for graduates exist across the financial services sector, in investment, corporate and private banking, in currency trading, in credit risk and in management of hedge funds. Some of the world’s leading financial firms have hired our graduates, including Goldman Sachs, JP Morgan, Merrill Lynch and Credit Suisse.

Actuarial profession – graduates can embark on a career as an actuary, working primarily in pensions, life insurance and investments. About a quarter of our graduates in recent years have gone on to complete postgraduate actuarial studies, and some graduates have gone directly to positions as trainee actuaries.

Other areas – opportunities for our graduates exist in government departments and other public sector bodies, where they play key roles on issues affecting the national economy. In recent years, graduates have been hired by the Department of Finance, the Central Bank of Ireland, the Bank of England and the National Treasury Management Agency (NTMA). Moreover, because of their strong numeracy skills, graduates have also secured employment in a wide variety of different areas, for example, as economists, in accountancy, tax and law, in management consultancy and even as a sports odds compiler.
Bachelor of Science (Financial Mathematics and Economics) continued

**COURSE OUTLINE**

<table>
<thead>
<tr>
<th>Year One</th>
<th>Year Three</th>
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<tbody>
<tr>
<td>Mathematics</td>
<td>Applied Regression Models</td>
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<td>Computer Science</td>
<td>Groups I</td>
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<tr>
<td>Economics</td>
<td>Topics in Microeconomic Theory</td>
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<tr>
<td>Mathematics of Finance</td>
<td>Annuities and Life Insurance</td>
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<td>Statistics and Probability</td>
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<tr>
<td>Mathematical Methods I</td>
<td>Metric Spaces</td>
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<td>Financial Management</td>
<td>Economics of Financial Markets</td>
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<tr>
<th>Year Two</th>
<th>Year Four</th>
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<tbody>
<tr>
<td>Analysis I</td>
<td>Actuarial Mathematics II: Life Contingencies</td>
</tr>
<tr>
<td>Intermediate Macroeconomics</td>
<td>Numerical Analysis</td>
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<tr>
<td>Probability</td>
<td>Measure Theory</td>
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<tr>
<td>Mathematical Methods I</td>
<td>Final-year Project (over 2 semesters)</td>
</tr>
<tr>
<td>Intermediate Microeconomics</td>
<td>Non-Linear Systems</td>
</tr>
<tr>
<td>Linear Algebra</td>
<td>Economics of Financial Markets Seminar I: Financial Modelling</td>
</tr>
<tr>
<td>Computer Science</td>
<td>Economics of Financial Markets Seminar II: Financial Derivatives</td>
</tr>
<tr>
<td>Discrete Mathematics</td>
<td>International Monetary Economics</td>
</tr>
<tr>
<td>Modelling, Analysis and Simulation</td>
<td>Stochastic Processes</td>
</tr>
<tr>
<td>Statistical Inference</td>
<td>Differential Equations with Financial Derivatives</td>
</tr>
<tr>
<td>Analysis II</td>
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</table>

This programme is an inter-college programme of the College of Science and the College of Business, Public Policy and Law. Applicants may apply to either college, according to which set of entry requirements is most advantageous.

**COURSE FACTS**

- **CAO Code:** GY309
- **Course Level:** 8
- **Duration:** 4 years
- **Minimum Entry Points 2012:** 430
- **Minimum A-Level Grades:** ABB (A-Level) & B (AS) or equivalent combination, Grade C in A-Level Mathematics
- **Leaving Certificate Entry Requirements:** Minimum Grade HC3 in two subjects and passes in four other subjects at H or O level in the Leaving Certificate, including Irish, English, Mathematics, a third language or a laboratory science subject (i.e. Chemistry, Physics, Biology, Physics with Chemistry (joint) or Agricultural Science) and any two other subjects recognised for entry purposes. A HC3 in Mathematics is required.
- **A-Level/GCSE Entry Requirements:** See page 150 for matriculation entry requirements.
- **Average Intake:** 30

**What our students say**

I chose this degree primarily based on my aptitude for mathematics but felt the broad spectrum of modules offered kept my options open. The degree provides a deep mathematical knowledge, as well as computer programming and problem-solving skills that prepared me well to pursue a variety of job opportunities. Furthermore, I was chosen from my degree class to participate in the Ireland-US Council Scholarship. The analytical skills I gained at NUI Galway were invaluable to me during this internship in New York. After acquiring the Core Technical exemptions provided, I decided to concentrate on actuarial roles. I started employment as a trainee actuary with New Ireland Assurance in August.

Maria Gormally – BSc (Financial Mathematics and Economics)
Bachelor of Science (Marine Science)

What is Marine Science?
Marine Science encompasses the study of marine life and environments, how they are formed and change over time, and how they are affected by human activity. Topics covered in this programme include marine biology, earth science, chemistry and experimental physics, mathematics, statistics, oceanography, meteorology, botany, geology and microbiology.

How will I benefit from studying Marine Science?
The degree in Marine Science is a four-year degree leading to a BSc (Hons). At the end of the degree, you will have improved your knowledge about the marine environment and will have developed your thinking and practical and personal skills, enabling you to undergo further academic training in a wide variety of scientific disciplines or begin your career. Marine Science is a broad area and the programme aims to help you find what specialty you prefer to study by introducing the subject in a general way at first and allowing you to follow your particular interests later on.

What other advantages does this programme offer?
Situated on the western seaboard, Galway has a deep and enduring relationship with the sea. NUI Galway is the only Irish University offering this degree programme and it now has the highest concentration of marine scientists of any institution in Ireland. NUI Galway’s marine research is focused on the fundamental understanding of marine organisms and ecosystems. Researchers also work in close co-operation with industry and state agencies. The 3,000 square-metre Ryan Institute is a focus for teaching and research activity in Marine Sciences at the University. The Ryan Institute’s aquaculture facility carries out applied research at Carna, Co. Galway. The government’s Marine Institute is also nearby, at Oranmore in Co. Galway.

What further education opportunities are available?
Honours BSc (Marine Science) graduates can pursue higher degrees in a wide range of related disciplines.

What career prospects does Marine Science offer?
The course will prepare you to find work in the commercial or state regulatory sectors, e.g. the Marine Institute, Bord Iascaigh Mhara or the EPA, as well as in the fisheries sector, pollution and environmental impact assessment, environmental consultancies, non-government (environmental) organisations, aquaculture, education projects, basic and applied research institutes and universities.

Course Outline

**Year One**
- Biology
- Introduction to Earth and Ocean Sciences
- Chemistry/Physics
- Plus one of the following:
  - Mathematics
  - Applied Mathematics

**Year Two**
- Fundamentals in Aquatic Plant Science
- Properties of the Ocean
- Ocean Processes
- Microbes and the Environment
- Invertebrate Biology
- Vertebrate Zoology
- Plus at least two of the following:
  - Molecular and cellular biology
  - Evolution and the tree of life
  - Laboratory skills in Microbiology
- Plus electives

**Year Three**
- Applied Aquatic Plant Science
- Ocean Dynamics
- Aquatic Geochemistry
- Marine Microbiology
- Geographic Information Systems and Biostatistics
- Marine Zoology
- Concepts in Population and Community Ecology
- Plus electives

**Year Four**
- Current Topics in Algal Research
- Global Change
- Marine Microbiology and Nutrient Cycling
- Marine Science Essay and Presentation
- Field Skills in Marine Science
- Marine and Coastal Ecology
- Research Project
- Plus electives

Find out more:
College of Science
+353 91 492 126
t
marinescience@nuigalway.ie
e
www.nuigalway.ie/science
w

What our students say

“I chose to study marine science at NUI Galway as I have always had an interest in science and nature. The course combines elements of zoology, botany, oceanography and statistics and I finished my degree with a broad understanding of the many dynamics that occur in the world’s waters. Specialising in zoology, my final year project utilised all these skills, honing my interests in fields such as aquaculture, conservation and animal behaviours. I now hope to continue my learning focusing on aquaculture and animal behaviour while travelling the world in the process.”

Liam Fulbrook – BSc (Marine Science)
Bachelor of Science (Health and Safety Systems)

What is the BSc in Health and Safety Systems about?
The BSc (Health and Safety Systems) is a workplace-oriented, multidisciplinary programme, where students receive tuition in subjects such as ergonomics, health promotion, physics, law, chemistry, anatomy, management and mathematics. The programme provides students with the knowledge and tools to have a rewarding career in ensuring the welfare and wellbeing of people at work by improving their work environment. Students will learn about the basic sciences, health sciences, human sciences, technology and regulatory affairs.

How will I benefit from doing this course?
You will get to meet health and safety practitioners and experience life as a health and safety professional by completing a formal work experience element through the third-year placement, the Professional Experience Programme (PEP). At this stage, you will have acquired in-depth knowledge and technical skills which can be applied directly to the workplace, as well as having developed written and oral communication skills.

What placement opportunities does this course provide?
Students undertake a five-month (April-August), off-campus work placement following completion of their third year of study. During this time, they work alongside a health and safety professional and, are given real day-to-day responsibilities for aspects of the host organisation’s safety-related activities. Employers from all sectors of the economy participate in this activity, for example, pharmaceutical and biomedical device companies, the healthcare sector, construction companies, local authorities, manufacturing companies, telecom service providers, health and safety consultants, and transport and logistics companies.

What career prospects are offered by doing Health and Safety Systems?
Typically graduates will seek opportunities to further their expertise in the construction, manufacturing, occupational health, public and business sectors. Career opportunities are to be found by working as a Safety Manager, an Occupational Hygienist, a Safety Consultant, a Health and Safety Officer, a Health Promotion Officer or as an Ergonomist.

What further education opportunities will I have?
Honours graduates can pursue higher degrees in a range of related disciplines and applied research institutes and universities.

What our students say
I chose Health and Safety as I enjoy working both in the office and outdoors. I am happy with my role as it is now a necessity in every workplace. It applies to all types of business, which gives me the option to change the type of work I do in the future. Also, as health and safety practice is growing, if I wish to travel I will be able to secure employment in other countries.

Laura Gibbon – BSc (Health and Safety Systems)
Bachelor of Science (Earth and Ocean Sciences)

What is Earth and Ocean Sciences?
It is the study of the physical and chemical processes that made and continue to modify the Earth and its oceans. EOS’s four integrated sub-disciplines of geology, geophysics, hydrogeology and oceanography, are focused on better understanding how the Earth works, and how its different components interact, from the upper atmosphere to the deep seafloor.

Why should I study this course?
Earth and Ocean Science graduates are in demand in the private and public sectors, in non-governmental agencies and groups and in research centres. Our graduates are trained to work at the interface of the human and natural worlds, from sourcing raw materials and energy to regulating and monitoring industries, in Ireland and globally. An Earth and Ocean Sciences degree exposes graduates to a global career market. You will study some of the most exciting areas in the natural sciences while being able to see at first hand their practical relevance in the world around you.

How will I benefit from doing this course?
You will develop an awareness of the issues around the protection and sustainable exploitation of our natural environment. You will understand where the energy and raw materials that we depend on for every aspect of our daily lives come from. You will also specialise and become expert in subjects that are pushing at the boundaries of scientific knowledge.

What postgraduate opportunities does this course offer?
Sophisticated tools and techniques now exist that give unprecedented access to our natural environment, providing new opportunities for both research and commercial activity, not only on Earth but, in the longer term, off-planet. Because the Earth and Ocean Sciences are so cutting edge, there is continual demand for more postgraduate research in both universities and industry.

What career prospects does it offer?
Graduates can pursue a range of career opportunities in diverse industries, including energy, raw materials, conservation and education. Personnel are needed in Ireland and abroad to manage both the marine and terrestrial environments. See www.earthworks-jobs.com to get an idea of the enormous range of opportunities for Earth and Ocean Scientists.

Course Outline

Year One
- Introduction to Earth and Ocean Sciences
- Plus three from the following:
  - Applied Mathematics
  - Biology
  - Chemistry
  - Computer Science
  - Mathematics
  - Physics

Year Two
- Ancient Earth Environments
- Introduction to Palaeontology & Evolution
- Crystallography and Mineralogy
- Optical Microscopy of Minerals and Rocks
- Properties of the Ocean
- Ocean Processes
- Plus one pathway from the following:
  - Applied Mathematics
  - Botany and Plant Science
  - Chemistry
  - Mathematical Studies
  - Mathematics
  - Microbiology
  - Physics and Applied Physics
  - Zoology
- Plus electives from a range of Science modules

Year Three
- Field Skills Training
- Introduction to Geological Maps
- Advanced Mapping

Plus one of the following module streams:

Stream A
- Ocean Dynamics
- Aquatic Geochemistry
- Introduction to Applied Field Hydrology
- Applied and Environmental Geophysics

Stream B
- Igneous Petrology
- Metamorphic Petrology
- Sediments and the Sedimentary Record
- Applied Palaeobiology

Plus electives from the alternate stream and/or a range of Science modules.

Year Four
- Final Year Project
- Field Techniques in Earth and Ocean Science
- Global Change
- Natural and Man-made Hazards
- Four EOS advanced modules

What our students say

“I chose to study this course at NUI Galway because of the diverse career opportunities it provides. From consultancy practice to a more hands-on approach working for oil companies or the mining industry. The theory that we learn in lectures is really put into practice in the field and the course focuses on the techniques used by industry and ensures that any graduate of this course is highly employable.”

Donal Duffy – BSc (Earth and Ocean Sciences)

Find out more:
Professor Peter Croott
Programme Director
College of Science

+353 91 492 194
peter.croott@nuigalway.ie

www.nuigalway.ie/eos or www.nuigalway.ie/science
Bachelor of Science (Biopharmaceutical Chemistry)

What is Biopharmaceutical Chemistry?
Biopharmaceutical Chemistry is the study of biomolecules (such as DNA, proteins and carbohydrates) and their applications as therapeutic medicine. Numerous diseases and medical conditions are caused by the improper function or the absence of a particular biomolecule. For example, some forms of diabetes result from a lack of insulin. The role of the biopharmaceutical chemist is to design and synthesise molecules that can substitute for the missing protein. The replacement molecule is often a modified protein, prepared using chemical and biotechnological methods.

How will I benefit from studying this subject?
Biopharmaceutical Chemistry is a multidisciplinary subject combining specific areas of chemistry and biology. The Biopharmaceutical Chemistry course involves lectures, tutorials and laboratory practical classes, and has a relatively small intake of students.

What further education options will I have?
In addition to careers in industry, honours graduates will be qualified to pursue higher degrees (e.g. PhD research) in a wide range of related disciplines.

What career opportunities does this course offer?
The biopharmaceutical industry is an increasingly important player in the Irish economy. Biopharmaceutical companies located in Ireland include Abbott, Amgen, Centocor, Elan, Eli Lilly, Genemedix, Genzyme, Merck and Pfizer. These companies need graduates who are trained in chemistry and aspects of biotechnology. The Biopharmaceutical Chemistry degree is tailored to meet the needs of this industry.

Find out more:
Dr Peter Crowley
School of Chemistry
College of Science

+353 91 492 480
peter.crowley@nuigalway.ie
www.nuigalway.ie/chemistry

What our students say
I've always found chemistry enjoyable, and I chose to continue on studying it. Biopharmaceutical Chemistry is a new and exciting course. Whether you prefer the more academic side of chemistry or the thrilling practical side of it, Biopharmaceutical Chemistry has it all and with many job prospects in the future too! If you choose to come and study this, you will also experience the great life that NUI Galway has to offer its students.

Samantha White – BSc (Biopharmaceutical Chemistry)
Bachelor of Science (Mathematical Science)

What is the BSc in Mathematical Science programme about?

This honours degree programme provides students with a solid foundation in Mathematical Science, encompassing all aspects of mathematics and its applications. Students will have the opportunity to specialise in particular areas, for example in mathematics, applied mathematics, financial mathematics, computer science, statistics and bioinformatics.

What further education opportunities will I have?

Graduates have a broad range of options for postgraduate work available to them. Opportunities include MSc or PhD programmes at NUI Galway and further afield in all areas of the Mathematical Sciences. Interdisciplinary research options are also available.

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<thead>
<tr>
<th>COURSE OUTLINE</th>
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<tbody>
<tr>
<td><strong>Year One</strong></td>
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<tr>
<td>▶ Applied Mathematics</td>
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<tr>
<td>▶ Mathematics (also available through the medium of Irish)</td>
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<tr>
<td>▶ Probability and Statistics</td>
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<tr>
<td>▶ Introduction to Programming</td>
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<tr>
<td>▶ One of: Biology, Chemistry, Earth and Ocean Sciences, Physics</td>
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<tr>
<td><strong>Year Two</strong></td>
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<tr>
<td>Curriculum core consists of components from the following modules/pathways:</td>
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<tr>
<td>▶ Linear Algebra</td>
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<td>▶ Discrete Mathematics</td>
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<td>▶ Analysis</td>
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<td>▶ Probability</td>
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<tr>
<td>▶ Statistical Inference</td>
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<td>▶ Mechanics</td>
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<tr>
<td>▶ Mathematical Methods</td>
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<tr>
<td>Up to one-third of the second year curriculum can be selected from a list of additional options, some offered from within the School and some available within other science disciplines, subject to first year prerequisites.</td>
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<tr>
<td><strong>Year Three and Four</strong></td>
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<tr>
<td>▶ Selection of specialized modules from chosen areas of the Mathematical Sciences</td>
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<tr>
<td>▶ Choices are flexible and possibilities include:</td>
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<tr>
<td>▶ Metric Spaces</td>
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<td>▶ Topology</td>
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<td>▶ Groups</td>
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<td>▶ Measure Theory</td>
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<tr>
<td><strong>Year Three and Four continued</strong></td>
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<tr>
<td>▶ Functional Analysis</td>
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<td>▶ Rings</td>
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<td>▶ Field Theory</td>
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<td>▶ Numerical Analysis</td>
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<td>▶ Applied Regression Models</td>
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<td>▶ Statistical Modelling</td>
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<td>▶ Stochastic Processes</td>
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<td>▶ Time Series Analysis</td>
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<td>▶ Introduction to Bayesian Modelling</td>
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<tr>
<td>▶ Probability Theory and Applications</td>
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<td>▶ Annuities &amp; Life Assurance</td>
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<td>▶ Actuarial Mathematics</td>
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<td>▶ Life Contingencies</td>
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<td>▶ Bioinformatics</td>
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<td>▶ Non-Linear Systems</td>
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<td>▶ Non-Linear Elasticity</td>
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<td>▶ Quantum Mechanics</td>
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<td>▶ Partial Differential Equations</td>
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<td>▶ Electromagnetism</td>
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<td>▶ Fluid Mechanics</td>
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<td>▶ Modelling</td>
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<tr>
<td>▶ Cosmology and General Relativity</td>
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<tr>
<td>▶ Cryptography</td>
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<tr>
<td>▶ Mathematical &amp; Logical aspects of Computing</td>
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<tr>
<td>▶ Networking</td>
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<tr>
<td>▶ Scientific Computing</td>
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<tr>
<td>▶ Object-Orientated Programming</td>
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<td>▶ Advanced Programming</td>
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<td>▶ Artificial Intelligence</td>
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<td>▶ Neural Network</td>
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<tr>
<td>▶ Graphics and Image Processing</td>
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<tr>
<td>▶ Human Computer Interaction</td>
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<tr>
<td>▶ Final year project</td>
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</tbody>
</table>

What career prospects does Mathematical Science offer?

The reasoning skills and problem-solving abilities of Mathematical Science graduates are highly valued and the career opportunities are diverse, both in the public and private sectors. Many graduates are employed in the financial and actuarial services, while others work in the IT industry, particularly in programming and software development. Others work in the pharmaceutical industry, doing clinical research, in secondary and tertiary education, and in the civil service.

What further education opportunities will I have?

Graduates have a broad range of options for postgraduate work available to them. Opportunities include MSc or PhD programmes at NUI Galway and further afield in all areas of the Mathematical Sciences. Interdisciplinary research options are also available.

Find out more:

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College of Science  
+353 91 492 332  
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www.maths.nuigalway.ie
What is Physics?
Physics is the fundamental science. It seeks to understand the basic laws governing the structure of matter, the nature of energy and the physical forces that form our world. Its span of interest ranges from the nature of the short-range forces which operate inside the atomic nucleus to the origin and structure of the universe.

Applied Physics is the study of physics with particular emphasis on technological and practical applications. Astrophysics is the part of astronomy that deals with the physics of the universe, including that of stars, black holes and galaxies. Biomedical Physics is the application of physics to the medical and biological sciences. Theoretical Physics is the application of mathematical tools and models to explain and predict physical phenomena.

Why should I study this programme?
If you have an enquiring mind, and are interested in discovering how things work, then this could be the course for you. The direct entry to this Physics degree ensures that you study a core Physics programme along with an exciting range of specialist options. You will be introduced to these options at the very start of the programme. Students do a common first year, and then specialize in one of the four pathways for the remainder of the degree.

How will I benefit from studying Physics?
You will gain an insight into one of the most exciting and interesting areas of scientific inquiry. You will have the opportunity to study specialist options and gain valuable numerical, computational and problem-solving skills.

What further education opportunities are there?
Honours graduates can pursue higher degrees in Physics or, depending on the specialisms selected, in a wide range of areas such as Applied Physics, Astrophysics, Energy/Environmental Studies, Medical and Biomedical Physics, Meteorology, and Theoretical Physics.

What career prospects does a degree in Physics offer?
A degree in Physics is an excellent training for employment in high technology industries (e.g. communications, electronics, optics and photonics, semiconductors and medical devices) and also in fields such as second- and third-level education, meteorology, the environmental and medical sciences, and software design. A Physics degree can also lead to an exciting career in fundamental research in any area of physics or in multidisciplinary areas such as nanotechnology, medical physics, biophysics, occupational health, and materials science. Theoretical physicists often work in the financial and actuarial sectors.

What our students say
"This degree gave me a great grounding in the fundamentals of physics, while at the same time I got to explore all the cutting edge areas of modern astrophysics right from the start. The research trip to a professional observatory was amazing too – we really got to see how astronomical science is performed. I highly recommend it."

Susan Collins – BSc (Physics with Astrophysics)
Graduate Insights

“I have always been interested in the natural world and in particular the marine environment, so when completing my CAO choice, Marine Science in NUI Galway was an obvious choice. Initially the course subjects were quite general providing a broad knowledge of marine science, and narrowing down as the years continued culminating in my final year project. This provided me with invaluable practical experience to complement my theoretical knowledge.

During my undergraduate degree I joined the University Sub-Aqua club. This allowed me to develop my diving skills which I was able to utilise during my final year project, in addition to meeting like-minded people and making lifelong friendships.

I am now continuing my studies with a PhD in the Ryan Institute. The skills, knowledge and contacts that I have gained during my degree have equipped me to advance in the field of Marine Science.”

Aimee Walls,
BSc in Marine Science

“I am working as a Project Geologist in SLR Consulting in Dublin. I studied Earth and Ocean Sciences at NUI Galway and it was my ideal course. First we were introduced to the basic – but necessary ideas of physics, chemistry, and biology. We then progressed to all things belonging to the natural world. We studied the secrets of the ocean floor and watched footage from the R/V Celtic Explorer and lived aboard a five day research cruise in Galway Bay, courtesy of the Marine Institute and the R/V Celtic Voyager. We studied the history associated with natural disasters to the mechanics of earthquakes, volcanoes and freak and tidal waves.

Everyday you can look forward to enjoying a range of subjects: oceanography, geology, climate science and the history of evolution. The best days were spent outside, and field trips meant making some of the best friends I have today.”

Charlie Carlisle,
BSc in Earth and Ocean Sciences

“Studying physics at NUI Galway has enabled me to learn this core science subject, as well as great transferable, problem-solving skills. Physics has applications in many areas. I decided to study physics in the field of medicine, in particular the treatment of cancer patients with radiation therapy. Postgraduate studies in Medical Physics at NUI Galway have also enabled me to study at one of the best cancer centres in the United States. Recently I have been offered a postdoctoral position at the Institute of Cancer Research in London, one of the world’s foremost independent cancer research organisations.”

Tuathan O’Shea,
BSc in Physics & Applied Physics,
MSc in Medical Physics, PhD in Medical Physics