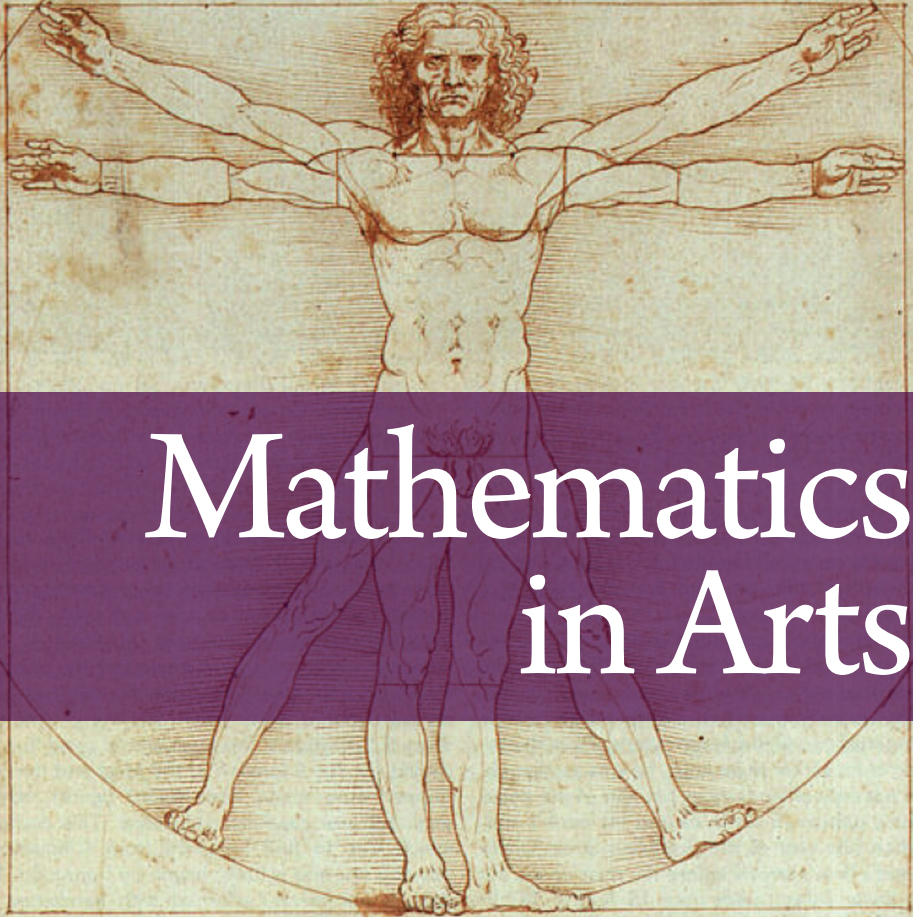




NUI Galway
OÉ Gaillimh



Mathematics in Arts

Mathematics and Mathematical Studies incorporate Mathematics, Statistics and their applications.

Mathematics is the language for the logical study of the structure of our world. It has developed from counting, calculating and measuring, through the use of abstraction and analogy, by recognizing the fundamental role that comparisons play in the mental process of ‘understanding’. It is an area of great beauty based on highly evolved concepts and language. It provides a continuous link through the intellectual, cultural and technological development of the human race over the last 5,000 years.

Mathematics or Mathematical Studies?

Students can opt to study towards a Mathematics BA or Mathematical Studies BA. The former is a traditional programme that covers a wide range of topics in mathematics, statistics, applications and history of mathematics with an emphasis on theoretical and abstract aspects.

The Mathematical Studies programme covers a similar range of topics but takes a more concrete approach, with more emphasis on the context of mathematics and its relevance to other areas of human activity.



Why study Mathematics/Mathematical Studies at NUI Galway?

- If you enjoyed Mathematics at school, you can expect to enjoy it even more at university as you broaden and deepen your understanding.
- The School of Mathematics, Statistics and Applied Mathematics at NUI Galway has a team of dedicated and enthusiastic teachers who are committed to making your experience as fulfilling as possible.
The resources available to support your mathematical learning at NUI Galway are excellent. All modules will be supported by weekly tutorials where you can ask questions and discuss examples. In addition you will have daily access to the SUMS Centre, which is open for 20 hours per week for students to drop in for expert advice on mathematical questions.
- The flexibility of the Arts programme in Galway allows you an opportunity to explore your interests before choosing your two degree subjects from the three that you study in the first year. There are many excellent companions for Mathematics in an Arts degree.
- Employment prospects for mathematics graduates are exciting, diverse and plentiful.



What will I be studying?

The first year of this programme consists of a broad-ranging introduction to all aspects of Mathematics, its applications and its historical and cultural development. After first year, students will have the possibility to continue to degree level either in Mathematics or in Mathematical Studies.

As you progress through the degree you will have opportunities to study areas such as geometry, linear algebra, real and complex analysis, statistics, abstract algebra, cryptography, discrete mathematics and mathematics education, as well as some of the contexts and applications of these subjects.



Careers and further study

Career opportunities for mathematics graduates are diverse and interesting. They have skills that are highly valued by employers, such as the ability to think rationally, process complex data reliably, construct and use mathematical models, and interpret quantitative information.

www.nuigalway.ie/careers/students/oppo/oppo_arts.html#maths

Graduates find employment in a wide range of areas, including the financial sector, the IT and software industry, the MET service, the civil service and the teaching profession. Opportunities also exist for further study and research in Mathematics either in Galway or elsewhere.



Entry Requirements

A minimum grade of H5 or O1 in Leaving Certificate Mathematics, or equivalent, is recommended.

Frequently Asked Questions

Is it difficult?

The study of any subject to degree level is challenging, so you will need to work consistently. In all mathematics and mathematical studies modules the learning outcomes and expectations will be very clear, and you will be provided with regular feedback on your work. You will have access to continuous support from your lecturers and tutors and from the SUMS Centre. You can expect to succeed very well if you work hard and make use of the resources that are provided.

Will I be qualified as a mathematics teacher?

The Mathematics and Mathematical Studies programmes are both recognized by the Teaching Council of Ireland as meeting the subject requirements for teachers of mathematics to Leaving Certificate (Higher) Level. After completing your degree and the two-year Professional Masters in Education (which qualifies you to work in the teaching profession), you will be a fully qualified mathematics teacher. Many of our Arts graduates are currently doing excellent work as mathematics teachers.

Contact Details

Professor Graham Ellis: graham.ellis@nuigalway.ie

Ciara Phelan

National Expert, Cabinet of EU Commissioner
for Research, Innovation and Science

Ciara graduated from NUI Galway in
2005 with a BA in Maths and Economics.



Why did you decide to study maths & economics?

I did an Arts degree to first try out a few subjects. I had ordinary maths for my Leaving and really enjoyed it. At NUI Galway I picked honours maths as one of my first year subjects and had to work pretty hard to catch up to honours level. But I really enjoyed maths and decided to keep it on for my degree. I also found the maths lecturers and staff very supportive.

Looking back, was the degree easy/hard?

There were definitely some challenging assignments and exams where a lot of coffee and chocolate was consumed. But looking back, my college days were amongst the best in my life. I've had the chance to do some pretty cool stuff since, but my college experience provided the basis for a lot of those opportunities. Having the time and resources to delve deep into fascinating subjects was a great privilege and I look back very fondly on those days.

Why did you do after your degree?

I worked in finance for about a year until I was admitted in the Civil Service and was placed in the Department of Enterprise, Trade and Employment working as an Administrative Officer. Later I took a career break and spent two winters in the Arctic working with sled dogs and then re-joined the Department working on the development of the Green Economy in Ireland.

What's your current position?

At the moment I am on a placement as a National Expert in the Cabinet of Máire Geoghegan-Quinn, the EU Commissioner for Research, Innovation and Science. It's incredible to get a bird's eye view of the EU policy making process, particularly in the Cabinet of an Irish (Galwegian!) Commissioner.

What's a typical day at work like for you?

I start by checking my emails and prioritising activities. I do a lot of reading, preparing briefing and speaking points, attending meetings with a wide range of stakeholders from other Departments, agencies and enterprise, etc. Travelling to Brussels and representing Ireland and/or meeting with European Commission officials is something I do a number of times a year in my 'day job.' The Innovation Convention took place during my second week at work here so I got to go to that, tried out Google Glass, met a robot and saw a number of great speakers from across the innovation world.

What did prospective employers think of your degree and is it useful for your work?

Having honours maths in my degree made me a more serious candidate for any job I've applied for. It even helped me to get a job training sled dogs in Arctic Finland! Having maths, combined with social sciences has been a great grounding for working in policy. Studying maths teaches strong analytical skills and provides a good grounding in logical thinking. And it's always useful to be quick at adding up numbers!

Any advice for Leaving Cert students thinking of registering for a degree with mathematics?

Go for it. If you're looking for some inspiration read some books on the history of maths. It helps to put things in context and mathematicians tend towards the eccentric so their biographies are generally highly entertaining. Unfortunately there are not too many women featured in the history of maths – yet! That means there's plenty of opportunity for today's female students to become the subject of tomorrow's history books.

Any advice for today's maths students?

With maths, it's always really difficult until you figure out how to do it, and after that, it's easy 😊

Deborah Ní Cheallaigh

Maths Teacher,
Gaelcholáiste Luimnigh, Limerick.



Deborah graduated in 2010 with a First Class Honours BA in Mathematics and Irish.

Why did you decide to study maths at NUI Galway?

Because I'd always loved Maths throughout school and always found it was an area of immense exploration.

Looking back, was the degree easy or hard?

Completing this degree defined me as an individual in many ways. Certain aspects were difficult but never impossible. We had fantastic help available from the walk-in support center SUMS, the tutors and the lecturers. I made great friends, loads of whom I'm still in contact with.

Was it hard to find a job after your degree?

Not at all, having achieved a first class honours in my Maths and Irish BA Degree definitely stood to me. The degree spoke for itself.

What's your current position?

I'm currently teaching in an all-Irish mixed Secondary School in Limerick City. I'm head of the Mathematics Department and Numeracy Coordinator for the School.

What's a typical day at work like for you?

Every day is completely different, incomparable. Highs, lows, laughter, tears, you name it! Every day I strive to engage my students in their own learning and boost their confidence in Maths. Undoubtedly every class/individual is a different challenge, but I enjoy my job thoroughly.

Did your degree at NUI Galway prepare you well for your current work?

Most definitely, a huge amount of coursework solidified concepts for me which were never properly explained in school. That's something I vow to have different for my students now: teaching for understanding is crucial to me at all times.

Any advice for Leaving Cert students thinking of registering for a degree with mathematics?

Think carefully about what level you choose your maths courses in University. I took Honours Maths (I think the University calls it "Maths" now as opposed to "Maths Studies" which would have been Pass Maths in my days) and it was most definitely worth the hard work.

Any advice for today's maths students?

Always do Maths with understanding.... If you don't understand something, question it again and again until you do... Once understanding marries with the topic, the application becomes a natural extension. Don't hesitate to knock on your Lecturer's door for help. They were always incredibly approachable.

Anything else that sticks in your memory?

During my second year in college, I was very unwell and had to defer all my Maths exams. The maths lecturers were fantastic to me and very accommodating during a period which was difficult and upsetting. It's something I will never ever forget. In fact it's because of this warmth and support that I still regularly visit Aras De Brun, the home of the School of Mathematics, just to pop in whenever I'm in Galway. The building has come a long way since 2010 but the people are still the same, some of the best!

Nichola Leonard

Maths Teacher,
Loreto Secondary School, Kilkenny

Nichola graduated from NUI Galway in 2012 with a First Class BA in Mathematics & Education.



Why did you decide to study maths at NUI Galway?

In 2008, NUI Galway offered for the first time the BA in Mathematics and Education. I had always wanted to be a teacher and this course ticked all the boxes for me by allowing me to become a maths teacher, a subject which I am passionate about.

Looking back, was the degree easy/hard?

In hindsight the degree surely threw up some challenges along the way. One stands out in particular: trying to find the centre of mass of a robot which was sitting down. After hours of bouncing ideas around we finally managed to come to a solution! Like everything in life, if you put in the hard work it gets easier. There were definitely many enjoyable moments throughout the course in both mathematics and education. Getting experience in the classroom which allows you to pass on your knowledge and illustrate your passion to students and hopefully kindling a spark of interest in maths: these are some of the best feelings ever!

Was it hard to find a job after your degree?

Nowadays getting a teaching job is difficult but the BA in Mathematics and Education qualifies you to teach honours Leaving Cert maths which makes a huge difference. I was one of the lucky ones who got a job straight out of college, after sending out a countless number of CVs and doing a few interviews.

What's a typical day at work like for you?

I guess in teaching there is no such thing as a typical day: every day throws up new unexpected challenges, questions and problems, which means there is never a dull moment! Usually I am in school at 8 AM to get everything in order for the day ahead. Each day consists of five to nine teaching classes. Then add in training of soccer, Gaelic or hockey during break or after school, along with plenty of corrections, some supervision, staff meetings, and you will soon realise that a teacher's life is very hectic but very rewarding.

What did prospective employers think of your degree, as far as you could tell?

As far as I could tell, they were impressed as they gave me the job! Being qualified to teach to Honours Leaving Cert level played a major part in getting the job, along with being qualified to teach Applied Maths, which is a rare qualification. They also were interested in the numerous teaching placements completed throughout the course. Through these one gains buckets of wisdom, confidence and improves in their delivery of classes.

Did the Maths & Ed degree at NUI Galway prepare you in any way for your current work?

Yes it did as completing a Maths degree takes commitment, hard work and a deep understanding of abstract concepts. These are qualities you must pass on as a teacher to inspire future generations. In the Education modules we learnt different techniques, methods and procedures but the hands-on elements of actual teaching practice was where the most learning was done! For my block teaching practice of 12 weeks in final year, I participated in the partnership programme, where my mentoring teacher sat in weekly on one of my classes and continuously gave me advice and feedback. Through this, my confidence grew and my teaching improved! This is definitely one of the best opportunities that a young starting off teacher can get to learn the ropes.

Any advice for Leaving Cert students thinking of registering for a degree with mathematics?

If as a Leaving Cert student you are contemplating a degree with mathematics, then you need to be up for the challenges that are going to face you. Don't be afraid to think 'outside the box' as many concepts are a little abstract. Be prepared to work hard. This is the advice I give my pupils!

Any advice for today's maths students?

They need to put in the hard graft, attend the lectures, and ask the lecturers and the tutors if something doesn't make sense because maths tends to build from one concept to the next. Also, make extensive use of SUMS (Support for Undergraduate Maths Students): it's like free grinds, but better! Most of all, enjoy the experience and strive on completing challenges handed to you.

Kate Sugrue

Senior Data Analyst,
Vhi Healthcare.



Kate graduated with a BA in Maths Studies and English in 2009, a Higher Diploma in Maths in 2010, and a MA in Maths 2011, all with first class honours.

Why did you decide to study maths at NUI Galway?

I really enjoyed maths in school, I was good at it. I didn't really know what I wanted to do after the Leaving Cert. For a while I considered engineering but my heart wasn't in it. Then I was advised by career counsellors that a maths degree would help me get a job after college, and it turned out to be true!

Looking back, how easy/hard was the degree?

It was tough at times but I was able to keep up so long as I went to lectures and did the assignments. The small classes in NUI Galway helped. I never felt self-conscious about asking questions, which was a nice change from secondary school! All the lecturers were very approachable, even outside of class.

How long did it take you to find a job after graduating?

Not long at all, within a month. I got several offers and decided to accept a graduate position with *Accenture*. I stayed there for 3 years before moving on to *Vhi*.

What do prospective employers think of your degree, as far as you can tell?

I get contacted by a lot of recruiters; they find the mixture of English and Maths curious, I'm told!

Did the maths degree prepare you in any way for your successive positions?

Yes, very much. I use maths every day. Apart from the actual calculations, it makes me approach tasks in an analytical and problem-solving way.

What's a typical day at work for you now?

A typical day always involves coding and communicating ideas with colleagues. My main job is to detect outliers in our data using statistical models. I also spend a lot of time supporting Business users with data analytics solutions. Although the work is very challenging at times, I love my job! I find I have a great work-life balance.

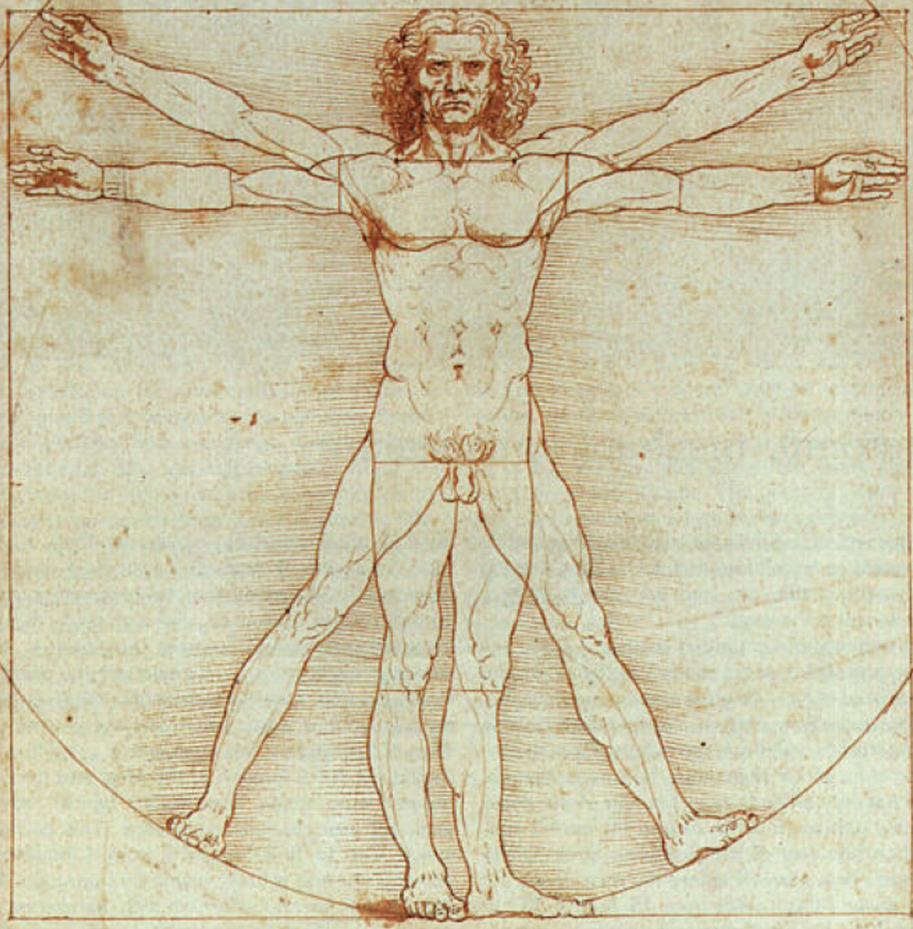
Any advice for Leaving Cert students thinking of registering for a degree with maths?

Do it! If you like maths in school and have the points for maths in college then you're well able for it. If you were to contact any recruiter, they would tell you that Ireland has a huge skills shortage when it comes to maths and computing. Maths will get you a job.

Any advice for today's maths students?

- Try to do a final year project that can be adapted to a work environment.
- If you don't already know how, then learn to code.
- Apply for every job going just so you can do as many interviews possible. If you're relaxed and comfortable in interview scenarios then when the role you really want comes up, you will be ready. Also, research the company very well before you go to an interview.
- Try to do some online certifications in MS Office at some stage, it looks good on a CV.

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