2020/1 - MTHA4001A MATHEMATICAL SKILLS

Autumn Semester, Level 4 module
(Maximum 120 Students)
UCU: 20 Organiser: Professor Shaun Stevens
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:E, F
Exam Paper(hrs):

The unit provides you with a thorough introduction to some systems of numbers commonly found in Mathematics: natural numbers, integers, rational numbers, modular arithmetic. It also introduces you to common set theoretic notation and terminology and a precise language in which to talk about functions. There is emphasis on precise definitions of concepts and careful proofs of results. Styles of mathematical proofs you will discuss include: proof by induction, direct proofs, proof by contradiction, contrapositive statements, equivalent statements and the role of examples and counterexamples. In addition, this unit will also provide you with an introduction to producing mathematical documents using Latex, and an introduction to solving mathematical problems computationally using both Symbolic Algebra packages and Excel.

2020/1 - MTHA6002A HISTORY OF MATHEMATICS

Autumn Semester, Level 6 module
(Maximum 50 Students)
UCU: 20 Organiser: Dr Mark Cooker
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Coursework
Timetable Slot:G

BEFORE TAKING THIS MODULE YOU MUST TAKE MTHA5001Y AND TAKE MTHA5004Y

We will trace the development of mathematics from prehistory to the high cultures of ancient Egypt, Mesopotamia, and the Indus Valley civilisation, through Islamic mathematics, and on to mathematical modernity, through a selection of topics. We trace the rise of calculus and algebra, from the time of Ancient Greek and Indian mathematicians, up to the era of Newton and Leibniz. Other topics are also discussed. We will explore mathematical practice and conceptual developments in different historical and geographical settings.

2020/1 - MTHB5009A MATHEMATICS FOR SCIENTISTS B

Autumn Semester, Level 5 module
(Maximum 90 Students)
UCU: 20 Organiser: Dr Hayder Salman

(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:TBC
Exam Paper(hrs):3

This module serves as a further introduction to general mathematics for scientists

2020/1 - MTHE6030A DIFFERENTIAL GEOMETRY

Autumn Semester, Level 6 module
(Maximum 60 Students)
UCU: 20 Organiser: Dr Joseph Grant
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type: Examination with Coursework or Project
Timetable Slot:TBC
Exam Paper(hrs):

BEFORE TAKING THIS MODULE YOU MUST TAKE MTHA4002Y AND TAKE MTHA4003Y AND TAKE MTHA4005Y AND TAKE MTHA5003Y

This module will give an introduction to ideas of differential geometry. Key examples will be curves and surfaces embedded in 3-dimensional Euclidean space. We will start with curves and will study the curvature and torsion, building up to the fundamental theorem of curve theory. From here we move on to tangent spaces and the first and second fundamental forms, Gaussian curvature, and further topics.

2020/1 - MTHE6032A QUANTUM MECHANICS

Autumn Semester, Level 6 module
(Maximum 50 Students)
UCU: 20 Organiser: Dr Hayder Salman
(UG) MODULE - 40% PASS ON AGGREGATE
Module Type:
Timetable Slot:TBC
Exam Paper(hrs):

This module covers the laws of physics described by quantum mechanics that govern the behaviour of microscopic particles. The module will focus on non-relativitic quantum mechanics that is described by the Schrodinger equation. Time-dependent and time-independent solutions will be presented in different contexts including an application to the hydrogen atom. Approximation schemes will also be discussed, with particular emphasis on variational principles, WKB approximation.