QUEEN'S UNIVERSITY BELFAST

FACULTY OF ENGINEERING AND PHYSICAL SCIENCES

EPS SUMMER SCHOOL 2021

DELIVERED ONLINE FROM MONDAY 19TH JULY – FRIDAY 30TH JULY

WHO WE ARE

9th oldest University in the UK

21st in the world for **international outlook**

(Times Higher Education World Higher Education Rankings 2021)

Home to **3,000 International students** from **86 countries**

Member of the Russell Group of top research-intensive universities alongside Oxford, Cambridge, and Imperial College London

SUMMER SCHOOL DRAFT TIMETABLE

	Timetable – Week 1				
	Monday 19 July	**Tuesday 20 July**	**Wednesday 21 July**	**Thursday 22 July**	**Friday 23 July**
	Introductory Session: Welcome and Overview of Summer School Introduction to Canvas	**Session 1:** Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study
	Timetable – Week 2				
	Monday 26 July	**Tuesday 27 July**	**Wednesday 28 July**	**Thursday 29 July**	**Friday 30 July**
	Session 1: Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study	**Session 1:** Module delivery **Session 2:** Self-study	**Last Day** **Session 1:** Next Steps Student Experience Talk

Session timings will be confirmed in due course

CHOICE OF SIX UNIQUE PROGRAMMES

SCHOOL OF
CHEMISTRY AND CHEMICAL ENGINEERING

SCHOOL OF
MATHEMATICS AND PHYSICS

SCHOOL OF
NATURAL AND BUILT ENVIRONMENT

SCHOOL OF
ELECTRONICS, ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

SCHOOL OF
MECHANICAL AND AEROSPACE ENGINEERING

SCHOOL OF
PSYCHOLOGY

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SUMMER SCHOOL - CHEMISTRY AND CHEMICAL ENGINEERING

MODULE TITLE

Solving global challenges with Chemistry and Chemical Engineering

LEARNING OUTCOMES

- You'll learn about the role of chemistry and chemical engineering in the design of sensors for disease diagnosis, the design and manufacture of healthcare materials, computer-aided molecular design and the development of the next generation of antibodies
- You'll be able to demonstrate a knowledge and understanding of the design and preparation of functional materials and their application in sustainable development, including in renewable energy, and CO_2 capture and conversion
- You'll gain experimental skills from workshops/mini-projects
- You'll also develop your critical thinking, problem-solving and teamwork skills

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SUMMER SCHOOL - CIVIL ENGINEERING

MODULE TITLE

Practical Introduction to Structures

LEARNING OUTCOMES

- You'll be able to demonstrate a strong understanding of the basic principles of structural design
- You'll learn about and use the principles of engineering drawing (both hand drawing and CAD)
- You'll learn about and show that you understand understand load paths for simple structures
- You'll develop your skills in innovation, from concept to testing

SUMMER SCHOOL - ELECTRONICS, ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

MODULE TITLE

Microcontroller Programming (Arduino/Tinkercad Simulation)

LEARNING OUTCOMES

- Introduction to microcontroller programming using ‘C’
- Basic principles of interfacing digital and analogue circuits to microcontrollers

SUMMER SCHOOL - MATHEMATICS & PHYSICS

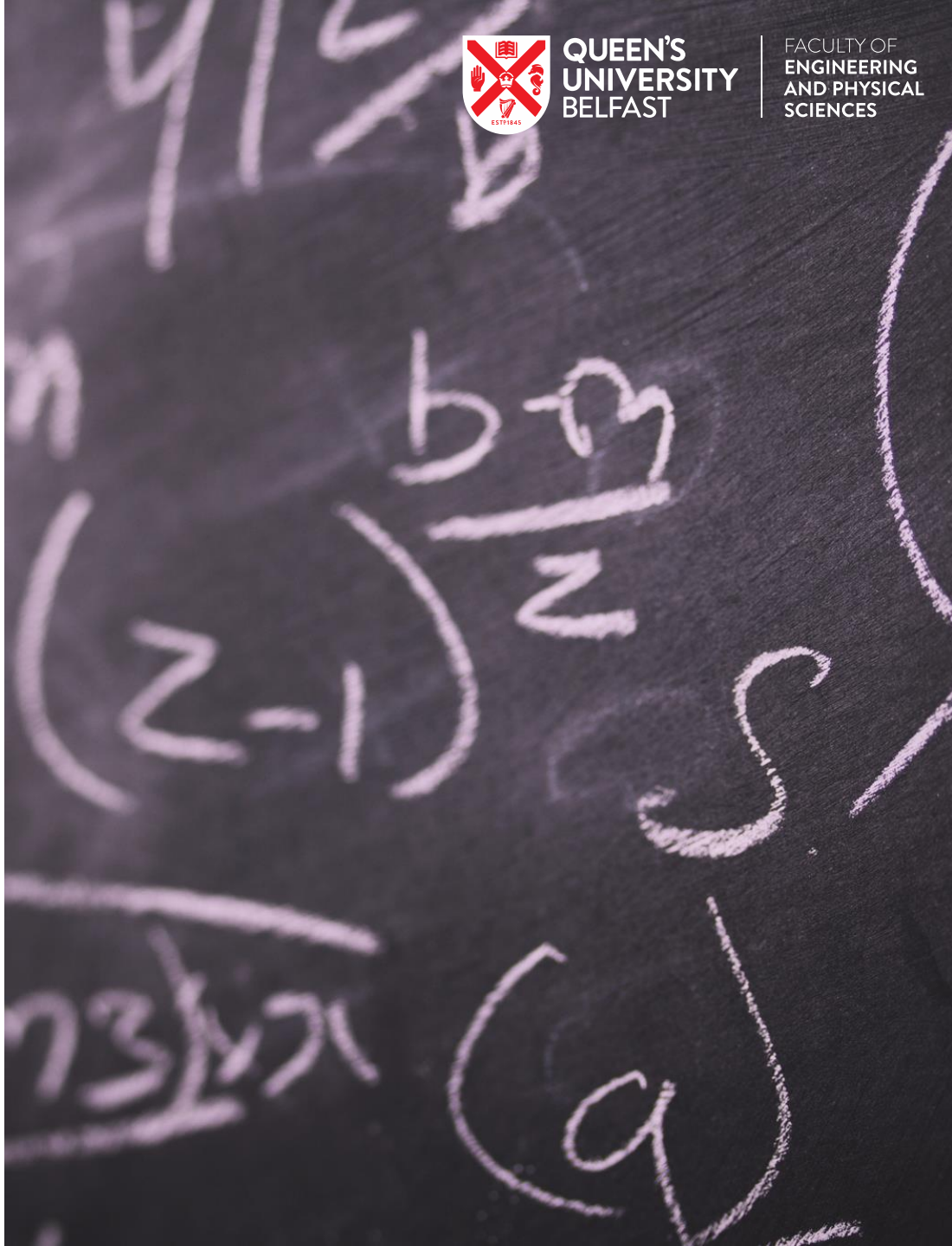
MODULE

Simulation, Physical and Mathematical Analysis

LEARNING OUTCOMES

The module covers two topics “Mathematics of Rainbows” and “Monte Carlo Simulation”

- Understand the physical and mathematical reasons behind the phenomenon of rainbows
- Be able to calculate the path of light through a spherical rain droplet and predict the position and order of colours in the first and second rainbows, the nature of the Alexander band and the physical origin of the supernumeraries
- To able to examine the behaviour of a simulation model as parameters are changed, and to plot graphs using matplotlib and describe what these graphs show
- Students will be able to build python functions that use for loops, 1D NumPy arrays and if statements
- Learn how to use LaTeX to write mathematical reports, and produce a report on the results of the investigation using this tool



SUMMER SCHOOL - MECHANICAL AND AEROSPACE ENGINEERING

MODULE TITLE

Project on Mechatronics/Robotics

LEARNING OUTCOMES

- Understanding general principles of Mechatronics as interdisciplinary topic between Mechanical Engineering, Electrical Engineering and Computer Science
- Gain knowledge of basic terms in Dynamic Systems, including Degrees of Freedom, Motions, Velocity, Accelerations, Forces, Torque and Gears
- Gain basic knowledge in electrical devices such as sensors and motors
- Get experience in use of computer software to train Robots

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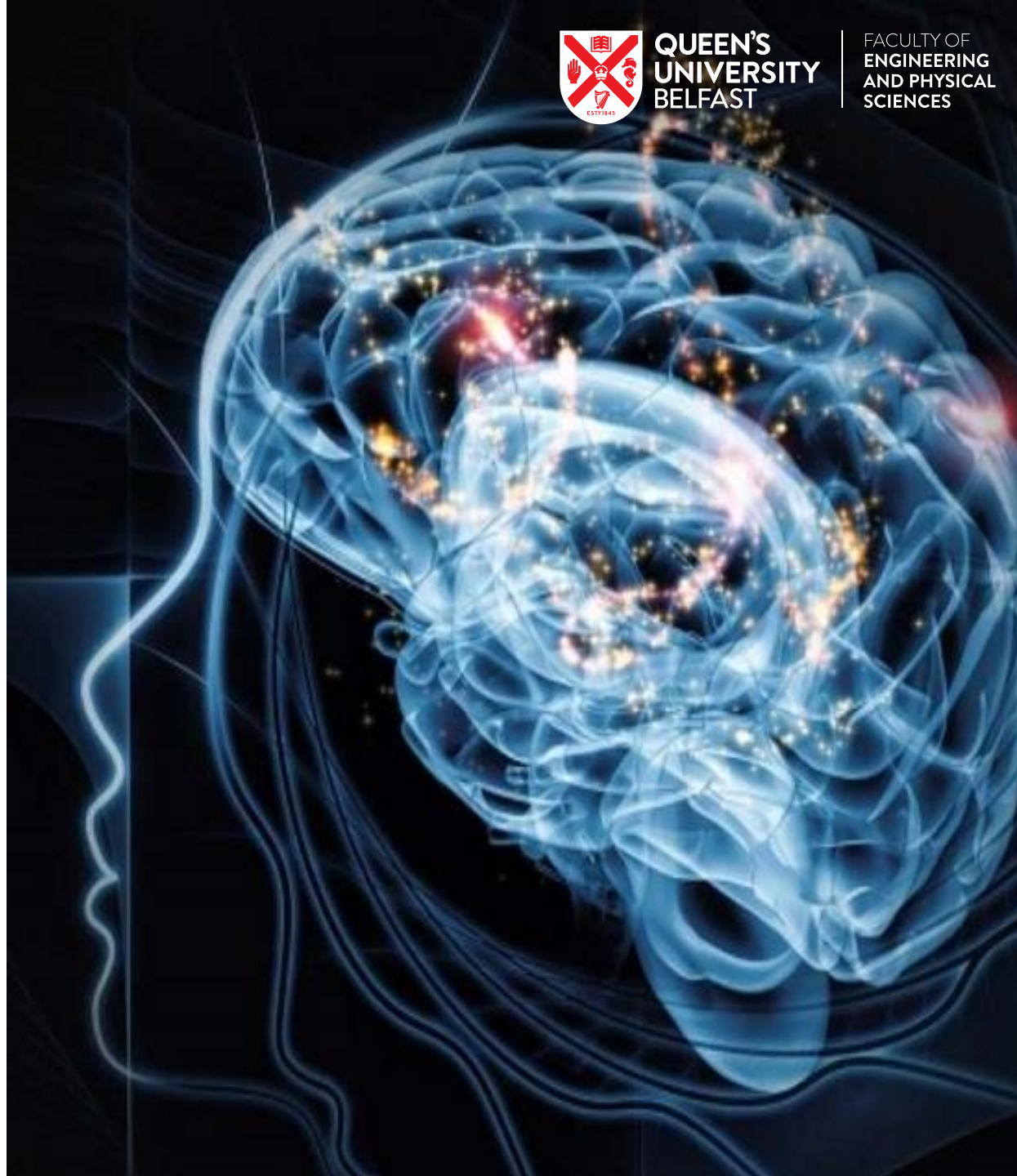
SUMMER SCHOOL - PSYCHOLOGY

MODULE TITLE

Research Skills and Contemporary Issues In Psychology

LEARNING OUTCOMES

- Understand foundational and emerging questions in contemporary psychology, spanning health, development, wellbeing, and personality/identity
- Gain knowledge of methodological issues in each area
- Design practical elements of a research project: experimental design, ethics application, questionnaire design using Qualtrics, and using online recruitment systems



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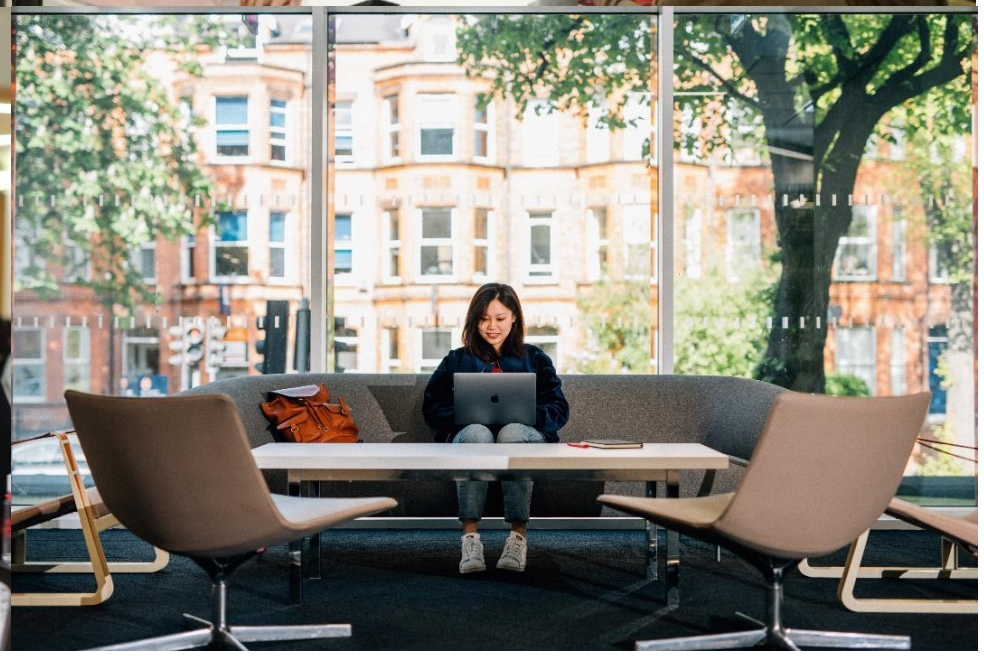
PROJECT-BASED LEARNING

Team-based projects mimic the working environment of professional practice

PROJECT-BASED LEARNING



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FEES

- Early Bird Tuition Fee before 1st June 2021: £200
- Regular Tuition Fee after 1st June 2021: £250

➢ All tuition

➢ Certificate

KEY DATES

MONDAY 29 MARCH 2021	ONLINE APPLICATION OPEN - If you are offered a place on the programme we will require a payment of £250 to secure your place. Once you have applied we will be in touch with information on how to make payment.
FRIDAY 21 MAY 2021	ONLINE APPLICATION CLOSE
TUESDAY 1 JUNE 2021	PAYMENT DEADLINE FOR EARLY BIRD OFFER ONLY
FRIDAY 18 JUNE 2021	PAYMENT DEADLINE

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HOW TO APPLY?

APPLICATION PORTAL:

http://go.qub.ac.uk/EPSSummerSchool

- Click the 'APPLY NOW' link
- Fill in the Application Form
- Click "Submit Application"
- We will be in touch with further details of how to pay for your place on the programme

LOYALTY SCHOLARSHIP AT QUEEN'S

Students who have attended the EPS Summer School who return to an **undergraduate** programme via one of our collaboration models or a **full-time postgraduate taught** programme, receive a 20% tuition fee reduction on first year of study

- Exclusions apply
- 20% tuition fee reduction on year 1
- Application necessary
- Queen's Loyalty Scholarship can only be used once and cannot be used in conjunction with other scholarships

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HAVE A QUESTION? GET IN TOUCH

Email: epssummerschool@qub.ac.uk

Website: http://go.qub.ac.uk/EPSSummerSchool