

# 2021/22

Scoil na hInnealtóireachta Scoil na Ríomheolaíochta

# Leabhrán Acadúil na Chéad Bhliana

School of Engineering
School of Computer Science

## First Year Academic Booklet





### Léarscáil den Champas Campus Map





# Foirgneamh na hInnealtóireacht Alice Perry

## Alice Perry Engineering Building

- Seomraí Seimineáir Seminar Rooms
- Saotharlanna Laboratories
- Seomra Boird Boardroom
- Ceantair Taighde Research Areas
- Ionaid Léitheoireachta Lecture Venues
- Seomraí Ríomhaireachta Computer Suites
- Innealtóireacht Bhithleighis
  Biomedical Engineering
- Oifig Innealtóireachta Meicniúil Mechanical Engineering Office
- Oifig Innealtóireachta Fuinnimh Energy Engineering Office
- Innealtóireacht Leictreonach & Leictreonach Electrical & Electronic Engineering
- Innealtóireachta Sibhialta Civil Engineering
- Oifig an Choláiste College Office
- Leithris Toilets
- Staighre Stairs
- Bialann Restaurant
- Ardaitheoir Lifts







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This Academic Booklet is valid for the 2021-22 Session. Whilst every effort is made to ensure the contents of the Academic Booklet are accurate, the Academic Booklet is issued for the guidance of students and staff only. The Academic Booklet is not an offer to supply courses of study nor is it in any way to be construed as imposing any legal obligation ons the School or University to supply courses either at all or in part in respect of any subject. No guarantee is given that courses, syllabuses, fees or regulations may not be altered, cancelled or otherwise amended at any time. The Academic Booklet confers no rights on any student registered for the Session 2021-22.





## CÉIM Academic Peer Support

CÉIM is an academic peer learning programme for 1st year Engineering students and 1st year



Construction Management students and is a joint initiative by the School of Engineering and NUI Galway Students' Union. Small groups of students meet weekly for an hour throughout the academic year to learn from each other under the guidance of trained 2nd year student leaders, with input from academic staff. Each student is also assigned to a Cairde group within their CÉIM group to further support building connections with fellow students. CÉIM is designed to help students gain a better understanding of complex subject matter in a relaxed atmosphere, quickly adjust to university life, become successful and independent higher education learners and get to know other 1st years and those in higher years. CÉIM sessions are informal and friendly, yet purposeful, with the emphasis on everyone in the group working together.



Weekly Peer Learning Sessions



Cairde Groups



Group Chat



Coursework Support



Digital Badge



Taking part

Students will be assigned to their CÉIM group in the second week of Semester 1.

#### How to take part

Students will be assigned to their CÉIM group by Tuesday, 5 October and CÉIM sessions will begin on Wednesday, 6 October at 15:00.

su.nuigalway.ie/ceim

2 Click CÉIM

See your CÉIM session time and information, and your Cairde group

## Contacts Details for Programme Administrators

Programme	Administrator	Phone	Email	Location
Civil Engineering  Project & Construction	Serena Lawless	492170	civilengineering@nuigalway.ie	ENG-1033
Management				
Electrical & Electronic Engineering	Mary Costello	492728	mary.costello@nuigalway.ie	ENG-3050
Electronic & Computer Engineering				
Mechanical Engineering	David Finn	492223	mecheng@nuigalway.ie	ENG-2050
Biomedical Engineering	Aisling Rooney	492723 biomedeng@nuigalway.ie		ENG-2023
Computer Science & Information Technology	Deirdre King	43259	iComputerScience@ nuigalway.ie	IT413, 4th floor, IT building
Energy Systems Engineering	Deirdre Duane	492664	deirdre.duane@nuigalway.ie	ENG-2050
Undenominated	Mary Costello	492728	undenominated@nuigalway.ie	ENG-3050
Engineering	& Jane Bowman	492723		ENG-2023



#### Contacts for School Office

School	Administrator	Phone	Email	Location
Engineering	Mairéad Faherty	49????	engineering@nuigalway.ie	ENG-1046B
Computer Science	Deirdre King	493259	deirdre.king@nuigalway.ie	IT-413

# Contacts for Programme Directors

Programme	Administrator	Phone	Email	Location
Biomedical Engineering	Dr. Pat McGarry	493165	pat.mcgarry@nuigalway.ie	ENG-3039
Civil Engineering	Prof. Xinmin Zhan	495239	xinmin.zhan@nuigalway.i	ENG-1037
Computer Science & IT	Dr. Colm O'Riordan	493669	colm.oriordan@nuigalway.ie	IT-403
Electronic & Computer Engineering	Dr. Martin Glavin	492035	martin.glavin@nuigalway.ie	ENG-3045
Electrical & Electronic Engineering	Dr. Maeve Duffy	493972	maeve.duffy@nuigalway.ie	ENG-3046
<b>Energy Systems Engineering</b>	Dr. Rory Monaghan	494256	rory.monaghan@nuigalway.ie	ENG-2023
Mechanical Engineering	Dr. Noel Harrison	493173	noel.harrison@nuigalway.ie	ENG-2043
Project & Construction Management	Dr. Indiana Olbert	493208	indiana.olbert@nuigalway.ie	ENG-1022
Undenominated Engineering	Dr. Mark Healy	495364	mark.healy@nuigalway.ie	ENG-1038

### Contacts for Heads of Disciplines

Discipline	Head of Discipline	Phone	Email	Location
Biomedical Engineering	Prof. Peter McHugh	493152	peter.mchugh@nuigalway.ie	ENG-3051
Civil Engineering	Prof. Xinmin Zhan	495239	xinmin.zhan@nuigalway.i	ENG-1037
Computer Science & IT	Prof. Michael Madden	493797	michael.madden@nuigalway.ie	IT-442, IT Building
Electrical & Electronic Engineering	Prof. Martin Glavin	492035	martin.glavin@nuigalway.ie	ENG-3045
Mechanical Engineering	Dr. Nathan Quinlan	492726	nathan.quinlan@nuigalway.ie	ENG-2042

#### Contact Details for Service Module Providers

Modules	Administrator	Phone	Email	Location
Chemistry	Karen Kelly	492460	karen.kelly@nuigalway.ie	Room 240, Arts/Science Building
Physics	Rebecca Nolan	492490	rebecca.nolan@nuigalway.ie	PHY224, Arts/Science Building
Mathematics	Mary Kelly	492332	mary.kelly@nuigalway.ie	ADB-G025A, Áras de Brun

# Making the Transition to University

When students make the transition from school to University they are faced with a whole range of new experiences and issues. You may be living away from home for the first time, you may not know any of your classmates yet, you are probably not familiar with the campus and may not even be familiar with Galway city. One of the most significant issues for you though will be getting to grips with the way university differs from school. For instance, no one is going to nag you about deadlines. Your assignments may not need to

be handed in for weeks and no one is going to contact your parents if you fail to turn up for lectures.

Learning at university is of course a very different experience to that of being at school. For a start, as a student you are considered an adult learner, capable of managing your own study schedule and putting in the time to read textbooks, articles and other materials so that you really understand your chosen subjects and feel more confident as you progress.

#### SUPPLEMENTARY LEARNING OUTSIDE OF THE CLASSROOM

The lectures, seminars, laboratory classes and other timetabled classes are actually only a small part of the total effort that you need to put in to succeed. Supplementary learning outside of lectures is a critical component of the learning experience. All of the assessment, coursework and available credit are based on the idea that you are spending a minimum of 40 hours per week, every week of the semester, on learning and assessment. This just represents a full-time workload and is the standard model used across Ireland and all courses that use European Credits (something called ECTS – European Credit Transfer System). In some courses it may be a little higher than this because of the nature of the subject.

The other big difference between university-level courses and some other types of qualification is that you really need to try to understand the subject and the ideas you come across in class or your reading. It's not about memorizing and regurgitating facts, but about seeing the ideas that lie behind them and being able to make use of knowledge to tackle new problems. That can be tricky to adjust to and sometimes it is really difficult to make sense of new concepts.

The good news is, that this is exactly what learning something new is like for everyone. There are always ideas that are really tricky to grasp at first and which don't make sense until you try again and again, hopefully getting some feedback on your efforts and maybe through working with fellow students. But when it does 'click' things fall into place and you get a sense of satisfaction that hopefully makes some of that struggle worth it! That's why we say you need to spend so many hours on self-study, because we know from experience (and extensive research on education) that you will need that time.

# Attendance and Submission of Assignments

It is essential that you get into the habit of attending all your lectures, tutorials and laboratories. Every year we see that there is a direct correlation between good attendance and good performance in examinations. All lecturers will routinely monitor attendance and poor attendance will have consequences.

If you miss lectures/labs/assignments due to illness/sporting commitments, please ensure that you inform your Lecturers and submit a medical certificate/letter from your team manager to your Programme Administrator.

It is also critical that assignments are submitted on time. You will need to learn to prioritise your work and leave plenty of time for assignments. Familiarise yourself with the library so that you know where you need to go to locate books and articles relevant to your area of study.

#### **SUPPORTS IN PLACE**

The University has put in place various resources to help you make the transition including the Student Support Services facility, Orientation programmes, tours of campus, 1st year handbooks, the CEIM mentoring scheme (see page 7) etc. From an academic perspective there are also a range of invaluable supports in place such as the Academic Writing Centre, SUMS (Maths Support Centre) and DISC (Computer Programming Drop In Support Centre).

The Academic Writing Centre (housed in the Library) offers free one-on-one teaching sessions tailored to the needs of the individual student. There is no need to make an appointment, simply drop in during the opening hours of the Centre: https://?????????

The SUMS: Maths Support Centre is a drop-in centre where any NUI Galway student can work on their maths questions, with expert tutors on hand to offer individual help if necessary. The centre is FREE to students and is an initiative of the Students' Union and the School of Mathematics, Statistics and Applied Maths. SUMS (Support for Undergraduate Maths Students) is located in Áras de Brun on the ground floor Room ADB-G023. Further information including opening hours, is available at www.maths.nuigalway.ie/sums

ComputerDISC is a free resource for all NUIG students that are enrolled in computer programming or software development courses. It is designed to complement the lectures, tutorials labs and other supports available. ComputerDISC is located in room 205 on the first floor of the IT building. Students can drop in at any time during opening hours as no

appointments are necessary. Further information can be found at www.computerdisc.it.nuigalway.ie

**Blackboard** is a learning system which allows lecturers to post materials such as lecture notes, reading materials, weblinks, videos, quizzes, etc, online. Many courses also use this for announcements, news items and for students to submit their coursework. Blackboard has a lot of additional tools and capabilities and quite which of these are used is decided by the lecturer or course team. Blackboard is available 24/7 from both on and off campus. Not every lecturer or module will necessarily be using it, but most will and in different ways.

You should certainly login regularly to check for updates to your modules. For those of you with a smartphone or tablet, there is also a Blackboard App (in iPhone and Android versions) which you can download.



#makethefuture



The Geec (Galway energy-efficient car) is an electric car built by NUI Galway engineering students. It is the most efficient car ever built in Ireland and one of the best in the world. The Geec has tested at 354 km per kilowatt-hour on a 15-km urban circuit, equivalent to over 10,000 miles per gallon, or 200 times as efficient as most cars on the road.

In July 2018 the team won the Technical Innovation Award at Shell Ecomarathon Europe in London, where 149 of Europe's best engineering schools competed and raced to test their energy efficiency.

In Autumn, a new team will assemble to continue developing the Geec, for even lower energy consumption. There are places for students from first year to fourth year, so watch out for posters and email announcements!

For more information, see www.theGeec.ie or follow the project on Facebook (facebook.com/theGeec.ie) or Twitter (@theGeec).

access to Blackboard using the same username and password for email and other computer services. Blackboard is available at: nuigalway.blackboard.com

The Learning Centre - Online Support and Training
All first year students are also enrolled onto a Blackboard course called the 'Learning Centre,' which contains online self-study lessons and guides to many relevant academic skills such as essay/report writing, studying and preparing for assessments. The University has a licence to make these materials available to students and we would strongly encourage you to make use of them. Feedback from other students has been very positive. The Learning Centre will also have links to other materials and interesting articles and updates will be posted there throughout the academic year, so please log in regularly.

Once you are enrolled in the university you will have

Becoming familiar with the wealth of resources offered by the library can be daunting. However, library staff provide support help and training to enable you to get to grips with the literature of your subject and the other resources on offer. As well as being available for one-to-one enquiries and consultations, the support staff provide training sessions throughout the. semester aimed at helping you to identify and use the information resources you need for your study. Checkout the library website to see the programme of training events available this September.

#### In Case of Difficulty...

If you are experiencing difficulties or take ill please make sure that you inform a lecturer, the administrative assistant associated with your Discipline or a member of staff in the College Office. You may have an individual advisor or may need to speak with the Head of School or Dean. Please don't hesitate in letting us know of any issues so that we can provide help where possible. Academic and support staff in this university are very approachable and used to helping students with all sorts of issues that might impede their studies.

### Academic Integrity

As an engineering student, over the next four years you will be required to complete many assignments, projects, reports and presentations. These are opportunities for you to learn and develop as an engineer and of course they are also used to assess your progress. The concept of academic integrity means that all staff and students must be absolutely honest in presenting their own work. Academic integrity breaks down in plagiarism, where somebody makes use of material from another source without making it absolutely clear where that material comes from. For example, plagiarism typically occurs when somebody copies text or images from the internet into a report. Academic integrity - doing our own work and giving credit to the work of others where we use it - is vital for the learning process. As a university, we put a high value on the integrity of our work and we have a strict code of practice for dealing with plagiarism when it happens.

All students are required to read the guide "Plagiarism as an Obstacle to Academic Integrity" which is available at www.nuigalway.ie/engineering-informatics/undergraduatestudents/plagiarism

### Jargon Buster – Modules, Programmes, Levels

All courses in NUI Galway are made up of 'modules'. These are usually described by a set of 'Learning Outcomes' that state what you should be able to do after successfully completing the module and a number of 'ECTS' credits. ECTS is basically an indicator of how big the module is. A module that is rated at 5 ECTS, for example, means that you need to spend at least 100 hours of concerted effort (including lectures, exams and self-study) in order to complete it satisfactorily. A module that is 10 ECTS, unsurprisingly, requires double that effort.

A whole year's worth of modules (if you are a full-time student) should total up to 60 ECTS (30 in each semester). To be awarded the credits for a module you must of course have successfully completed it in terms of attendance, participation, coursework and examinations.

A 'programme' is a whole degree course, made up of all the individual modules. It is usually described by 'Programme Learning Outcomes' and there will be rules that determine which modules you need to successfully complete each year to end up with the appropriate degree title (e.g. BE (Mechanical), BComm, BA (History), etc)).

All of our degree programmes are recognised by employers and other educational institutions and comply with international agreements on course structure (the 'Bologna Process'). All programmes are subject to regular quality reviews where the quality of the teaching and learning is scrutinised by an external panel with international experts in the subject. Every programme also has an 'external examiner' (a senior academic from another university) who oversees the final decisions about grades, checks the examination papers and processes and guarantees that the quality of our courses and graduates compare well with the standards in the subject.

Ireland has a National Framework of Qualifications (NFQ) that describes the levels of all courses of study and this matches similar schemes in other countries so that it is easy for employers and educators to make sense of different qualifications obtained from different institutions, as well as making it easier for students to move between one country and another, picking up credit and qualifications along the way. According to this scheme, an undergraduate honours degree (BA, BSc, BComm, etc) is a 'level 8' qualification. A Masters would be level 9 and a PhD level 10.

So what does this mean in practice? Well, that you must attend all the scheduled classes, spend time every week on reading, studying and working through course

materials and that what you are trying to do in the assessments and exams is show that you can actually achieve the learning outcomes. There's still plenty of time to socialize and get involved in clubs and sports (see later section) outside the 40 hours!

The lectures, labs, tutorials and other classes, combined with the textbooks, online materials and the library are all resources that the university provides to help you succeed. At the end of the day, though, success depends on your own efforts. It is possible to not only succeed in the assessments and feel a sense of achievement at having learned new knowledge and skills, but also to enjoy being a student in your chosen subject. Your final qualification will be well-regarded and recognised internationally by employers and other educational institutions across the world.

The University doesn't see you as a 'customer' or a 'consumer' but hopes that you will, instead, be a member of our academic community. That you will be able to get the most out of being in a city of ideas and learning not just about the basics of your subject but also get a feel for the latest research, the big ideas, the debates and where future opportunities lie for further study, research or employment.

#### Know The Code!

Your programme has a unique University Code.

This is the code you will see on your registration statement:

CAO Code	Programme Name	University Code
GY350	BSc Computer Science & Information Technology	ВСТ
GY401	Undenominated Engineering	EG
GY402	Civil Engineering	BE
GY405	Mechanical Engineering	BM
GY406	Electronic & Computer Engineering	BP
GY408	Biomedical Engineering	BG
GY410	Project & Construction Management	BCM
GY413	Energy Systems Engineering	BSE
GY414	Electrical & Electronic Engineering	BLE

# Curriculum

#### First Year Engineering (EG, BE, BM, BP, BG, BSE, BLE)

Module Code	Module Name	ECTS Credits	Taught in Semester(s)	Examined/ Submitted in Semester(s)
CH140	Engineering Chemistry	5	1	1
CT1110	Engineering Computing I*	5	1	1
EI160	Engineering Graphics	5	1	1
MA140	Engineering Calculus	5	1	1
MP120	Engineering Mechanics	5	1	1
CT1111	Engineering Computing II*	5	2	2
EI150	Engineering Design*	10	2	2
MM140	Engineering Mathematical Methods	5	2	2
PH140	Engineering Physics	5	2	2
EI140	Fundamentals of Engineering	10	Full Year	1 + 2

c/a=continuous assessment

<sup>\*</sup>This module is a course requirement: Students must achieve a minimum of 40% in this module. It cannot be passed by compensation.

#### First Year Computer Science & Information Technology (BCT)

Requisite Type:	Module Code	Module Name	ECTS Credits	Taught in Semester(s)	Examined/Submitted in Semester(s)
	EE130	Fundamentals of Electrical & Electronic Engineering I	5	1	1
	CT1114	Web Development	5	2	2
	PH150	Introduction to Physics	5	Full Year	2
	CT101	Computing Systems	10	Full Year	2
	CT102	Algorithms & Information Systems	10	Full Year	2
	CT103	Programming	10	Full Year	2
PR: Maths HL	MA160 Or MA190	Mathematics Mathematics (honours)	10 10	Full Year Full Year	2 2
	CT1112	Professional Skills I	5	Full Year	2

Up to 60% of a module may be examined by continuous assessment

#### First Year Project & Construction Management (BCM)

Module Code	Module Name	ECTS Credits	Taught in Semester(s)	Examined/ Submitted in Semester(s)
AY104	Introduction to Financial Accounting	5	1	1
CT1110	Engineering Computing I*	5	1	1
EI160	Engineering Graphics	5	1	1
MG1101	Introduction to Management	5	1	1
AY105	Management & Enterprise	5	2	2
CE119	Fundamentals of Project & Construction Management	5	2	2
PH150	Introduction to Physics	5	2	2
CE141	Introduction to Engineering and Design	15	Full Year	2
MA1161	Mathematical Studies	10	Full Year	1 + 2

c/a=continuous assessment

<sup>\*</sup>This module is a course requirement: Students must achieve a minimum of 40% in this module. It cannot be passed by compensation.

# Programme Timetables

Timetables can be found online at http://www.nuigalway.ie/science-engineering/studentinformation

### Student Hotline

Phone number: 091-49 3999
Opening Hours: Mon – Fri 9-1 & 2-5.
Opens 11th September and closes 14th October.

#### Academic Calendar 2021-2022

The academic calendar is available from the following web address: <a href="http://www.nuigalway.ie/registry/academic-term-dates/">http://www.nuigalway.ie/registry/academic-term-dates/</a>

#### Financial Aid Fund

The Student Assistance Fund is intended to tackle disadvantage by providing financial support to students who require financial support to enable them to fully benefit from their third level studies. The Financial Aid Fund comprises the Student Assistance Fund and an additional contribution from the University. Support from the Financial Aid Fund takes into account a students financial situation and other personal circumstances. A standardised assessment system is used to determine the level of need and aid. The ability to support a student depends on the size of the fund available, the number of applications and the circumstances of the applicants in any given year.

For more information visit:

www.nuigalway.ie/student-life/accommodation/financialsupports

# Health & Safety Tips



SAFETY FIRST

The
Riverside Walk
should not be used
during night hours.
24 hour Security.
Phone: 091-49 3333
Building EirCode
H91 HX31.

In event
of a medical
emergency, the AED
and a list of First Aiders
can be found at the
Ground Floor
Atrium.







### Exam Regulations

Referred to as the Marks & Standards, exam regulations can be found at: https://www.nuigalway.ie/exams/policies-procedures/.

## Opportunities for Masters Level Study (Optional)

Students can advance to Masters level (ME) through an integrated 1 year (September-June) follow-on to the 4 year BE programme, subject to a sufficient standard (2nd Class Honours minimum).

The integrated 5 year ME programme (4 years BE and 1 year ME) meets Engineers Ireland's criterion for Level 9 degrees, providing graduates with a route to Chartered Engineering status and a qualification that will be recognised worldwide. The 5 year programme strengthens the ability of our graduates to compete nationally and internationally for employment at the highest level in industry and other sectors of the economy.

A Masters Degree qualification from the College of Engineering and Informatics will help you to compete and distinguish yourself in a competitive job market.

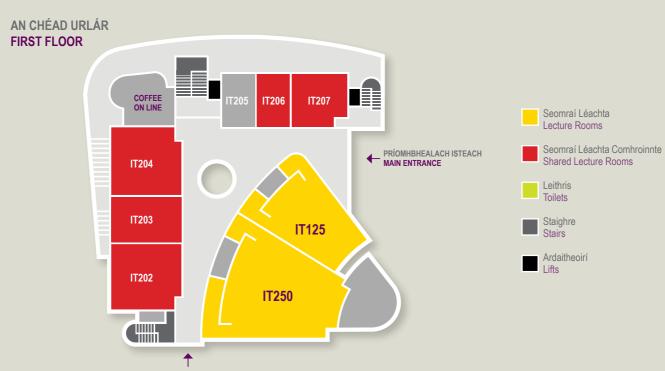
It also enables you to develop the specialist skills you need to succeed in your chosen field.

Our ME programmes are accredited by Engineering Ireland, which means that they are recognised internationally. We work with industry to ensure that our programmes produce graduates who are highly skilled and trained to address the problems society face and our graduates secure employment soon after completing their programme in many world-leading companies.





# Foirgneamh IT IT Building

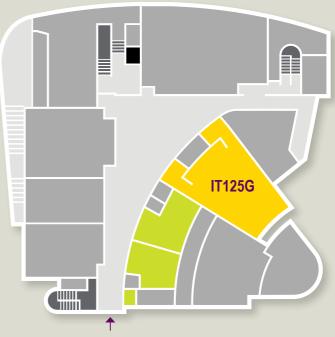


PRÍOMHBHEALACH ISTEACH AR AN CHÉAD URLÁR (ó Fhoirgneamh na nDán/na hEolaíochta) MAIN ENTRANCE FIRST FLOOR (from Arts/Science Building)

Tabhair faoi deara go bhfuil seomra IT125G suite ar urlár na talún agus go bhfuil seomra IT125 ar an chéad urlár.

Please note, room IT125G is located on the ground floor and room IT125 is on the first floor.

URLÁR NA TALÚN GROUND FLOOR



PRÍOMHBHEALACH ISTEACH AR URLÁR NA TALÚN (ó Fhoirgneamh na nDán/na hEolaíochta) MAIN ENTRANCE FIRST FLOOR (from Arts/Science Building)

#### NUI Galway OÉ Gaillimh

#### Foirgneamh na nDán/na hEolaíochta





NUI Galway, University Road, Galway, Ireland T +353 91 524 411 F +353 91 750 558