



Maynooth  
University  
National University  
of Ireland Maynooth



ENGINEERING & COMPUTER SCIENCE  
INTERNATIONAL SUMMER SCHOOL  
IRELAND **June 14th - July 26th 2024**

## 2 CLASSES | 6 WEEKS OF BOUNDLESS POSSIBILITIES



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*COMBINE ACCREDITED CLASSES*

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*WITH A PACKED CO-CURRICULAR PROGRAM*

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*BUILD YOUR OWN ADVENTURES*

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MAKE FRIENDS FOR LIFE AT MAYNOOTH UNIVERSITY!



<https://sway.office.com/7vqfAlpHBJYuf3El#content=59Ssbp44W5qgeb>

## OUR PROGRAM PACKAGE





- **ON-SITE COORDINATOR STAFF** : To support, advise and encourage you!
- **HOUSING** : Stay on campus in single en-suite room apartment-style living (your own bathroom)!!
- **ACADEMIC FIELD TRIPS** : Enjoy excursions that complement your learning
- **ACTIVITIES AND FACILITIES** : Enjoy on-campus activities throughout the programme
- **MEALS** : Hot Breakfast and Hot Lunch On-Campus Monday-Thursday
- **EXTRA ADVENTURES** : Explore Ireland with our exciting optional Friday day-trips included in your programme fee!

[APPLY HERE!](#)





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## ACADEMICS

*Our tailored international summer school offers you the chance to gain credit and enjoy classes with our experienced and enthusiastic instructors whilst also experience life in an Irish town located in the Celtic heart of Europe.*

*All our classes are fully accredited and carry Maynooth University transcripts.*

*Your classes are taught across the 6-week duration of the program and are worth either 5 ECTS or 7.5 ECTS credits each.*

**[Check out our master syllabi doc here!](#)**

## STRUCTURE YOUR OWN SCHEDULE

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### 1ST CLASS

You Must Choose 1 Class From Stream A

### 2ND CLASS

You Must Choose Your Second Class From Stream B



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*Week 1 & 2*

***Monday to Thursday***

***Stream A Class 9.30 am to 12.30 pm***

*Week 3 to 6*

***Tuesday & Thursday***

***Stream A Class 9.30 am to 16.30 pm***

***Monday & Wednesday***

***Stream B Class 9.30 am to 16.30 pm***

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## YOUR CHOICE OF CLASSES



## STREAM A



1 - *STREAM A*

### **COMPUTER SCIENCE: ALGORITHMS & DATA STRUCTURES**

#### **5 ECTS CREDITS**

Introduction to algorithms and data structures. This course includes a review of elementary programming concepts suitable for the implementation of abstract data types (operators, types and expressions; control of flow; methods; recursion; input & output); algorithms for searching: linear, bounded linear and binary searches; algorithms for sorting: selection, insertion, bubble and quick sorts; fundamental linear data structures: stacks, queues, linked lists; object-oriented programming:

encapsulation and information hiding, classes, interfaces, class hierarchies, inheritance, polymorphism, basic exception handling; analysis of basic algorithms

### **COMPUTER SCIENCE: SOFTWARE DESIGN**

#### **5 ECTS CREDITS**

In the course students will be introduced to principles and practices of object oriented software analysis, design, and programming using C++. The course will be delivered in two halves. The first half will focus on taking students from the basics of C++, through to objected oriented and generic programming. Topics covered will include (i) basic C++ syntax and program structure, (ii) primitive and abstract data-types, (iii) arrays, pointers, and dynamic memory management, (iv) object oriented programming (encapsulation, inheritance, polymorphism, etc.), and (v) generic programming and the stl. Note that the course assumes that students already have a good level of programming competency, but that they have not previously programmed in C++.



*2 - STREAM A*



### **ELECTRONIC ENGINEERING: ELECTRICAL CIRCUITS**

#### **5 ECTS CREDITS**

This course looks at some more advanced topics in circuit theory such as the use of the Laplace Transform, and passive filter design. The course also continues the study of electromagnetics, and in



particular electromechanical energy conversion, looking at simple motors and generators. At the end of the course students will be able to: use Laplace and Inverse Laplace transforms to determine transients in circuits with switches; explain conceptually what resonance and bandwidth mean in the context of RLC networks; list and draw the frequency specifications of the four basic types of filter; design a passive filter based on a Butterworth or Chebyshev response given a desired specification; draw a Bode Plot of a network function; analyse magnetic circuits.

## **ELECTRONIC ENGINEERING: SYSTEM DYNAMICS**

### **5 ECTS CREDITS**

The objective of this class is for students to analyse a range of both continuous and discrete time systems and to introduce the concept of state-space, frequency-domain system analysis as well as further the use of Matlab and Simulin in laboratories.

On successful completion of the module, students should be able to:

- Develop mathematical models for a range of dynamical systems.
- Change between different mathematical model representations (differential equation, state-sp and transfer function).
- Linearise a nonlinear system about an operating point.
- Calculate responses of simple dynamical systems.
- Analyse simple systems using Bode plots.
- Use Matlab and Simulink to simulate and analyse a range of systems.



## STREAM B



3 - *STREAM B*

### **IRELAND & THE GREAT FAMINE**

#### **5 ECTS CREDITS**

In this class students are introduced to the causes and consequences of the 1845-1853 great Irish famine. The class examines the economic, social and political background, as well as public and private reactions, and the changes in Irish society resultant from the famine.



*4 - STREAM B*



## **ANTHROPOLOGY OF IRELAND**

### **5 ECTS CREDITS**

In this class, students explore Ireland's economic, social and cultural challenges and look at how Ireland's present-day multiplicity intersects with the traditional image of rural, mono cultural and Catholicism. The class analyses manifestations of Irish culture such as dance and language, how they are reproduced, and what meanings they hold.

## **PUBLIC SPEAKING**

### **5 ECTS CREDITS**

This course introduces students to the key elements of communication, providing practical experience in the preparation and presentation of speeches. It improves critical learning skills and enables the development of core professional communication skills.





*5 - Stream B*

## **THE CULTURAL HERITATE OF MEDIEVAL IRELAND**

### **7.5 ECTS CREDITS**

This class introduces students to early cultural history, with an emphasis on the past as a foundation for the present, as well as the dissemination of cultural heritage. Students will assess the manipulation of history in relation to some of the great Irish prehistoric and early medieval locations.

LIVE IN THE BEAUTIFUL HISTORIC TOWN OF MAYNOOTH







*6 - MAYNOOTH UNIVERSITY*

## **MAYNOOTH UNIVERSITY**

### **Where Old meets New**

Located on one of Ireland's oldest sites of learning, Maynooth is also Ireland's newest university.

The site of the south campus has been a centre of learning since at least 1425, affiliated with Maynooth Castle, located just outside our campus gates.

Maynooth was formally founded in 1795 as St. Patrick's college, Ireland's 'national' seminary.

In 1997 Maynooth university was founded as part of the national university of Ireland. Maynooth, is consistently ranked amongst THE's top young universities in the world!

Today Maynooth University has approximately 13,000 students from over 90 countries. This summer Maynooth University welcomes you to share in our history, heritage and future!





## **MAYNOOTH TOWN**

### **Ireland's Only University Town**

Named after the ancient Irish god Nuadha, Maynooth was once Ireland's capital.

Located just 30 minutes from Dublin City Centre, today it is a small but thriving centre full of shops, restaurants, bars and clubs. Maynooth is also serviced by excellent transport links connecting us to the many places across Ireland.

Being a university town, Maynooth is known for its warm and friendly nature and for welcoming newcomers from all over the world.

Everything you need is just a few minutes away – that's the beauty of Maynooth!



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## **ACCOMMODATION**

*Stay in our en-suite apartment-style residence.*

*Enjoy a single room and private bathroom in our 5-room apartment. Our Kitchens include key appliances and utensils.*

## **FACILITIES**

*WiFi is available throughout campus. Laundry is on-site and just €4.50 a load. Take full advantage of all Maynooth University Facilities, including our sports hall, gym, library, computer banks, extensive grounds and food outlets.*

## **MEALS**

*Enjoy Breakfast & Lunch On-Campus Monday-Thursday*

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## OUTSIDE THE CLASSROOM



### FIELD TRIPS

Included in every academic class are trips to visit sites, institutions and companies relevant to course material.

These offer an unparalleled insight into the Irish landscape, society and culture!





## DAY TRIPS & ACTIVITIES

Visit Dublin & The Historic Croke Park Stadium |

Learn How to Play Irish Gaelic Football |

Social Nights Out | Scavenger Hunts |

Ultimate Frisbee | Trampolining | Local Hikes |

Plus Much Much More!



*7 - WEEKENDS*

## WEEKENDS

Join Our Optional Friday Day-Trips to different cities around Ireland | *(all pay as you go)*

### **Galway City Day Trip (included)**

#### ***Friday July 5th***

Visit one of Ireland's most famous cities and explore the West of Ireland. This day trip also includes a visit to Clonmacnoise the historic monastery founded in the 6th century!

### **Kilkenny City Day Trip (included)**

#### ***Friday July 12th***

Explore Ireland's medieval city, visit the famous Kilkenny Castle and so much more!

Choose to extend your visits to weekend trips at your own cost and see parts of Ireland that are unique to the world

## **YOUR TYPICAL WEEK**



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### *YOUR SUMMER SCHEDULE*

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#### **Classes: Monday-Thursday**

| 9.30am-12pm | 12.45pm-3.15pm

With classes only in computer science

and electronic engineering during

weeks 1 and 2.

**Downtime and social activities  
with our staff and your classmates!**

An on-campus activity on at least  
two evenings a week.

Decide to go on a day trip or a  
weekend adventure to finish the week!









### Days Of Social Activities Subject To Change

## 8 - YOUR SCHEDULE

## Program Breakdown & Costs



**PROGRAM COST / €4,505**

- *ON-CAMPUS PRIVATE ROOM EN-SUITE ACCOMMODATION*



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- *BREAKFAST & LUNCH MONDAY-THURSDAY*
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- *ALL TUITION AND TRANSCRIPTS*
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- *ALL ACADEMIC FIELD TRIPS AND ORIENTATION DAY TRIP TO DUBLIN*
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- *ON-SITE COORDINATOR STAFF*
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- *ACTIVITIES ON CAMPUS*
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- *CULTURAL EXCURSIONS*
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- *AIRPORT TRANSFERS AT SET TIMES*
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- *ALL-IRELAND HERITAGE PASS*
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***SCHOLARSHIPS AVAILABLE!***

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FIND OUT MORE



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***KICKSTART YOUR SUMMER!***

**[APPLY HERE!](#)**



[CHECK OUT OUR WEBSITE!](#)

*[SUMMER.SCHOOL@MU.IE](mailto:SUMMER.SCHOOL@MU.IE)*

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