

Mathematics Summer School 2021

Who is it for?

The School of Computing, Engineering and Built Environment (SCEBE) is running a Mathematics Summer School (MSS). Due to the current situation in relation to Coronavirus the MSS for 2021 will not take place on campus as it traditionally has but will now be delivered fully online using GCU's virtual learning environment (VLE) GCULearn.

The MSS is designed for students who have received a conditional offer to join their selected course in Engineering, Computing, Networking or the Built Environment. Students with an unconditional offer, who would like to update their mathematical knowledge and study skills, may also attend. There will be no cost for attendance at the MSS.

When and Where?

The MSS teaching runs for three weeks, on weekdays, from **Monday 16th August until Friday 3rd September 2021** inclusive with an online examination on **Monday 6th September 2021**. Examination times may vary depending on which group you are in and further details will be given in class. The MSS starts each weekday morning at 10am and ends at 2pm, with one hour for lunch.

An overview of the structure and content will be presented on the first day of the MSS, **Monday 16th August at 9:30am**; you must be logged into GCULearn 5 - 10 minutes prior to this overview commencing. Teaching will then begin at 10am and will be the starting time of all morning teaching sessions for the duration of the MSS. The structure of the MSS groups and topics covered is set out later in this document in the 'Timetables' section.

Teaching and Assessment

Teaching is a mixture of lectures and tutorials; each teaching session is of 1.5 hours duration and will take the form of online lecture-style presentations and online tutorials on GCULearn using Collaborate Ultra. During lectures you are expected to take notes and at tutorials discuss any questions arising from the lecture material. Additionally, you are expected to undertake at least 50 hours of directed independent study (e.g. 3 hours per day on weekdays and 2 hours per day at weekends). You are urged to speak with your lecturer if you have any problems with the material.

The MSS is taught online to 3 groups over 3 weeks:

- 1. Level 2 Entry – Engineering**
Lecturer: Alan Sutherland (Alan.Sutherland@gcu.ac.uk)
- 2. Level 3 Entry – Engineering**

Lecturer: Calum Macdonald (calum.macdonald@gcu.ac.uk)

3. Level 3 Entry – Computing and Networking

Lecturers: Alan Sutherland & Mustafa Ibrahim (Mustafa.Ibrahim@gcu.ac.uk)

Lecture materials including notes, slides, worked examples and audio recordings of lectures will be made available on GCU Learn within the online community (organisation) for each MSS group.

A strict condition of entry to your selected degree programme is that you successfully complete the MSS by demonstrating regular attendance at classes and passing the compulsory online exam. The exam format will vary depending on which MSS group you are enrolled on and further information will be given in class.

- Students applying for Level 2 and Level 3 entry to Engineering programmes must achieve at least 40% to pass the exam.
- Students applying to the BEng (Hons) Computer Networking programme or BSc (Hons) Digital Security and Forensics must achieve at least 50% to pass the exam. Any student scoring between 40% and 49% inclusive will be offered a place on the BSc (Hons) Cyber Security & Networks programme.

Resits will only be considered where there are genuine mitigating circumstances.

Attendance

Attendance at scheduled online lectures and tutorials is mandatory for all conditional offer holders and will be monitored. Anyone who thinks they may experience difficulty attending online sessions for reasons such as; caring responsibilities, illness, access to relevant IT equipment, etc. must notify Donna McAlpine by email at Donna.McAlpine@gcu.ac.uk as soon as possible detailing your reasons. Further guidance will then be provided depending on individual circumstances.

Disability

We have taken an inclusive approach in our arrangements for MSS online exams. Our planning has taken into consideration connectivity, family responsibilities and disabilities amongst other factors. Please see later in this document for more information regarding examination arrangements for each MSS group.

Any student that has disclosed a disability at the application stage has been sent via email information about the Student Wellbeing service. Our Student Wellbeing team are meeting students virtually over the summer period and if any student wants to speak with them regarding their specific circumstances they can email disability@gcu.ac.uk.

Accessing Maths Summer School Communities

Registration

To access the online Mathematics Summer School (MSS) communities (organisations) and learning materials on GCULearn you will first need to register with us at GCU on the Mathematics Summer School programme. You should have received a joining instructions email for the MSS which will contain your unique GCU username and password (if you are not in receipt of such an email please first check your junk e-mail folder and add registration@gcu.ac.uk to your mailing lists. If such an email can still not be located please email contacts below for assistance). The username is in the format: first initial followed by up to 5 characters of your surname, followed by 2 or 3 numbers, e.g.JSMITH99; JSMITH299). Follow the link within the joining instructions email and complete registration for the Summer School (P01455).

It is advised that you use a desktop browser on a PC to complete the registration rather than a mobile phone or tablet. Registration works best when using the Internet Explorer or Google Chrome browsers (if you have that on your desktop) and if you have a mac alternative browsers to use would be Mozilla Firefox or Google Chrome (The Safari browser on a mac has known issues with the GCU registration process), if you experience issues trying to complete registration on a mac you may need to alternatively complete registration on a PC.

You may have already completed a GCU registration in the past for a College Connect or a GCU pathways programme however in order to be successfully set-up to undertake the MSS exam and access MSS resources you will need to complete registration for the MSS programme.

If you have any problems completing your GCU registration for the MSS, you should email jim.canning@gcu.ac.uk or joanna.marshall@gcu.ac.uk for further assistance.

Accessing GCULearn

GCULearn is a web-based system which supports and provides information (materials, assessments, announcements, contacts, etc.) about the modules you are enrolled on at university. It also provides access to features that can help facilitate communication and collaboration with groups/other students in GCULearn. Since GCULearn is used to provide

information and display messages about your modules you should get into the habit of logging in on a regular basis.

As GCULearn is a web-based system it can be accessed from any computer that is connected to the internet. If using GCULearn from home you will require internet access and browsing software such as Google Chrome or Mozilla Firefox. Once you have opened an internet browser there are two ways to access GCULearn:

1. GCULearn can be accessed directly using the following address:
<http://blackboard.gcal.ac.uk>
2. Through the link from the student home page, under Top services:
<http://www.gcu.ac.uk/student>
Click on the GCULearn link.

When logging in from home you may be asked to Sign On with your University Username and Password. Once you have done this and clicked on the Sign On button, you will then be asked to agree to the Privacy policy in regards to cookies, click on the OK button to be taken to your GCULearn page.

Accessing MSS communities

Under the Organisations menu tab on GCULearn the Mathematics Summer School community (organisation) you have been enrolled on will be listed. It will be one of the following three depending on which point of entry you hold an offer for at GCU:

[Maths Summer School - Level 2 Entry Engineering](#)

[Maths Summer School - Level 3 Entry Engineering](#)

[Maths Summer School - Level 3 Entry Computing & Networking](#)

Clicking on the appropriate community link will take you to relevant MSS materials for your course as well as provide access to online lectures and tutorials.

Accessing MSS lectures and tutorials

A link to the Collaborate lectures and tutorials will be posted in an announcement within your community on GCULearn and emailed to your GCU email address. Access to these sessions is allowed up to 15 minutes before the start time to enable students to check their connection. Audio recordings of lectures will be made available under the appropriate link in the left-hand menu, within your community, on GCULearn.

Accessing audio recordings, slides, worked examples and more

These materials will be made available under an appropriate link in the left-hand menu, within your community, on GCULearn. Specific guidance on how to access the material will be provided by MSS lecturers and instructions uploaded to GCULearn.

Accessing your GCU email address

The student email system is Web-based, and can be accessed using Internet browsing software such as Internet Explorer, Google Chrome or Mozilla Firefox. Once you have started the browser software, there are two ways to access the student email system:

- Through the Student homepage <https://www.gcu.ac.uk/student/> - click on the email link on that page and the email web page will open.
- Directly using the following address: <http://outlook.com/caledonian.ac.uk>

The Office 365 sign in screen appears. Click in the first field and enter your full email address, e.g. jsmith299@caledonian.ac.uk. Click in the password field and type in your password. Then click on the Sign in button.

You can change your email password using the options in your account, however, please note that when you change your domain password this will automatically change your email password to the same.

All communication between MSS lecturers and students must be via GCU email addresses, i.e. not personal email addresses.

Browser Recommendations for GCULearn

Use the Chrome or Firefox browsers to access GCULearn and especially Collaborate Ultra webinars. These browsers are kept up to date on GCU computers but you will need to update your own browsers on your own devices.

If you are using the newest versions of a browser then some content, for example audio and video, may not display in GCULearn. This is because GCULearn is linking to content from other web sites which is not protected or secure.

This browser checker from Blackboard <https://bit.ly/2wEXlvY> will show you if your browser is supported.

If you have further technical issues in registering, accessing GCULearn or accessing your Maths Summer School community (organisation) please contact Jim Canning at Jim.Canning@gcu.ac.uk .

Maths Summer School Timetables

Level 2 Entry Engineering – Maths Summer School 2021 - Timetable

Date	Topic	Lecture / Tutorial
16 Aug	Introduction & Overview	9:30 – 10:00
16 Aug	Algebra	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
17 Aug	Algebra	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
18 Aug	Algebra Matrices	Tutorial: 10 – 11:30am Lecture: 12:30 – 2pm
19 Aug	Matrices	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
20 Aug	Matrices + Revision	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
23 Aug	Vectors	Lecture: 10 – 11:30am + Lecture 12:30 – 2pm
24 Aug	Vectors Complex Numbers	Tutorial (Vectors): 10 – 11:30am Lecture (Complex Numbers): 12:30 – 2pm
25 Aug	Complex Numbers	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
26 Aug	Differentiation	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
27 Aug	Differentiation + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
30 Aug	Differentiation	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
31 Aug	Integration	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
01 Sep	Integration	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
02 Sep	Integration	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
03 Sep	Revision of Calculus	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
06 Sep	MSS Exam	

Contact Hours

Lectures: $21 \times 1.5 = 31.5$ hours

Tutorials: $9 \times 1.5 = 13.5$ hours

Total: 45 hours

Additional support with the course material is available on weekdays between 10am and 4pm.

Students requiring additional support should contact their lecturer to arrange an agreed time.

Mobius (Maple TA) online exam: Monday 6th September, 2pm to 4:30pm

Additional information and lecture materials can be found at the following link:

<https://www.gcu.ac.uk/study/collegeconnect/summerschool/mathssummerschool/>

Level 3 Entry Engineering – Maths Summer School (MSS) 2021 - Timetable

Date	Topic	Lecture / Tutorial
16 Aug	Introduction & Overview	9:30 – 10:00
16 Aug	Partial Differentiation	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
17 Aug	Partial Differentiation First Order ODEs	Tutorial: 10 – 11:30am Lecture: 12:30 – 2pm
18 Aug	Second Order ODEs	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
19 Aug	Second Order ODEs	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
20 Aug	Second Order ODEs + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
23 Aug	Laplace Transforms	Lecture: 10 – 11:30am + Lecture 12:30 – 2pm
24 Aug	Laplace Transforms	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
25 Aug	Laplace Transforms	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
26 Aug	Laplace Transforms	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
27 Aug	Laplace Transforms + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
30 Aug	Linear Systems of ODEs	Lecture: 10 – 11:30am + Lecture 12:30 – 2pm
31 Aug	Linear Systems of ODEs	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
01 Sep	Linear Systems of ODEs	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
02 Sep	Linear Systems of ODEs	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
03 Sep	Linear Systems of ODEs + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
06 Sep	MSS Exam	

Contact Hours

Lectures: $21 \times 1.5 = 31.5$ hours

Tutorials: $9 \times 1.5 = 13.5$ hours

Total: 45 hours

Additional support with the course material is available on weekdays between 10am and 4pm.

Students requiring additional support should contact their lecturer to arrange an agreed time.

Mobius (Maple TA) online exam: Monday 6th September, 2pm to 4:30pm

Additional information and lecture materials can be found at the following link:

<https://www.gcu.ac.uk/study/collegeconnect/summerschool/mathssummerschool/>

Level 3 Entry Computing & Networking – Maths Summer School 2021 - Timetable

Date	Topic	Lecture / Tutorial
16 Aug	Introduction & Overview	9:30 – 10:00
16 Aug	Algebra	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
17 Aug	Algebra	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
18 Aug	Algebra Matrices	Lecture: 10 – 11:30am Lecture: 12:30 – 2pm
19 Aug	Matrices	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
20 Aug	Matrices + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
23 Aug	Number Systems	Lecture: 10 – 11:30am + Lecture 12:30 – 2pm
24 Aug	Number Systems	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
25 Aug	Graph Theory	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
26 Aug	Graph Theory	Tutorial: 10 – 11:30am + Lecture 12:30 – 2pm
27 Aug	Graph Theory + Revision	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
30 Aug	Probability & Statistics	Lecture: 10 – 11:30am + Lecture 12:30 – 2pm
31 Aug	Probability & Statistics	Tutorial: 10 – 11:30am + Lecture: 12:30 – 2pm
01 Sep	Probability & Statistics	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
02 Sep	Probability & Statistics	Lecture: 10 – 11:30am + Tutorial: 12:30 – 2pm
03 Sep	Probability & Statistics + Revision	Lecture: 10 – 11:30am + Lecture: 12:30 – 2pm
06 Sep	MSS Exam	

Contact Hours

Lectures: 21 × 1.5 = 31.5 hours

Tutorials: 9 × 1.5 = 13.5 hours

Total: 45 hours

Additional support with the course material is available on weekdays between 10am and 4pm.

Students requiring additional support should contact their lecturer to arrange an agreed time.

Online written exam: Available from 2pm to 6pm on Monday 6th September.

Additional information and lecture materials can be found at the following link:

<https://www.gcu.ac.uk/study/collegeconnect/summerschool/mathssummerschool/>