CN4004/CD4004

Maths for Computing

(Term 1)

MODULE GUIDE 2021/22

University of East London

School of Architecture, Computing and Engineering

Contents

CONTACT INFORMATION

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MODULE INTRODUCTION

This is a level four module within the Engineering and Computing Subject Area and is a core requirement of the following programmes:

BSc Computer Science
BSc Computer Science with Education and QTS
BSc Computing for Business
BSc Cyber Security and Networks
BSc Data Science and Artificial Intelligence
BSc Digital & Technology Solutions (Apprenticeship)

This module will help students build fundamental knowledge in mathematical concepts and skills that are required for the study and application of computer science. This module covers the basic arithmetic and algebraic concepts that are used in almost every aspect of computer science. This is expanded on by topics on logic that are the basis of the fundamental concepts used in the functioning of computer hardware and design and programming of software. Computer science theory heavily relies on proofs. This module will handle the basics of proof techniques. The module will go on to cover topics in basic abstract and linear algebra and touch upon advanced topics like groups and using matrices to solve systems of linear equations. Finally, the basics of probability and some concepts in statistics will be covered.

Students will also get the opportunity to develop their spreadsheet skills by using spreadsheets for generating graphs, and for statistical methods.

In addition to the course text that will be made available to you, all the teaching support materials will be on an accompanying **Moodle** site, and it is important that you consult this site regularly throughout the programme. **Microsoft Teams** will be the platform of real-time communication.

MODULE AIMS AND LEARNING OUTCOMES

Aims of the module	Learning outcomes for the module
1) To provide students with an understanding of foundational mathematics material for computer science. 2) To prepare students for the more advanced mathematics they will encounter on their degree.	***Knowledge*** 1) Demonstrate knowledge and skill of working with different types of numbers encountered in the study and practice of computer science. (DP, CC) 2) Demonstrate skills in mathematical logic and writing proofs. (DP) ***Thinking skills*** 3) Apply knowledge of number systems in the context of computer architecture and system design. (DP, IC, COI) 4) Apply concepts from linear and abstract algebra (DP, IC, COI) ***Subject-based practical skills*** 5) Use mathematical applications such as sage for basic computations. (DP) ***Skills for life and work (general skills)*** 6) Demonstrate confidence in using number systems, proof techniques, combinatorial principles, probability and statistics to solve practical problems. (SID, CC)

KEY INFORMATION

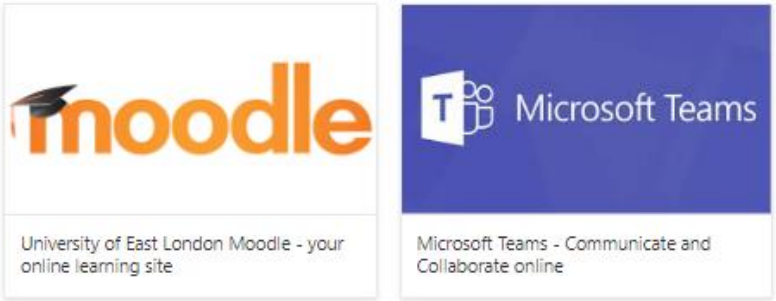
The module will be delivered through a combination of **pre-recorded lectures** and **tutorial sessions**. The lectures will be made available to view **at least a week before the associated tutorial sessions.** *It is vital that students study the relevant lecture before each tutorial session.*

Tutorials will be involve an assortment of exercises that will prepare students for their assessments and will be used to reinforce the lecture material.

Provided there is no change in policy, students will be able to choose between either on-line remote sessions, or face-to-face on-campus sessions.

The majority of students' time on this module will be spent in private study. Students are expected to use this private study time to watch the lecture videos, and carry out the suggested reading for that week, and prepare for tutorials as requested by teaching staff.

As with all modules at UEL, extensive use will be made of an on-line virtual learning environment called **Moodle** and a communication tool called **Microsoft Teams**



You can access all your Moodle and Teams sites via UEL's **TrackMyFuture** portal:

https://trackmyfuture.uel.ac.uk

You can also directly access these sites via the following links:

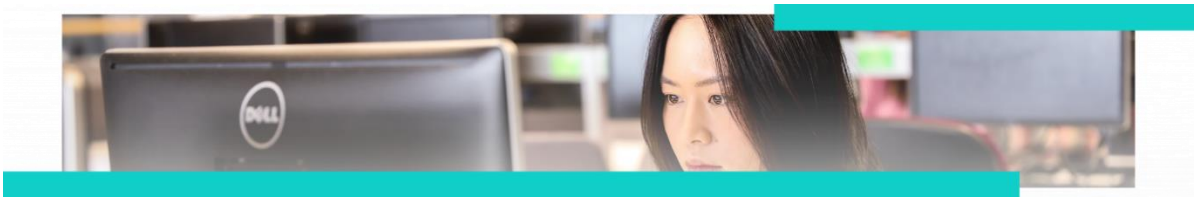
CN4004	**CD4004**
Moodle Site	**Moodle Site**
Microsoft Teams Site	**Microsoft Teams Site**

The **Moodle** site will contain a variety of information and resources including teaching and learning materials (recorded lecture videos, lecture slides, lab exercises, etc), a calendar of important events and coursework deadlines and important news regarding the operation of this module. You should check Moodle regularly.

TEACHING SCHEDULE

Date	Topic
Week beginning 27.09.2021	***Introduction to the Module***
Week beginning 04.10.2021	**Sets and Groups: Part 1**
Week beginning 11.10.2021	**Sets and Groups: Part 2**
Week beginning 18.10.2021	**Matrices**
Week beginning 25.10.2021	**Relations and Functions**
Week beginning 01.11.2021	**Equations and Graphs/Spreadsheets**
Week beginning 08.11.2021	**Mathematical Logic: Part 1**
Week beginning 15.11.2021	**Mathematical Logic: Part 2**
Week beginning 22.11.2021	**Permutations and Combinations**
Week beginning 29.11.2021	**Probability**
Week beginning 06.12.2021	**Introduction to Statistics**
Week beginning 13.12.2021	**Further Spreadsheet Work**

ASSESSMENT INFORMATION



Students must achieve an overall module mark of **40%** in order to pass this module.

The assessment will consist of nine weekly tests (often referred to as Time Constrained Assessments or TCAs) which will be worth 10 marks each, taken each week after the session has finished. Each TCA will consist of 10 multiple choice questions, each of 30 minutes duration. They will be taken online, and will be available for a number of days as shown on the Moodle site. Additionally there will be two short spreadsheet exercises of 5 marks each, undertaken in the lab session. The full assessment schedule is shown below:

	Assessment	Marks Available
Week Beginning 27.09.2021	*No assessment*	-
Week Beginning 04.10.2021	TCA 1 *Sets and Groups Part 1*	10
Week beginning 11.10.2021	TCA 2 *Sets and Groups Part 2*	10
Week Beginning 18.10.2021	TCA 3 *Matrices*	10
Week Beginning 25.10.2021	TCA 4 *Relations and Functions*	10
Week Beginning 01.11.2021	Spreadsheet Exercises *Equations and Graphs*	5
Week Beginning 08.11.2021	TCA 5 *Mathematical Logic Part 1*	10
Week Beginning 15.11.2021	TCA 6 *Mathematical Logic Part 2*	10
Week Beginning 22.11.2021	TCA 7 *Permutations and Combinations*	10
Week Beginning 29.11.2021	TCA 8 *Probability*	10
Week Beginning 06.12.2021	TCA 9 *Introduction to Statistics*	10
Week Beginning 13.12.2021	Spreadsheet Exercises *Statistics*	5

Resit Assessment

If you do not pass your module at the first attempt you will have an opportunity to take a resit TCA. The marks for all resits are capped at 40%.

READING AND RESOURCES

Core	Recommended/Reference
Discrete Mathematics and its Applications Kenneth H. Rosen McGraw-Hill; 8th edition ISBN: 9781260289701	**Schaum's Outline of Discrete Mathematics, Revised Third Edition** Lipschutz, S. McGraw-Hill (2009) ISBN: 9780071615860 **Discrete Mathematics** Amanda Chetwynd & Peter Diggle, Elsevier (1995) ISBN: 9780080928609 ***www.mathsisfun.com***

STUDENT FEEDBACK

a) The following are examples of feedback from students from previous years:

"Every lesson is exciting as well as interactive which it makes the maths lesson interesting and something to look forward too every week."

"Everything was good. An experienced lecturer."

"Good use of tutorial questions to let students know what they have learnt."

"Immediate feedback given for tutorial questions to know what I need to focus on."

"Great teaching with manageable questions and good explanations to ensure that you understand and learn."

"It covers the basics for those who do not understand fully."

"Lecturer takes time to make sure you understand."

"It's managed really well as we only tackle one topic per week which I can be able to handle."

"The lecturer is enthusiastic, explains the work in detail."

"The materials are relevant and will be useful in the future."

"The method of testing is very good."

"The teacher listens to the students and helps them so that they understand."

"The teaching was great and how it was conducted gave me confidence."

"Very good teaching methods."

"No improvement is needed."

"The structure of the slides makes the work easily understood."

"Lectures and tutorials are both engaging and fruitful."

"Extra material is provided if you're interested."

"I got explanations for the problems, which helped me to improve my maths skills."

b) Opportunities for student feedback on the module

Students can provide feedback at programme committee meetings and by making use of a feedback questionnaires at the end of the module

LATE SUBMISSIONS (if applicable)

We strongly suggest that you try to submit all coursework by the deadline set as meeting deadlines is expected in employment. However, in our regulations, UEL has permitted students to be able to submit their coursework up to 24 hours after the deadline. The deadline will be published in your module guide. Coursework, which is submitted late, but within 24 hours of the deadline, will be assessed but subjected to a fixed penalty of 5% of the total marks available (as opposed to marks obtained). However, you have to **be very careful when you are submitting your assessment**. If you submit your work twice, once using the original deadline link and then again using the late submission link, your assignment will be graded as late with the 5% deduction.

Please note that if you submit twice, once before the deadline and once during the 24 hour late period, then the second submission will be marked and 5% deducted.

This rule only applies to coursework. It does not apply to examinations, presentations, performances, practical assessments or viva voce examinations. If you miss these for a genuine reason, then you will need to apply for **extenuating circumstances**, or accept that you will receive a zero mark.

Extenuating Circumstances are circumstances which:

impair your examination performance prevent you from attending examinations or other types of assessment, or
prevent you from submitting coursework or other assessed work by the scheduled deadline date, or within 24 hours of the deadline date

Such circumstances rarely occur and would normally be:

unforeseeable - in that you could have no prior knowledge of the event concerned, and
unpreventable - in that you could do nothing reasonably in your power to prevent such an event, and
expected to have a **serious impact** on performance

You can make an application for extenuating circumstances by following this link: https://uelac.sharepoint.com/StudentSupport/Pages/Extenuation-information.aspx

RETURN OF WORK AND FEEDBACK

Arrangements for the publication of results is stated in the Course Handbook. Formal results are ONLY available in UEL Direct, and will be published within 8 working days of the Board, where results are formally confirmed. Any other results are provisional / indicative but not approved.

You will receive feedback throughout your course through the following:

X	one-to-one or individualised *(i.e. tutorials, conversations with supervisors, or individualised comments on assignments)*
X	informal feedback *(i.e. through in-class discussions or online forums)*
X	self-evaluation *(i.e. online checklists or reflective submissions)*
X	Moodle Quizzes

Feedback and students' marks should be provided within 15 working days of the due date for summative work (i.e. work that counts towards the final course grade) and formative work (i.e. work that is developmental and designed to help you improve).

Whilst feedback will be given on draft/formative work, it shouldn't be assumed that every aspect will be identified.

ONLINE SYSTEM FAILURES

If you experience a problem submitting your work online, you should notify your lecturer/tutor by email immediately. However, deadlines are not extended unless there is a significant systems problem with Turnitin. UEL has specific plans in place to address these issues. If UEL finds that the issue with the system was significant, you will receive an email notifying you of the issue and that you have been given a 24 hour extension. **If you don't receive any email that specifically states you have been given an extension, then the original deadline has not been changed**.

Best advice: Don't wait until the last minute to submit your assessments electronically.

A guide to submitting your work through **Turnitin**:
https://moodle.uel.ac.uk/mod/book/view.php?id=762499&chapterid=46648

A guide to viewing and understanding the similarity report in **Turnitin**:
https://moodle.uel.ac.uk/mod/book/view.php?id=793923&chapterid=46752

Guide to **Extenuating Circumstances**:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Extenuation.aspx

Assessment & Feedback Policy:
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

ATTENDANCE REQUIREMENTS

As a UEL student you are expected to attend all scheduled sessions, including lectures, seminars, group work and tutorials – whether online or face to face. You are also expected to be punctual, to be respectful of others' time as well as your own, to participate whilst present, to put in time to study between classes, to prepare for taught sessions and to be active participants in both group work and your own learning experience.

MORE INFORMATION

Link to your **personal timetable**: https://uelac.sharepoint.com/students/Pages/Timetable-and-Attendance.aspx

Link to the **University of East London Campus Maps**: https://uelac.sharepoint.com/Pages/Maps-and-key-buildings-at-UEL.aspx

Link to the **Guide to Room Numbers:** https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/Guide-to-Room-Numbers.aspx

ASSESSMENT FEEDBACK

WHAT IS FEEDBACK?

Feedback is crucial for your learning and it is an important part of the academic cycle. It tells you what the strengths are of your work, what its weaknesses are and how it can be improved.

WHY IS FEEDBACK IMPORTANT?

Feedback is the most effective way to: Help you understand how to succeed in your assessments; Help you produce better work for the future; Signpost you to other resources for assistance.

If you pay attention to feedback, particularly where the same comment is made in several modules, you can use the information to improve.

WHERE DO I GET FEEDBACK?

When a tutor comments on your answers in seminars/lectures/workshops

General comment on assessment performance in lectures and seminars

General comment on questions prepared for seminars

When another student makes comments on your presentation

When you produce practice questions for a tutor who gives comments

When you receive written comments on your work submitted either as coursework or exam

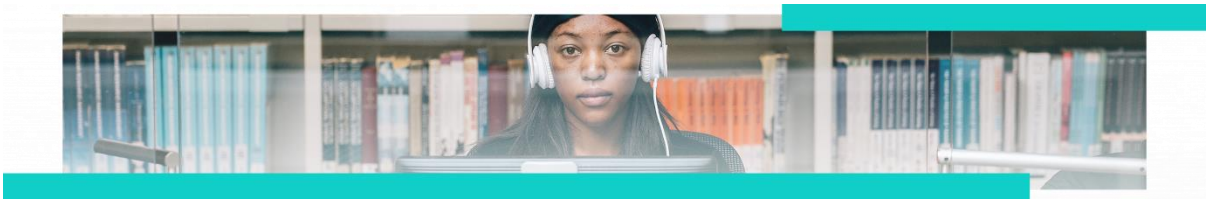
When you look at general feedback on module performance on UEL Direct.

When you see your Academic Adviser with all your assessment feedback for general advice. You should always do this after each assessment period.

MORE INFORMATION

Link to information about the **Centre for Student Success**:
https://uelac.sharepoint.com/sites/studenthandbooks/SitePages/The-Centre-for-Student-Success.aspx

KEY LINKS



Academic Appeals
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Student-Appeals

Academic Integrity
https://uelac.sharepoint.com/LibraryandLearningServices/Pages/Academic-integrity.aspx

Academic Tutoring
https://www.uel.ac.uk/centre-for-student-success/academic-tutoring

Assessment and Feedback Policy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

Bus Timetable
https://uelac.sharepoint.com/EstatesandFacilitiesServices/Pages/Timetable.aspx

Centre for Student Success
https://www.uel.ac.uk/centre-for-student-success

Civic Engagement
https://www.uel.ac.uk/Connect/Civic-Engagement

Complaints procedure
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Student-Complaint-Procedure

Counselling
https://uelac.sharepoint.com/StudentSupport/Pages/Health-And-Wellbeing.aspx

Disability support
https://uelac.sharepoint.com/StudentSupport/Pages/Disability-And-Dyslexia.aspx

Engagement & Attendance Policy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

Equality and Diversity Strategy
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies (click on other policies)

Extenuation Procedures
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Extenuation-Procedures

Frequently-Asked Questions
https://uelac.sharepoint.com/sites/studenthandbooks/ModuleGuides/SitePages/Frequently-Asked-Questions.aspx

Health and Safety
https://uelac.sharepoint.com/EstatesandFacilitiesServices/Pages/health-&-safety.aspx

IT Support
https://uelac.sharepoint.com/sites/ITServices/SitePages/Problem_Reporting/Reporting-Problems.aspx

Library Archives and Learning Services
https://www.uel.ac.uk/lls/

Manual of General Regulations
https://www.uel.ac.uk/Discover/Governance/Policies-Regulations-Corporate-documents/Student-Policies/Manual-of-General-Regulations

Mentoring
https://www.uel.ac.uk/centre-for-student-success/mentoring