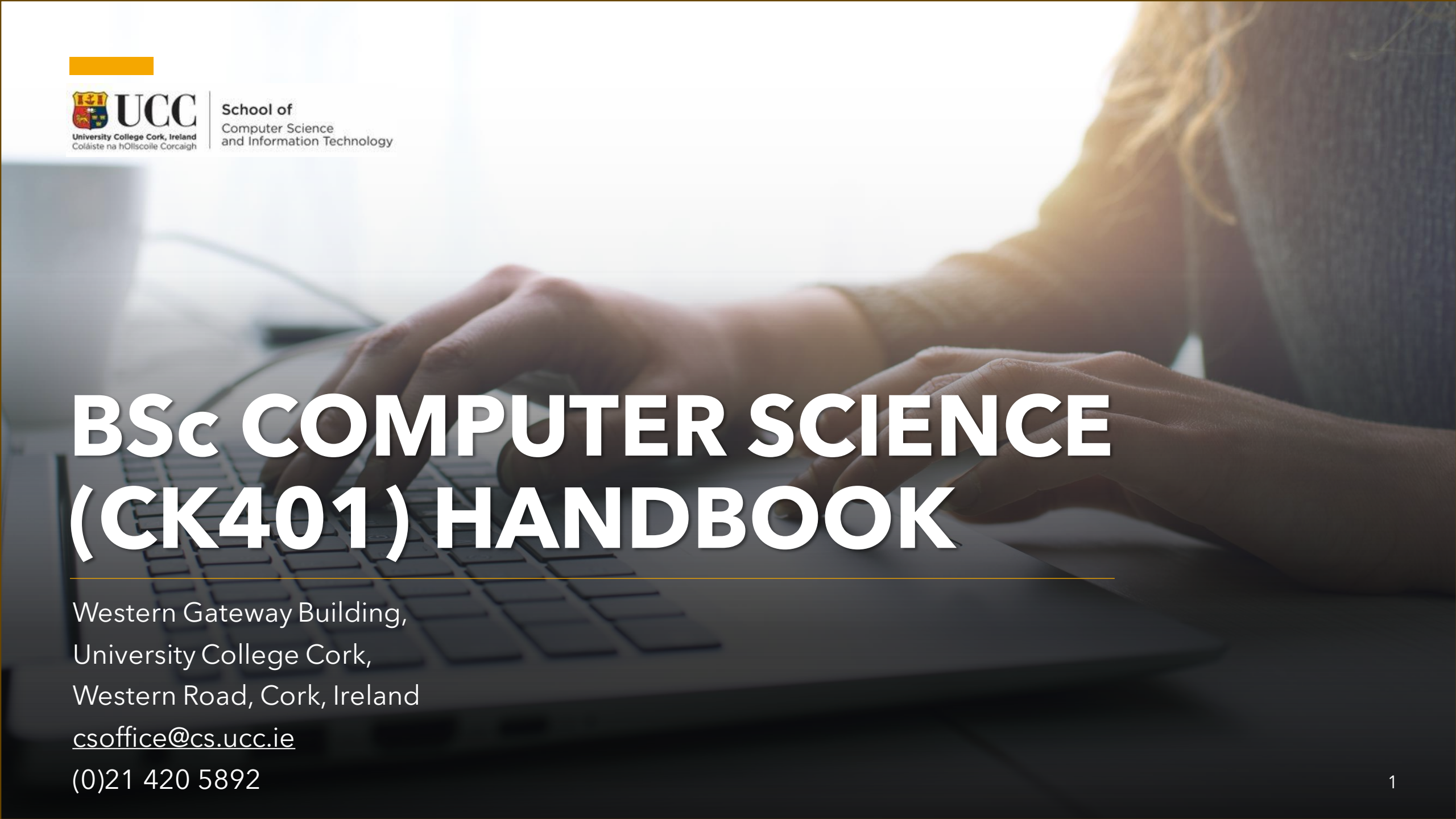


UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

School of
Computer Science
and Information Technology

BSc COMPUTER SCIENCE (CK401) HANDBOOK

Western Gateway Building,
University College Cork,
Western Road, Cork, Ireland
csoffice@cs.ucc.ie
(0)21 420 5892

PROGRAMME DIRECTOR

Dr Kieran Herley

Office: No. G-63 Western Gateway Building

Tel. 021 420 5905

Email: k.herley@cs.ucc.ie

YEAR COORDINATORS

Year 1: Dr Kieran Herley

Office: No. G-63 Western Gateway Building,

Tel. 021 420 5905

Email: k.herley@cs.ucc.ie

Year 2: Dr Krishnendu Guha

Office: No. 1-77 Western Gateway Building,

Tel. 021 420 5902

Email: kguha@ucc.ie

Year 3: Dr Klaas-Jan Stol

Office: No. G-69 Western Gateway Building,

Tel. 021 420 5923

Email: k.stol@cs.ucc.ie

Year 4: Dr Frank Boehme

Office: No. G-60 Western Gateway Building,

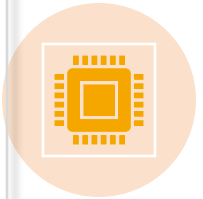
Tel. 021 420 5916

Email: f.boehme@cs.ucc.ie

CONTENTS

INTRODUCTION

University College Cork (UCC) has a very important place in the history of Information Technology as Boolean algebra, which provides the mathematical basis for computer design, was named after George Boole, the first Professor of Mathematics in UCC.



Computer scientists conceive, design, build, and maintain the complex computer systems to solve real world problems. This involves the study of computing processes, algorithmic principles, software, hardware & systems design, their implementation, and their impact on society. As a Computer Science student, you will master the core technologies that provide the building blocks of modern computer systems, such as networks, database technology, programming, algorithms, artificial intelligence, cyber security, web technology and applications.

The school is located in the five-storey Western Gateway Building. The building includes state-of-the-art teaching laboratories, world-class research laboratories and is designed to achieve an environment that will encourage staff and students to be both productive and creative.

COURSE OUTLINE

Our Computer Science degree programmes comprise a blend of lectures and laboratory work. Apart from the lectures that introduce the key concepts, each module includes a suite of labs designed to provide experience with practical problem solving, using these concepts in a small group setting. Computer Science is a discipline where you learn by doing, and so these labs form an integral component of the course. Your work is assessed throughout the year using a mixture of regularly assigned course work, class tests and projects.

SEMESTER DATES

Teaching Semester 1	18/09/2023 – 01/12/2023 (commencement for first year students)
Study/Review Week	04/12/2023 - 07/12/2023
Christmas Exams	08/12/2023 – 21/12/2023
Teaching Semester 2	15/01/2024 - 19/04/2024
Easter Recess	23/03/2024 - 07/04/2024
Study/Review Week	22/04/2024 - 25/04/2024
Exam Dates	26/04/2024 - 10/05/2024

COURSE DETAILS

Year 1 Modules

60 credits

Core Modules **50 credits**		**Credits**	**Lecturer**
CS1106	Introduction to Relational Databases	5	Dr Kieran Herley
CS1110	Computer Hardware Organisation	5	Professor John Morrison
CS1111	Systems Organisation	5	Professor John Morrison
CS1112	Foundations of Computer Science I	5	Professor Barry O'Sullivan
CS1113	Foundations of Computer Science II	5	Professor Barry O'Sullivan
CS1115	Web Development I	5	Dr Derek Bridge
CS1116	Web Development II	5	Dr Derek Bridge
CS1117	Introduction to Programming (15 credits)	15	Dr Aisling O'Driscoll

Year 1 Modules

60 credits

Elective Modules
10 credits

CH1001	Chinese Language (Mandarin) I (Beginner Level) (10 credits)
CS1130 & CS1131	Irish Language for Computer Science I ***plus*** Irish Language for Computer Science II
EC1202 & EC1203	Economic Reasoning for Business ***plus*** Macroeconomic Context and Business
FR0105	Introduction to French : Complete Beginners
FR1005	French for Near Beginners
FR1105 & FR1107	Threshold French ***plus*** French for Reading Purposes I
GE0005 & GE0008	German Language (CEFR-Level A2.1 ***plus*** A2.2)
HS0028	Spanish Language (Beginner Level) (10 credits)
IT1102	Non-Beginners' Written and Spoken Italian (10 credits)
IT1109	Introduction to Written and Spoken Italian (10 credits)
MA1001	Calculus for Science Part 1
MA1002	Calculus for Science Part 2
MA1059	Calculus
MA1060	Introduction to Analysis

Please note that if you are a proficient or native speaker of any of these languages it is not recommended that you take this/these module(s).

Year 2 Modules

60 credits

Core Modules **50 credits**		**Credits**
CS2208	Information Storage and Management I	5
CS2209	Information Storage and Management II	5
CS2503	Operating Systems I	5
CS2505	Network Computing	5
CS2506	Operating Systems II	5
CS2507	Computer Architecture	5
CS2513	Intermediate Programming	5
CS2514	Introduction to Java	5
CS2515	Algorithms and Data Structures I	5
CS2516	Algorithms and Data Structures II	5

Year 2 Modules

60 credits

Elective Modules
10 credits

Computer Science (5 credits per module):
- Logic Design CS2502
- Usability Engineering CS2511

Languages:
- Spanish Language (Improver [01] Level) (10 credits) HS0128
- Threshold French FR1105 * ***plus*** French for Reading Purposes I FR1107* (5 credits per module)
- ***or*** Towards Vantage French FR2105 ***plus*** French for Reading Purposes II FR2107 (5 credits per module)

Please note that if you are a proficient or native speaker of any of these languages it is not recommended that you take this/these module(s).

Mathematics:
- Introduction to Abstract Algebra MA1057 (5 credits)
- ***plus*** Introduction to Linear Algebra MA1058 (5 credits)

Note: *Modules FR1105 and FR1107 are only available to students who have not already taken French in First Year.

Year 3 Modules

60 credits

Core Modules **40 credits**		**Credits**
CS3305	Team Software Project (10 credits)	10
CS3306	Workplace Technology and Skills (10 credits)	10
CS3318	Advanced Programming with Java	5
CS3500	Software Engineering	5
CS3300 or **CS3301**	Work Placement (Between April and April of the following year) **or** Work Placement (April – September)	10

Year 3 Modules

60 credits

Elective Modules **20 credits**		**Credits**
CS3204	Cloud Infrastructure and Services	5
CS3506	Networks and Data Communications	5
CS3509	Theory of Computation	5
CS3511	Ethical Hacking and Web Security	5
CS3514	C-Programming for Microcontrollers	5

Year 4 Modules

60 credits

Core Modules **15 credits**	
CS4501	Computer Science Project

Year 4 Modules

60 credits

Elective Modules

45 credits *Note that not all elective modules will be offered each year. Credits are worth 5 credits each unless otherwise stated.*

CS4092	Special Topics in Computing I	CS4614	Introductory Network Security
CS4093	Special Topics in Computing II	CS4615	Computer Systems Security
CS4150	Principles of Compilation	CS4618	Artificial Intelligence I - In order to register for CS4619, you must register for CS4618 as it is a co-requisite.
CS4402	Parallel and Grid Computing	CS4619	Artificial Intelligence II
CS4405	Multimedia Compression and Delivery	CS4620	Functional Programming I
CS4407	Algorithm Analysis	CS4626	Constraint Programming and Optimisation
CS4507	Advanced Software Engineering	CS4628	Internet of Things

COURSE PRACTICALITIES

This is a full-time course expecting a full-time commitment. The annual 60-credits workload typically equates to 12 hours of lectures per week and a comparable amount for laboratory work and tutorials.

Expected reading/practical hours: The course also demands a significant amount of additional time for study, reading, completion of project and assignment work.

TIMETABLES

The BSc Computer Science starts on 18/9/2023 for 1st year students. Timetables are available at http://timetable.ucc.ie , select College of Science, Engineering, Food Science and Semester 1/2.

Please note that the timetables may be altered and updated over the first weeks of Semesters I and II; laboratory timetables are scheduled later.

Understanding your Timetable

- Room codes consist of building codes followed by room names or numbers.
- The building code for the Western Gateway Building is WGB. Follow the link to the Building Codes table for further information
- The start date for first years on the 18th of September 2023 corresponds to Week 7 on your timetable.
- Please note that the timetable is often updated, so check back for the latest version.

My Timetable

- You can create your own personalised academic timetable by using the MyTimeTable web application.

- You can access MyTimeTable by using your Student IT account credentials.

My Timetable *cont.*

- You can create your own personalised academic timetable by using the MyTimeTable web application.
- When you have received the details of your academic timetable from your department, you can create your own personalised timetable on MyTimeTable for the full academic year. Once set up, your personalised timetable will display details for the current week by default.
- If there are any last minute changes to your scheduled timetable, e.g. change of location, cancellation, change of time – you will receive an email notification of this to your Umail inbox.
- MyTimeTable timetables will always display the most up to date timetable information as per departmental scheduling requirements. Your timetable on MyTimeTable will also be automatically updated with any new information.

HOW TO USE CANVAS

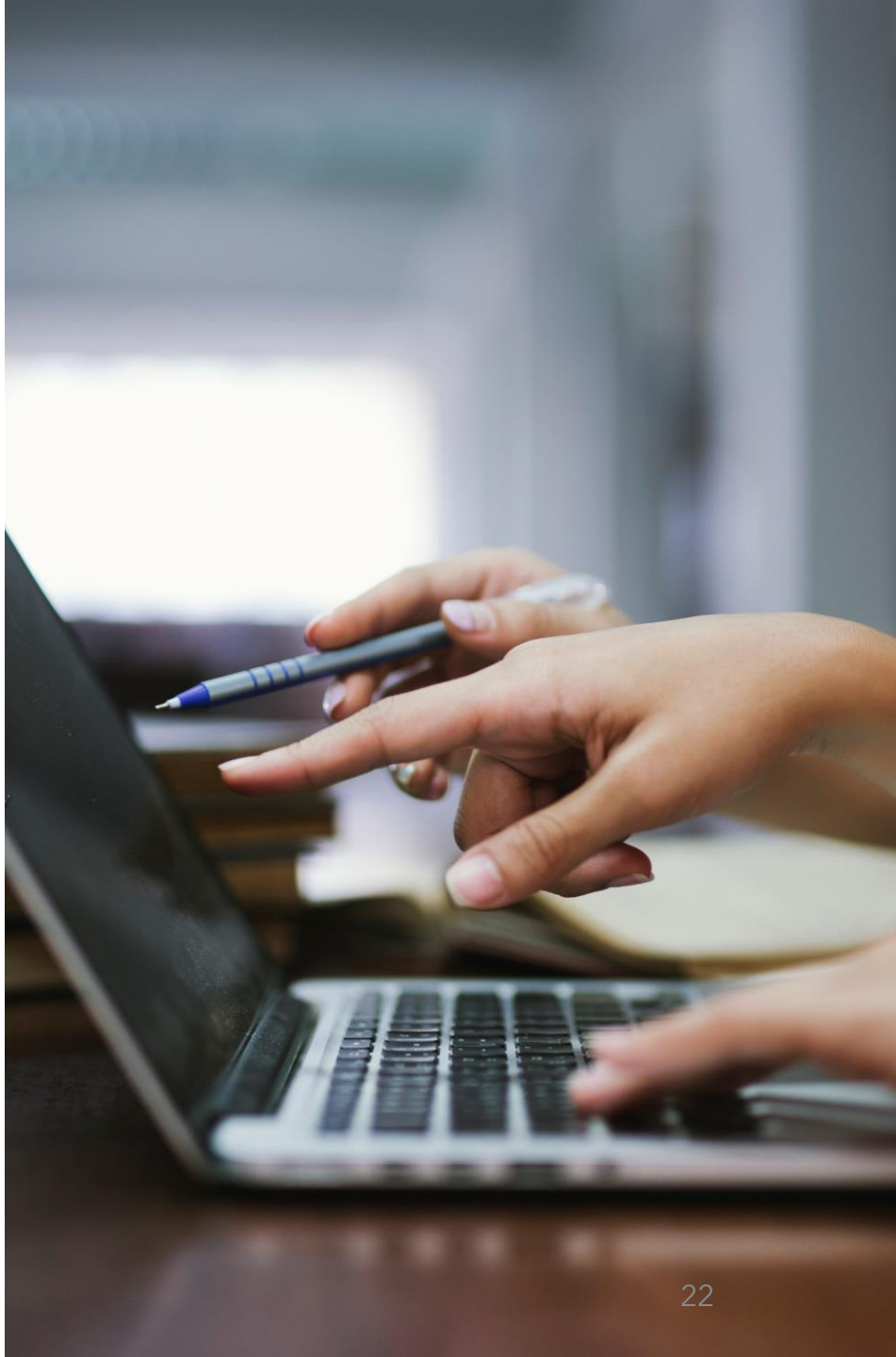
- Canvas is a web-based learning management system, used by institutes of higher education around the world. It will be an important learning support to you in your time in UCC.

- When you register with us, you will be automatically enrolled in the "Learning with Canvas" course, which is accessible through canvas.

- Further information on Canvas and its technical requirements can be found on our remote learning support webpage : https://www.ucc.ie/en/digital-ed/training/canvas/

PLAGIARISM

Plagiarism is the presentation of someone else's work as your own. When done deliberately, it is cheating, since it is an attempt to claim credit for work not done by you and fails to give credit for the work of others. Plagiarism applies not just to text, but to software, graphics, tables, formulae, or any representation of ideas in print, electronic or any other media.



UCC policy on plagiarism

All students are required to read, to understand, and to comply with the UCC Policy on Plagiarism, which may be found on line at www.ucc.ie/en/exams/procedures-regulations/

Submitting original and existing work

In general, you should write all coursework in your own words.

Coursework includes but not limited to:

- Programming assignments;
- Literature reviews;
- Abstracts and summaries;
- Thesis.

Submitting existing software

As a general rule:

- For assignments you are not allowed to submit existing software unless the lecturer clearly indicates that this is allowed. Please consult with your course lecturer if you are unsure whether you are allowed to submit existing software for assignments.
- For your thesis, you are usually allowed to submit (small) parts of existing software. Please consult with your project supervisor if you are unsure whether you are allowed to re-use existing software for your thesis.

Submitting work from others

If you wish to quote small portions of text, include images, software, or other work created by others, you need to make it clear that you are doing so. You usually do this by putting quotation marks around quoted text and by including citations. Please note that pictures and diagrams in books and papers may be copyrighted, in which case you need explicit permission from the copyright holder.

Please note that if you acknowledge the original source, your lecturers/examiners will know that you are aware of the source, for which you can receive credit in the form of marks. If you fail to acknowledge the source, your lecturers/examiners cannot give you any credit for using the source. When failing to acknowledge the source is a deliberate, this is a form of cheating, which may result in awarding a zero mark.

Citing existing software

As with any work written by others, if you submit (parts of) existing software as part of your coursework, you should always give proper credit to the original author(s). In addition, you should clearly indicate which parts of these software are yours and which are not.

In a program listing you should indicate this using comments;

In a report, literature review, or thesis you should also indicate the source of the software in the running text, which should include a proper citation.

ATTENDANCE

Every registered student is expected to attend all teaching elements of their programme, including, but not limited to, lectures, tutorials, laboratory classes, placements, etc.

ADDITIONAL ACADEMIC SUPPORTS

If you need additional academic support please speak to your module lecturer in the first instance followed by your year coordinator. Those who require additional academic support due to disability, should register with the UCC disability support service at https://www.ucc.ie/en/dss/ .

OUR FACILITIES

The School of Computer Science and Information Technology is situated within the modern five-storey Western Gateway Building.

The building includes state-of-the-art teaching laboratories, world-class research laboratories, and has been designed to create an environment that fosters creativity and productivity among students and staff.

OUR FACILITIES

Nestled alongside the River Lee, the Western Gateway Building is the hub of Computer Science at UCC.

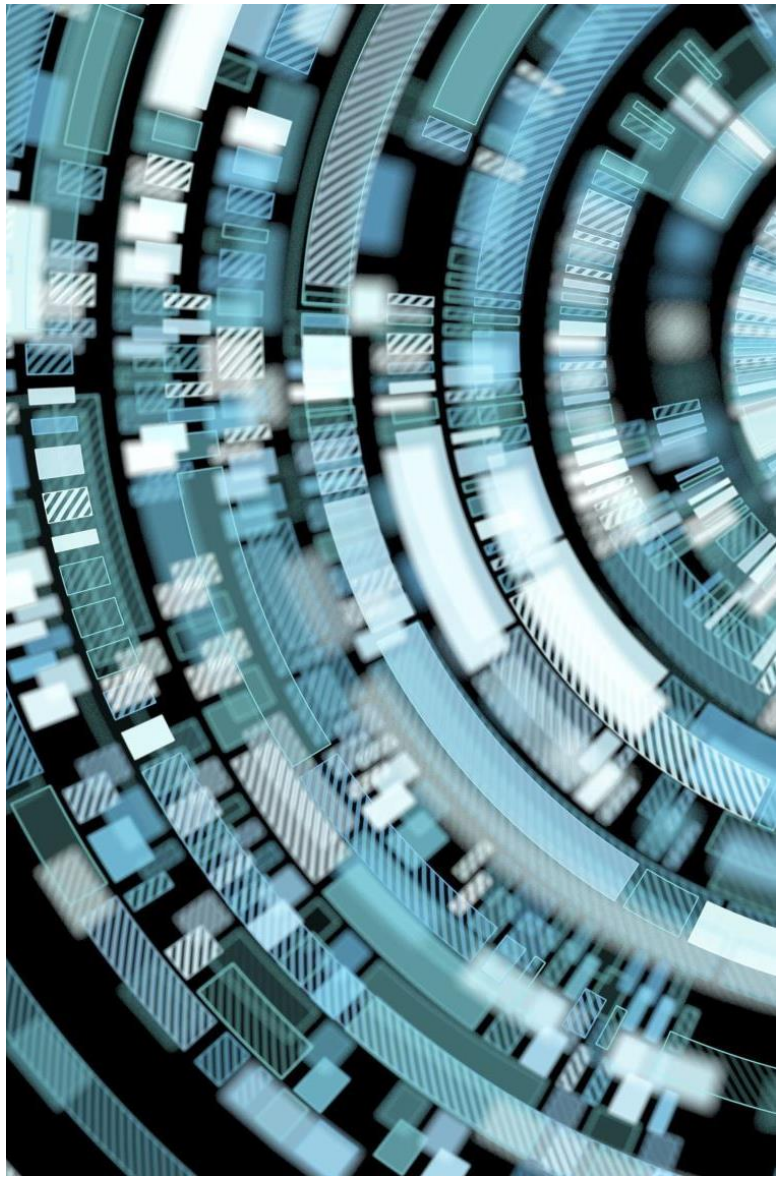
This modern building is at the centre of a UCC student's college life. Within a three-minute walk of the Mardyke Arena, and within a few minutes walk of Campus Accommodation, most lectures, lab sessions and facilities used by our students are located in this state-of-the-art facility.

Underpinned by Research

The School of Computer Science and Information Technology (CSIT) at UCC boasts a large team of academic staff, many with international academic or industrial experience, with a broad spectrum of expertise across the full range of computer science.

Our school, and its associated research centres, have an international reputation for research in areas such as artificial intelligence, data analytics and algorithmics, networks and communications, interactive media, human computer interaction and computer security.

This expertise is reflected in the breadth and quality of our degree programme and our commitment to providing an excellent learning experience for all our students.



COMPUTER SCIENCE TEACHING FACILITIES

- Teaching and specialist labs (more detail below).
- IT Helpdesk: Email based ticketing system. Web site with frequently asked questions. Physical desk for queries that cannot be handled via self-service or email.
- File system for staff and student data. RAID and Mirrored.
- Web and DBMS for school, staff and student development and production use.
- Platforms include PHP and server-side Python.
- Full email service for staff. Managed email lists for staff and student groups.
- Dedicated SSH gateway server (to allow secure external SSH access to CSIT Unix servers) .
- VLE: Canvas.
- Virtual Machines in labs with use across MSc, 2nd year, 3rd year and diploma courses for more flexible teaching.

GENERAL-USE TEACHING LABS

Dual boot Windows /Linux PCs across 3 teaching labs for undergrad teaching (83, 80 and 75 seat).

Dual boot Windows /Linux PCs across 2 labs for diploma and MSc.

40 seats across two labs for minor, service modules and overflow.

19 seat labs for school research MSc/PhD students.

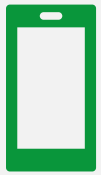
20 seat lab for 1st, 2nd and 3rd year unscheduled coursework.

Specialist Teaching Labs and Facilities

- Hardware lab: 25 seats for 2 specialist hardware classes with Arduino Kits and FPGAs.
- Multimedia classes: 70 MAC OSX workstations.
- Final year and MSc project lab: 25 seat high end workstations mostly for data analytics and compute-intensive needs.
- Specialist GPU workstation lab for compute intensive deep learning.
- Video laboratory with high end workstations and video editing hardware and software.
- Audio lab high end workstations, keyboards and audio editing software.
- Dedicated virtual reality lab: State-of-the-art VR hardware and HCI devices.
- Fully equipped multimedia recording studio.

Other Teaching Facilities

Server Room with Fire suppression and rack mounted servers.



A selection of devices (phones & tablets etc) for loan to project students.

Specialist IP video conferencing in main CS meeting room for School use.

IT SUPPORT FOR BSC COMPUTER SCIENCE

- You will be provided with a Login ID and Password in your first lab session to access the CS and Statistics laboratory machines and the main servers.
- Entry to our computer laboratories is by Swipe Access, for which you will need a valid Student ID Card, which you will receive at Registration.

COMPUTER SCIENCE LAB SUPPORT

- If you have any IT queries regarding the Computer Science Labs you should contact the Computer Science IT Support Desk via email at help@cs.ucc.ie.
- The Computer Science IT Support Desk is situated in Room 1.25, First Floor, Western Gateway Building. The Computer Science IT Support Desk is open during term between 11.00 a.m. – 12.30 p.m. Monday to Friday and 2.30 p.m. – 4.00 p.m. Monday to Thursday.
- You can visit the Computer Science IT Support webpage for helpful technical guidance

EQUIPMENT

- The School provides all the facilities necessary to complete your practical laboratory work. However, many students opt to purchase a personal laptop/machine.

- If you choose to do so and have queries relating to a suitable specification please consult the Computer Science IT Support webpage, where a dedicated post is available at this page.

HEALTH & SAFETY GUIDELINES FOR STUDENTS

Students and staff are at all times expected to adopt a responsible attitude to all matters concerning Health and Safety at UCC.

Under the current Safety, Health and Welfare at Work Act students/staff have a legal responsibility to consider their own safety, must cooperate at all times in implementing laboratory safety policy of UCC, must use the safety equipment provided, must report accidents or unsafe practices and must not interfere with the school safety policy.

It is expected that students will adhere strictly to the instructions of academic, technical and research staff when carrying out practical work.

EMERGENCY EVACUATION DRILLS/FIRE ALARMS

If the fire alarm sounds please leave the building as quickly as possible by the nearest exit and follow instruction of the fire marshals.

SCHOOL FIRST AIDER

Contact School Office ext. 5891

UCC STUDENT HEALTH

021 490 2311

HEALTH & SAFETY GUIDELINES FOR STUDENTS

Students and staff are at all times expected to adopt a responsible attitude to all matters concerning health and safety at UCC. Under the current Safety, Health and Welfare at Work Act students/staff have a legal responsibility to consider their own safety, must cooperate at all times in implementing laboratory safety policy of UCC, must use the safety equipment provided, must report accidents or unsafe practices and must not interfere with the school safety policy.

It is expected that students will adhere strictly to the instructions of academic, technical and research staff when carrying out practical work.

EMERGENCY EVACUATION DRILLS/FIRE ALARMS

If the fire alarm sounds please leave the building as quickly as possible by the nearest exit and follow instruction of the fire marshals.

SCHOOL FIRST AIDER

Contact School Office ext. 5891

UCC STUDENT HEALTH

021 4902311

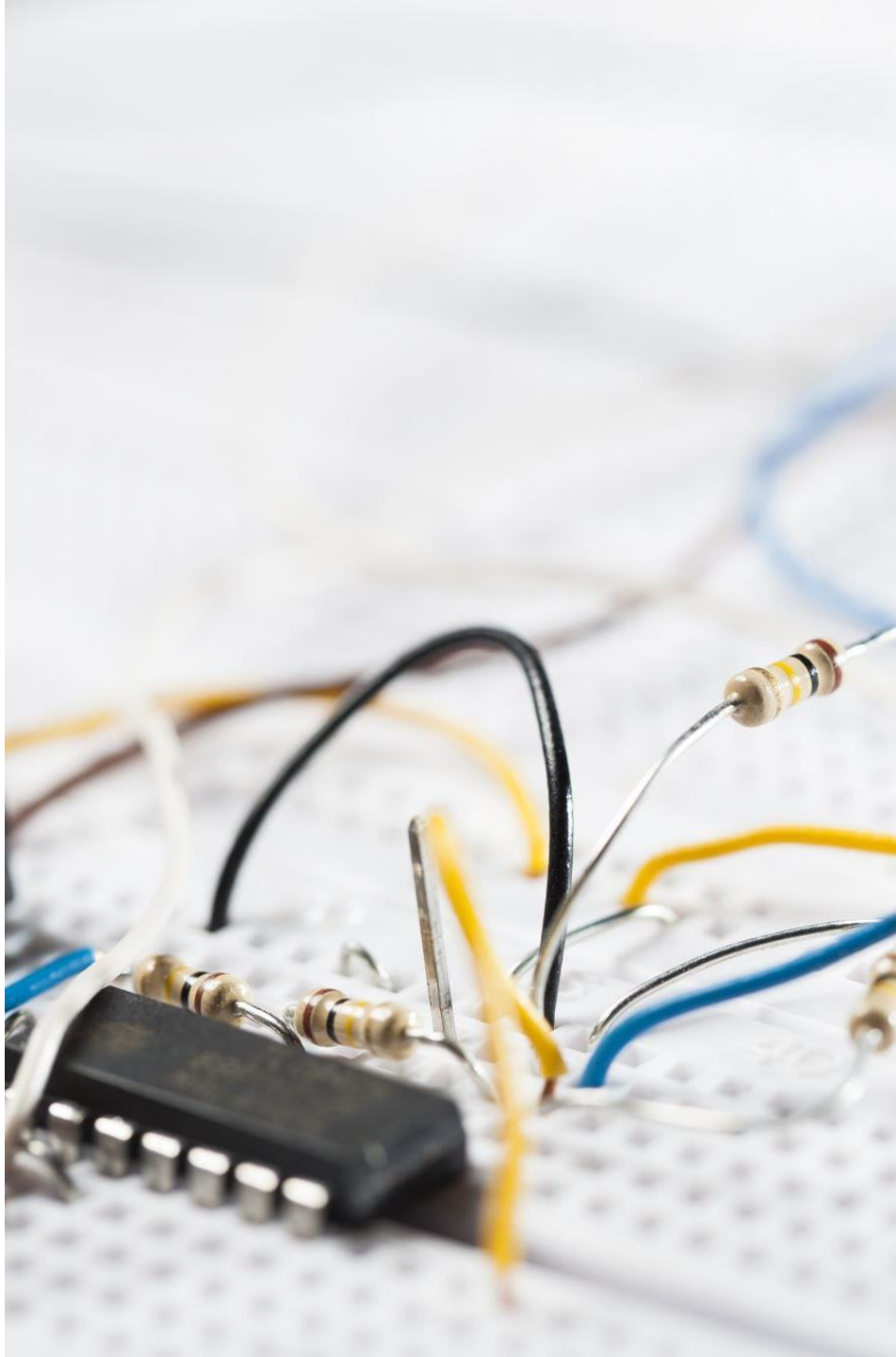
Laboratories

Food and beverages are not allowed in the laboratories – food contamination on the mouse and keyboards are serious health risk.

Laboratories

cntd.

- Remove all trip hazards (rucksacks, clothing etc.) from walking areas
- Please remove all personal items from the laboratory when you are leaving
- Do not provide access to the laboratory to other non-Computer Science students
- Report any hazards (obstacles, cables, etc.) to School Office, Rm 1.28
- Note the UCC acceptable usage policy regarding online usage. See link listed below
- Pay attention to existing signage in the laboratories
- If you find items in labs that do not belong to you, please bring to the School Office, Room 1.28
- Please remember that the laboratories are a working environment and noise should be kept at a minimum
- Dispose of all waste in the refuse bins provided



UCC POLICIES AND PROCEDURES

There are many important policies and procedures with which Students should be familiar. See the below for information on each one.

- Policies and Procedures www.ucc.ie/en/academicgov/policies/student-policies/
- Acceptable Usage Policy https://www.ucc.ie/en/it-policies/policies/au-pol/
- Student Health Service https://www.ucc.ie/en/studenthealth/

This document is provided as a guideline only, if you have any concerns, please contact the School Office;

Tel: 021 420 5892, email: csoffice@cs.ucc.ie

UCC SKILLS CENTRE

Dedicated to helping students improve their fundamental academic skills, the Skills' Centre will be on hand to offer training and support on:

- how to study
- writing essays at university level
- how to plan and manage your college assignments

Make sure to take the Skills' Centre lesson, visit the Skills' Centre website, and take the other Skills' Centre Canvas module, to set yourself up for academic success.

See http://skillscentre.ucc.ie/

BOOLE LIBRARY

https://libguides.ucc.ie/library

A series of workshops for incoming students will run in the Boole Library throughout September. No need to book, just turn up on the day.

It is important that you attend these workshops as they are a vital resource in your studies, and you will receive guidelines on all aspects of academic writing.

STUDENT LIFE – GET INVOLVED

While studying at UCC it's important to remember that there is a life beyond the lectures, seminars and labs. UCC has a great range of clubs, societies and supports available to students.

UCC is home to a wide range of clubs and societies to cater to all students. Make the most of your time in UCC - get involved!

EXPLORE OUR STUDENT-LED CLUBS & SOCIETIES

Expand your college experience by joining our student-led clubs and societies, where you can learn new skills, build new friendships and fully engage in campus life!

As a UCC student, you have access to over 117 societies.
For sign-up information, please visit the UCC Societies website.

Key Supports and Services

- Student Counselling and Development
- Student Budgetary Advice
- Disability Support Service
- Peer Support
- Careers Service
- Student Health
- Transition-In Programme
- Equality, Diversity and Inclusion (EDI)
- Access UCC
- Chaplaincy

IMPORTANT WEBSITE LINKS

Book of Modules	http://www.ucc.ie/modules/
Academic Programme Catalogue	https://www.ucc.ie/admin/registrar/calendar/science/sci002.html#CK401
Examinations	http://www.ucc.ie/en/exams/
Fees	http://www.ucc.ie/en/financeoffice/fees/
Marks and Standards	http://www.ucc.ie/admin/registrar/marksandstandards/
Registration	http://www.ucc.ie/calendar/general/info014j.html

Includes information on the following:

- Address details
- Identity ID cards
- Workload Guidelines
- Attendance
- Elective Modules
- Change of Module/Subject
- Special Permission to depart from published regulations
- Attendance at additional modules
- Student Leave of Absence
- Withdrawal from course programme during the academic year
- Fees Refund – Fees Office
- Attendance in a repeat year
- Transcripts

LIST OF LECTURING STAFF

Lecturing Staff	Tel. No.	Room No.	Email
Dr Frank Boehme	420-5916	G-60	f.boehme@cs.ucc.ie
Dr Derek Bridge	420-5907	2-64	d.bridge@cs.ucc.ie
Prof Ken Brown	420-5952	2-50	k.brown@cs.ucc.ie
Dr James Doherty	420-5929	1-72	j.doherty@cs.ucc.ie
Dr Dan Grigoras	420-5918	G-65	d.grigoras@cs.ucc.ie
Dr John Herbert	420-5925	1-78	j.herbert@cs.ucc.ie
Dr Kieran Herley	420-5905	G-63	k.herley@cs.ucc.ie
Dr Krishnendu Guha	420-5902	1.77	kguha@ucc.ie
Dr Laura Maye	420-5889	G-70	l.maye@cs.ucc.ie
Dr Rosane Minghim	420-5901	1-76	r.minghim@cs.ucc.ie
Prof John Morrison	420-5944	2-50	j.morrison@cs.ucc.ie
Mr David Murphy	420-5908	1-73	d.murphy@cs.ucc.ie
Dr Harry Nguyen	420-5917	G.68	h.nguyen@cs.ucc.ie
Dr Aisling O'Driscoll	420-5919	G-61	a.odriscoll@cs.ucc.ie
Dr John O'Mullane	420-5920	G-72	j.omullane@cs.ucc.ie
Mr Adrian O'Riordan	420-5906	1-80	a.oriordan@cs.ucc.ie

LIST OF LECTURING STAFF

CONTINUED

Lecturing Staff	Tel. No.	Room No.	Email
Prof Barry O'Sullivan	420-5951	2-65	b.osullivan@cs.ucc.ie
Dr Paolo Palmieri	420-5922	1-74	p.palmieri@cs.ucc.ie
Prof Dirk Pesch	420-5914	G-50	d.pesch@cs.ucc.ie
Dr Ian Pitt	420-5904	G-60	i.pitt@cs.ucc.ie
Dr Steve Prestwich	420-5911	2-58	s.prestwich@cs.ucc.ie
Prof Gregory Provan	420-5928	1-71	g.provan@cs.ucc.ie
Prof Utz Roedig	420-5900	1-70	u.roedig@cs.ucc.ie
Mr Gavin Russell	420-5910	G-66	g.russell@cs.ucc.ie
Prof Michel Schellekens	420-5941	2-55	m.schellekens@cs.ucc.ie
Prof Cormac J. Sreenan	420-5930	1-75	cjs@cs.ucc.ie
Dr Klass-Jan Stol	420-5923	G-69	k.stol@cs.ucc.ie
Dr Sabin Tabirca	420-5915	1-81	s.tabirca@cs.ucc.ie
Dr Marc van Dongen	420-5903	G-64	dongen@cs.ucc.ie
Dr Andrea Visentin	420-5909	G-71	andrea.visentin@ucc.ie
Dr Ahmed Zahran	420-5926	1-82	a.zahran@cs.ucc.ie

CONTACT DETAILS

The School Office is situated in Room 1.28 on the First Floor of the Western Gateway Building.

Contact Details:

- Julie Walsh
- Phone: +353 21 4205892
- Email: csoffice@cs.ucc.ie

The School Office opening hours is from 9.00 a.m. – 1.00 p.m. and 2.00 p.m. – 5.00 p.m. Monday – Friday to help you with any queries.