UNIVERSITY OF LEICESTER

Module Specification

MA2021 Differential Equations and Dynamics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	20
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	147
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Ivan Tyukin
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Skills test	20				
003	Examination (Final)	60		2		
103	Examination (Final)	100		2		Y

Intended Learning Outcomes

To be able to:
1) Define both the analytic and the geometric interpretation of differential equations
2) Explain the differences between classes of differential equations (autonomous, non-autonomous, linear, non-linear, homogeneous, inhomogeneous)
3) Analyse initial value problems in order to determine whether or not they have unique solutions
4) Explain and prove basic existence and uniqueness results (Peano existence theorem, Osgood's uniqueness theorem, Picard's theorem)
5) Use and apply methods for finding general solutions of general ODEs of the first-order in normal form
6) Solve linear homogeneous and inhomogeneous equations with constant coefficients
7) Apply and write programs for finding numerical solutions of ordinary differential equations (involving both explicit and implicit procedures).

Teaching and Learning Methods

Lectures, Feedback Classes, Computer Classes, automated computer assignments

Assessment Methods

Class test, marked problem sheets, written reports on computer practicals, automated computer assignments (Maple TA), final exam

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2022 Differential Equations and Dynamics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	18
Seminars	
Practical Classes & Workshops	10
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	72
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator: Ivan Tyukin
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Skills test	20				
003	Examination (Final)	60		1.5		
103	Examination (Final)	100		1.5		Y

Intended Learning Outcomes

To be able to use both the analytic and the geometric interpretation of differential equations. To be able to distinguish between classes of differential equations (autonomous, non-autonomous, linear, non-linear, homogeneous, inhomogeneous). To be able to analyse initial value problems in order to determine whether or not they have unique solutions. To be able to solve simple nonlinear equations of the first order using the methods of separation of variables, integrating factors, substitutions. Apply phase portraits for asymptotic analysis of the solutions of differential equations. To be able to state and prove basic existence and uniqueness
results (Peano existence theorem, Osgood's uniqueness theorem, Picard's theorem). To be able to use and program numerical methods for finding solutions of ordinary differential equations (explicit and implicit).

Teaching and Learning Methods

Lectures, Feedback classes, computer practicals, automated computer assignments

Assessment Methods

Class test, marked problem sheets, written reports on computer practicals, automated computer assignments (Maple TA), final exam

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

Cannot be taken with MA2021

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2032 Calculus and Analysis 3

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	
Tutorials	9
Fieldwork	
Project Supervision	
Guided Independent Study	161
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nikolai Brilliantov
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Coursework	20				
003	Skills Test	20				
101	Examination (Final)	100		2		Y

Intended Learning Outcomes

Upon completing the module, students should be able to: differentiate and integrate vector valued functions, apply Fubini's theorem and learn to calculate iterated integrals, use Jacobians to calculate change of variables, learn how to use multi-dimensional linear interpolation for approximations, apply the theorems of Stoke and Green, calculate with basic Fourier series and use Pareval's theorem.

Teaching and Learning Methods

Lectures, Feedback classes, Computer-aided learning, Example sheets.

Assessment Methods

Written examination, weekly written homework.

Pre-Requisites

MA1012, MA1013

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA2104 Elements of Topology

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	20
Seminars	4
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	10
Guided Independent Study	62
Demonstration	4
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Frank Neumann
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
002	Coursework	100				
003	Examination (Final)	100		2		Y

Intended Learning Outcomes

Upon completing the module, students should be able to:
Define topology and continuity in the general setting and to relate these notions to the analogues they will have seen in analysis; create new spaces out of old ones, understand the notions of connectivity, compactness and Hausdorff property, understand the notion of topological equivalence as given by the concept of homeomorphism. visualise the abstract topological concepts in particular examples and understand their basic geometric properties.

Through the written assignments, students should develop their ability to think critically, to analyse and to write clear arguments. The students should develop team working skills through working in small groups.

Teaching and Learning Methods

Lectures, Feedback classes, presentation

Assessment Methods

Written examination, assignments.

Pre-Requisites

MA1012

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2132 Linear Algebra 3

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	
Tutorials	5
Fieldwork	
Project Supervision	
Guided Independent Study	75
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Alexander Baranov
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	60		2		
002	Skills Test	20				
003	Coursework	20				
101	Examination (Final)	100		2		Y

Intended Learning Outcomes

Upon completing the module, students should be able to: diagonalise matrices and define when this is possible, calculate the minimal polynomial of a matrix and interpret its meaning. Find the Jordan normal form of a matrix, diagonalize normal operators and quadratic forms.

Teaching and Learning Methods

Lectures, and Feedback classes

Assessment Methods

Written examination, marked problem sheets and mid-term test

Pre-Requisites

MA1112, MA1113

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2133 Algebra

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	
Tutorials	11
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Teimuraz Pirashvili
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination (Final)	80		2		
003	Examination (Final)	100		2		Y

Intended Learning Outcomes

The module aims to provide students the foundation required for further study in algebra and to provide the knowledge essential to be able to apply algebra as it occurs in other areas. At the same time, students will see ample applications of algebra, for example in the study of symmetry, and students should develop the ability to see how to apply algebra in those situations to which it naturally applies. Students will be introduced to groups, rings and fields and students should be able to perform basic calculations in each of these contexts. The students will learn how the notions of homomorphisms and isomorphisms apply to all these contexts and should be able to perform related calculations. Students should be able to apply the quotient construction in the context of groups and rings to construct new groups and rings. Students should be able to define the various types of factorisation in rings and be able to identify the class to which various rings belong. Students should be able to define what a maximal ideal is and to be able to use maximal ideals to construct fields.

Through the weekly written assignments, students should develop their ability to think critically, to analyse and to write clear arguments.

Teaching and Learning Methods

Lectures, Feedback classes

Assessment Methods

Continuous assessment based on written homework. Written exam.

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

MA2252 Introduction to Computing

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	18
Seminars	
Practical Classes & Workshops	9
Tutorials	9
Fieldwork	
Project Supervision	
Guided Independent Study	64
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Edward Hall
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
002	Coursework	100				
004	Examination (Final)	100		2		Y

Intended Learning Outcomes

The module is designed to introduce students to the basics of data representation in computers, algorithmic thinking, and programming simple numerical methods. Students will gain practical experience of working with Matlab.Drawing the flowcharts of computer programs is also required.

Teaching and Learning Methods

Lectures, computer lab sessions, and feedback classes

Assessment Methods

Problem sheets, test.

Pre-Requisites

-

Co-Requisites

MA2132, MA2032

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2261 Linear Statistical Models

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	5
Practical Classes & Workshops	5
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	160
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Simona Paoli
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination (Final)	80		3		
003	Examination (Final)	100		3		Y

Intended Learning Outcomes

Students should explain the distributions of the least squares estimators for parameters of the simple linear regression model, be able to calculate confidence intervals and prediction intervals and use hypothesis tests for model parameters. Students should be able to perform hypothesis tests using an analysis of variance (ANOVA) table and to define how it is used to explain variation, and be able to assess the lack of fit of a linear model using repeated observations.

Teaching and Learning Methods

Class sessions with some handouts.

Assessment Methods

Marked problem sheets and examination.

Pre-Requisites

MA1061, MA1202

Co-Requisites

-

Excluded Combinations

Cannot be taken with MA2262

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2262 Linear Statistical Models

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	15
Seminars	3
Practical Classes & Workshops	3
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	79
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator: Simona Paoli
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination (Final)	80		1.5		
003	Examination (Final)	100		1.5		Y

Intended Learning Outcomes

Students should define the distributions of the least squares estimators for parameters of the simple linear regression model, be able to calculate confidence intervals and prediction intervals and use hypothesis tests for model parameters. Students should be able to perform hypothesis tests using an analysis of variance (ANOVA) table and to discuss how it is used to explain variation, and be able to assess the lack of fit of a linear model using repeated observations.

Teaching and Learning Methods

Class sessions with some handouts.

Assessment Methods

Marked problem sheets and examination.

Pre-Requisites

MA1061, MA1202

Co-Requisites

-

Excluded Combinations

Cannot be taken with MA2261.
Normally this module should be taken along with MA2511.

Guided Independent Study: Indicative Activities

Module Specification

MA2266 Applied Statistics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	
Tutorials	11
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Paul King
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	70		2		
002	Coursework	30				

Intended Learning Outcomes

Students will:
Identify concepts on decision theory, to be able to apply these in practical situations
Apply concepts of different statisitical distributions in actuarial problems
Conceive the effect of risk-sharing arrangements such as re-insurance
Discuss the concepts of risk models and compound distributions and apply these to practical actuarial contexts, particularly when it comes to the assessment of an insurance firm's solvency, in terms of ruin theory
Apply techniques of run-off triangles to extrapolate to the future states
Full syllabus from http://www.actuaries.org.uk/students/pages/syllabus-exams (CT6 to (iv) and vi)

Teaching and Learning Methods

Students will be provided with material written specifically for the module. Three lectures per week will be used to teach the details of the material. Students are further supported with 1 feedback class per week.

Assessment Methods

2 hour written examination intended to assess technical skills.
A substantial independent research project/case study report. This is an individual open ended task which requires the student to demonstrate self-direction and originality in tackling and solving problems and to act autonomously in planning and implementing the tasks at a professional level. It is also intended to develop the student's transferable skills in line with QAA.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA2401 Actuarial Modelling 1

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	22
Seminars	
Practical Classes & Workshops	
Tutorials	22
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nick Foster
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	70		2		
002	Mini Project	30				
003	Examination (Final)	100		2		Y

Intended Learning Outcomes

The syllabus is taken from the Actuarial Profession's CT1 module www.actuaries.org.uk/students/pages/syllabus-exams
A successful student will be able to:
-Describe fundamental financial terms.
-Define the role of actuaries in the financial sector
-Form cashflow descriptions of financial and business scenarios.
-Demonstrate the ability to manipulate use standard actuarial notation.
-Explain the use and function of basic financial products.
-Reproduce standard criticisms of fixed-interest models, and have an appreciation of mathematical issues arising from stochastic models.
-Demonstrate basic skills in the interpretation of financial problems.

Teaching and Learning Methods

Students will be provided with material written specifically for the module and the onus is placed on self study. One lecture per week will be used to teach the details of the material. Students are further supported with 2 problem classes per week.

Assessment Methods

2 hour written examination intended to assess technical skills.
An independent research project/case-study report. This is an individual, open-ended task which requires the student to demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional level. It is also intended to develop the student's transferable skills in line with QAA descriptors.

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA2402 Business Finance

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	15
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	155
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Leena Sodha
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	70		2		
002	Coursework	30				

Intended Learning Outcomes

The module aims to give students a solid grounding in the basics of finance and acocunting. The syllabus is taken from the Actuarial Profession's CT2 module: www.actuaries.org.uk/students/pages/syllabus-exams.
Students will be able to discuss the fundamental framework of UK finance and be able to write/interpret company accounts. Tax and the international perspective are also considered.
Students will also address the challenges of communicating financial and business solutions to less mathematical members of the sector.

Teaching and Learning Methods

Students will be provided with material written specifically for self study which will be paced across the semester. Three lectures will be given per week. One feedback class per week will be given to go through regular (non assessed coursework) and a project class delivered fortnightly to prepare students for tackling realistic business problems.

Assessment Methods

2 hour written examination intended to assess technical skills.
An independent case-study report. This is an individual, open-ended task which requires students to demonstrate self-direction in tackling a realistic business problem and communicating their conclusions in an appropriate manner.

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA2404 Markov Processes

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	11
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Bogdan Grechuk
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	70		2		
002	Project/Tests	30				

Intended Learning Outcomes

Students will be introduced to the need and theory of mortality modelling in the actuarial context. The syllabus is taken from the Actuarial Profession's CT4 module (items (i)-(iv)): http://www.actuaries.org.uk/students/pages/syllabus-exams
1. Describe the principles of actuarial modelling.
2. Describe the general principles of stochastic processes, and their classification into different types.
3. Define and apply a Markov chain.
4. Define and apply a Markov process.

Teaching and Learning Methods

Students will be provided with material written specifically for the module. Three lectures per week will be used to teach the details of the material. Students are further supported with 1 feedback class per week.

Assessment Methods

2 hour written examination intended to assess technical skills.
Substantial independent research project/case study report (20%). This is an individual open ended task which requires the student to demonstate self-direction and orginality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional level.
Two in class tests (10%)

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

MA2414 Mortality Modelling

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	15
Seminars	5
Practical Classes & Workshops	0
Tutorials	0
Fieldwork	0
Project Supervision	0
Guided Independent Study	80
Demonstration	0
Supervised time in studio/workshop	0
Work Based Learning	0
Placement	0
Year Abroad	0
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Andrey Morozov
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	70		2		
002	Problem Sheets	30				

Intended Learning Outcomes

Students will be introduced to the need and theory of mortality modelling in the actuarial context. The syllabus is taken from the Actuarial Profession's CT4 module (from item (v) x): http://www.actuaries.org.uk/pages/students/syllabus-exams
1. Explain the concept of survival models.
2. Describe estimation procedures for lifetime distributions.
3. Derive maximum likelihood estimators for the transition intensities in models of transfers between states with piecewise constant transition intensities.
4. Describe the Binomial model of mortality, derive a maximum likelihood estimator for the probability of death and compare the Binomial model with the multiple state models.
5. Describe how to estimate transition intensities depending on age, exactly or using the census approximation.
6. Describe how to test crude estimates for consistency with a standard table or a set of graduated estimates, and describe the process of graduation.

Teaching and Learning Methods

Students will be provided with material written specifically for the module. Three lectures per week will be used (over half the semester) to teach the details of the material. Students are further supported with 1 feedback class per week.

Assessment Methods

2 hour written examination intended to assess technical skills.
Weekly problem sheets of exam standard are marked.

Pre-Requisites

MA2401

Co-Requisites

MA2404

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA2510 Investigations in Mathematics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	1
Seminars	1
Practical Classes & Workshops	8
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	90
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Alexander Clark
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100		0		
003	Written report	100				Y

Intended Learning Outcomes

To write a clear and logical presentation of their topic based on the given notes and work programme.
To deliver an oral explanations of some of their solutions.
To reflect on problem-solving skills used.
To develop self study skills
To develop oral communication skills by presenting solutions and making group presentation.
To develop team working skills by working in groups on the group presentations and poster presentation.

Teaching and Learning Methods

Seminars based on the topic of students choice from a list of topics. Poster presentation, group presentation and a written report on the module.

Assessment Methods

Group poster presentation, group presentation to larger group of peers and staff and individual written report.

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA2511 Business Applications of Mathematics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	2
Seminars	
Practical Classes & Workshops	14
Tutorials	2
Fieldwork	
Project Supervision	6
Guided Independent Study	76
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator: Clive Rix
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Presentations and reports (Final)	100		0		

Intended Learning Outcomes

Students will be able to:
- explain business terminology and the types of strategic issues that have to address;
- work in teams in formal meeting environments; set agendas, chair meetings and take minutes
- develop strategic business plans;
- prioritise workloads and delegate work when under pressure;
- apply mathematical techniques to real practical problems proposed by local and regional companies;
- compile reports relating to the business case student for presenting to the client;
- define the importance of articulating their academic skills for graduate employment;
- explain how to prepare and apply for a year in industry;
- produce an effective CV targeted towards a job advert.specification;
- deliver an oral presentation reflecting on their experience of the topics covered.

Teaching and Learning Methods

A competitive business management simulation exercise, undertaken in groups; case studies in groups, seminars and practical demonstrations; guidance on production of an effective CV and job interviews

Assessment Methods

Written reports, oral presentations, both individually and in groups, practical demonstrations

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA2512 Applied Econometrics

Academic Year: 2018/9
Module Level: Year 2
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	11
Seminars	0
Practical Classes & Workshops	8
Tutorials	0
Fieldwork	0
Project Supervision	0
Guided Independent Study	81
Demonstration	0
Supervised time in studio/workshop	0
Work Based Learning	0
Placement	0
Year Abroad	0
Total Module Hours	100

Period: Semester 2
Occurence: E
Coordinator: Tatiana Tyukina
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				
003	Written report (Final)	100				Y

Intended Learning Outcomes

Students will be able to define the methods and applications of econometrics, specifically the carious forms of regression analysis, in a wide range of practical applications not restricted to economics. They will be assess the applications of the methodology, rather than the theoretical underpinnings, an in particular it stresses the problems associated with contructing robust regression models and the need for critical appraisal of results. The module will require a significant amount of data handling, including data cleansing and data manipulation using excel; the ability to carry out various types of regression in both excel and specialist software; the ability to develop robust econometric models for data to appraise them critically.
The module will cover:
Simple linear regression, multivariate linear regression, time series analysis, non-linear regression, system models, regression with discrete response variable and a brief introduction to Bayesian Econometrics

Teaching and Learning Methods

Lectures, Computer practicals, Group workshop

Assessment Methods

Coursework is split:
Written report: 75%
Group work: 25%

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA3002 Equations of Mathematical Physics

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	10
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	160
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nikolai Brilliantov
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Weekly Exercises	20				
002	Examination (Final)	80		3		
005	Examination (Final)	100		3		Y

Intended Learning Outcomes

To apply the classification of linear partial differential equations, in order to apply the basic methods of its solution for one, two and three dimensions. To apply the concepts of eigenfunctions, eigenvalues, and a Green function in solution of partial differntial equation of hyperbolic, parabolic and elliptic types. To use the Fourier series and some special functions in solving partial differential equation on domains of different geometry. To derive some basic equation of matematical physics of hyperbolic, parabolic and analyse the limits of its applications.

Teaching and Learning Methods

Lectures, feedback classes

Assessment Methods

There will be an intermediate 1 hour test based on the weekly problem sheets and 3 hour examination. It will have 4 questions with full marks obtained by correctly answering 4 of them.

Pre-Requisites

MA2021

Co-Requisites

MA1051

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA3012 Scientific Computing

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	20
Seminars	
Practical Classes & Workshops	20
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Ruslan Davidchack
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	30				
002	Examination (Final)	70		2		
005	Exam (Final)	100		2		Y

Intended Learning Outcomes

Students should be able to utilise advanced methods of scientific computing in order to
- Solve linear systems of equations
- Solve nonlinear equations and systems of equations
- Interpolate functions using polynomials and trigonometric functions (Fourier transform)
- Calculate numerical approximations of derivatives and integrals of functions
- Construct and analyse numerical methods for solving ordinary differential equations

Teaching and Learning Methods

Lectures, feedback classes, instructor-assisted computer lab sessions, revision problem sheets.

Assessment Methods

Coursework: Computer assignments, revision sheets.
Exam: Two hour final examination

Pre-Requisites

MA2032, MA2132, MA2252

Co-Requisites

MA2021

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA3071 Financial Mathematics I

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	32
Seminars	14
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	154
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Sergey Utev
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	100		3		

Intended Learning Outcomes

On completion of this module, students will be able to apply the basic concepts and instruments of financial market, the main concepts of probability and stochastic processes, will be able to use the knowledge of probability & stochastics to analyse different models of financial market.

Teaching and Learning Methods

Lectures and surgeries with some handouts

Assessment Methods

3 hour written examination

Pre-Requisites

MA1061, MA2021

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA3074 Introduction to Actuarial Mathematics

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	20
Seminars	10
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	170
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nick Foster
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	100		3		

Intended Learning Outcomes

On completion of this module, students will apply cashflow models to financial and business scenarios, and be able to understand standard actuarial notation and fundamental financial concepts. The student will have a clear understanding of the role of actuaries in the financial sector.

The student will also practice the ability to self study - an important skill for lifelong learning in any chosen profession.

Teaching and Learning Methods

Students will be provided with material written specifically for self study which will be paced across the semester. One lecture will be given per week and the onus is on self study. This study will be supported via electronic means on blackboard. One example class per week will be given to go through regular (non-assessed) coursework.

Assessment Methods

The assessment for this module will consist of a 3hr examination on unseen questions.

Pre-Requisites

MA1061

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA3077 Operational Research

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	10
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	157
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Ivan Tyukin
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	50				
002	Examination (Final)	50		2		
005	Examination (Final)	100		2		Y

Intended Learning Outcomes

The students will be able to formulate, and classify linear and nonlinear optimization problems. With regards to linear optimization (programming), they will be able to apply the theory of the simplex method, and be able to use the method for solving problems with linear cost functions and constraints in the form of a convex polyhedron. In addition, the students will apply techniques and methods for solving one-dimensional and multi-dimensional constrained and unconstrained nonlinear optimization problems. The students will be able to solve shortest path and minimal-tree problems, and should know basic notions and concepts from the theory of games. Application of programming skills to production of algorithms in VBA.

Teaching and Learning Methods

Lectures, feedback classes, computer practicals, automated computer assignments, plus optional VBA classes

Assessment Methods

Class tests, written reports on computer practicals, final exam, computer demonstration. Class computer test on linear programming and networks.

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA3101 Squaring the Circle and Irreducible Polynomials

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	10
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	160
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Alexander Baranov
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination (Final)	80		2		
005	Examination (Final)	100		2		Y

Intended Learning Outcomes

Construct and work with factor rings.
Prove and to use tests for irreducibility.
Relate irreducible elements and maximal ideal in the ring of polynomials over a field.
Explain the significance and properties of the minimal polynomial.
Construct extension fields and use the concept of the degree of an extension.
Apply the concepts introduced in the course to ruler and compass constructions.
Solve the three classical Greek questions discussed in this moduels.

Teaching and Learning Methods

Lectures and feedback classes

Assessment Methods

Examination and group project with WIKI entry creation or poster presentation.

Pre-Requisites

MA1112, MA1113, MA2133

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

MA3121 Complex Analysis

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	9
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	158
Demonstration	3
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	50		2		
002	Test	50				
005	Examination (Final)	100		2		Y

Intended Learning Outcomes

Students should know and be able to apply the key concepts of this module:
Holomorphic functions, path integrals, Taylor and Laurent series, singularities and residues of complex functions. Students should be able to explain the main proofs given in the lectures and be able to
determine whether a complex function is differentiable, define and evaluate path integrals, find Taylor and Laurent expansions of complex functions, calculate residues and use the residue theorem to evaluate real integrals and sums of real series.

Teaching and Learning Methods

Lectures and feedback classes, coursework.

Assessment Methods

Class test and written exam

Pre-Requisites

MA1012, MA1013

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA3152 Curves and Surfaces

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	157
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Katrin Leschke
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Group Project (Final)	30				
002	Skills test	40				
003	Class test	30				
007	Examination	100		2		Y

Intended Learning Outcomes

To know the definitions and the key concepts of curves and surfaces.
To be able to reproduce and apply the main results and proofs given in the module.
To demonstrate familiarity with the topic and to be able to solve routine problems.
To know how to connect visual information with geometric properties.
To be able to produce mathematical exhibits and to communicate mathematical content to non-experts.
To be able to apply methods of the module to investigate new geometric situations.

Teaching and Learning Methods

Lectures, feedback classes, example sheets, group project

Assessment Methods

Written skills test, computer tests, group project

Pre-Requisites

MA2032, MA2132

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

MA3153 Number Theory

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	157
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Frank Neumann
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	90		2		
002	Group Work	10				
005	Examination	100		2		Y

Intended Learning Outcomes

To define the definitions and the key concepts of elementary number theory and to be able to reproduce and apply the main results and proofs given in the module. To define how to formulate number theoretical problems in rigorous mathematical language. To demonstrate familiarity with the topic and to be able to solve routine problems.

Teaching and Learning Methods

Lectures, feedback classes, group work

Assessment Methods

Group work, written examination

Pre-Requisites

MA1104

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA3201 Generalized Linear Models

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	170
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Simona Paoli
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	20				
002	Examination (Final)	80		3		
005	Examination	100		3		Y

Intended Learning Outcomes

Students will be able to apply the assumptions made in using the generalized linear regression model and be able to calculate confidence intervals and use hypothesis tests for model parameters. They will also be able to assess the fit of a log-linear model using a nested hierarchy of log-linear models.

Teaching and Learning Methods

Class sessions with some handouts.

Assessment Methods

Marked problem sheets and examination.

Pre-Requisites

MA1202, MA2261, MA2262

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA3206 Actuarial Statistics

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	11
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Nick Foster
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	70		2		
002	Case Study	30				
003	Examination	100		2		Y

Intended Learning Outcomes

Students will explain the idea of Bayesian statistics and calculate the posterior distribution and Bayesian estimation.
Students will discuss the creditbility approach and demonstrate how Bayesian statistics is applied in credibility theory.
Students will apply the statistics and theory are applied to the actuarial industry.
They will develop independent research and problem solving skills.
Motivate the use of GLM in a financial context. Reproduce underlying mathematics. Apply in standard situations.
Motivate the use of time series methods. Reproduce underlying mathematics. Apply in standard situations.
Motivate the use of Monte Carlo simulations. Reproduce underlying mathematics. Modify existing simulations.
Full syllabus from www.actuaries.org.uk/students/pages/syllabus-exams (CT6 from (v), (vii), (viii), (ix)).

Teaching and Learning Methods

Students will be provided with material written specifically for this module. Three lectures per week will be given. Students will be further supported with one problem class per week. An individual open ended case study that requires the student to demonstrate self direction and originality in tackling and solving problems will be set.

Assessment Methods

2 hour written exam intended to assess technical skills.
A substantial independent research project/case study report. This is an individual open ended task which requires the student to demonstrate self direction and originality in tackling and solving problems and to act autonomously in planning and implementing the tasks at a professional level. It is also intended to develop the students transferable skills in line with QAA.

Pre-Requisites

Co-Requisites

Together with MA2266 this module covers the full CT6 syllabus

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Independent mini project work, assignments, exam preparation.

UNIVERSITY OF LEICESTER

Module Specification

MA3405 Actuarial Products and Liabilities

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	11
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Bo Wang
Mark Scheme: UG Honours Level Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination	70		2		
002	Project	30				

Intended Learning Outcomes

Define standard actuarial notation and fundamental life contracts;
Use mathematical methods to describe and model various life contracts;
Calculate the associated quantities in varios life contracts;
Value cashflows dependent on death, survival or other uncertain risks
Discuss factors affecting mortality and morbidity rates.
Full syllabus CT5: http://www.actuaries.org.uk/students/pages/syllabus-exams

Teaching and Learning Methods

Students will be provided with material specifically written for this module. Three lectures per week will be used to teach the details of the material (shared with MSc students on MA7405). Students are further supported with one problem class per week.

Assessment Methods

2 hour written exam intended to assess technical skills
Substantial independent research project/case study report. This is an individual open ended task which requires the student to demonstrate self direction and originality in tackling and solving problems and act autonomously in planning and implementing tasks at a professional level. It is also intended to develop the students transferrable skills in line with QAA descriptors.

Pre-Requisites

CT1, CT3, CT4

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA3418 Financial Engineering

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	
Practical Classes & Workshops	11
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Aihua Zhang
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination	70		2		
002	Case Study	30				

Intended Learning Outcomes

On completion of this module students will be able to:
Describe and discuss the application of utility theory to economic and financial problems.
Discuss the advantages and disadvantages of different measures of investment risk.
Describe and discuss the assumptions of mean-variance portfolio theory and its principal results.
Describe and discuss the properties of single and multifactor models of asset returns.
Describe asset pricing models, discussing the principal results and assumptions and limitations of such models.
Discuss the various forms of the Efficient Markets Hypothesis and discuss the evidence for and against the hypothesis.
Demonstrate a knowledge and understanding of stochastic models of the behaviour of security prices.
These map to components (i)- (vii) of the latest CT8 syllabus. The full CT8 syllabus can be found from the link www.actuaries.org.uk/studying/prepare-your-exams/syllabus-and-changes-syllabus

Teaching and Learning Methods

Students will be provided with material written specifically for this module. Three lectures per week (shared with MSc students on MA7418) will be used to teach the details of the material. Students are further supported with one problem class per week (shared with MSc students). An individual open ended case study that requires the student to demonstrate self-direction in tackling and solving problems will be set.

Assessment Methods

2 hour written exam intended to assess technical skills
Substantial independent research project / case study report

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA3511 Communicating Mathematics

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	16
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	124
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	60
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Nicole Snashall
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

1. Apply presentation skills,
2. Demonstrate the ability to select information appropriately for presentation to a target audience,
3. Demonstrate skills in analysing mathematical information from books or journals,
4. Demonstrate writing skills,
5. Demonstrate the ability to work effectively in a team setting,
6. Demonstratethe ability to apply knowledge in ways that are relevant to the learning environment,
7. Demonstrate the ability to critically evaluate communication skills within a school/university setting.

Teaching and Learning Methods

Seminars and in school/university experience.

Assessment Methods

The placement component of the coursework will be assessed via your written evaluation of your special project, and an assessment by the member of staff with whom you worked. In total this counts for 55% of the mark.
The taught university component counts for 45% and will be assessed via written work, oral presentations, and groupwork.

Pre-Requisites

{IMPORTANT NOTE}: Any student who wishes to take this module MUST complete an application form prior to being interviewed and accepted. Electronic application forms will sent directly to students who have chosen the module by the central School and College Services team. It is expected that interviews will take place before the end of term in March 2018. DBS checks and training must be completed in semester 1 in preparation for placement in schools in semester 2.

Co-Requisites

none

Excluded Combinations

MA3513 and MA3511 cannot be taken together

Guided Independent Study: Indicative Activities

Module Specification

MA3513 Mathematics Business Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	5
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	20
Project Supervision	15
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	10
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous assessment	100				

Intended Learning Outcomes

Students will be able to identify and mathematically model a problem in business. They will be able to apply simple programming with appropriate software. They will be able to implement a mathematical algorithm for solving the problem if appropriate. They will be able to test and evaluate the end product and document the process. They will present their findings as to a director of a company.
Students will complete a project with a supervisor from local business.

Teaching and Learning Methods

Visual basic lectures.
Individual supervision.

Assessment Methods

Assessment methods:
Project Plan
Case Study
Oral Presentation
Project report
External Client Score

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

Module Specification

MA3514 Professional Skills

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 10

Student Workload (hours)

Lectures	
Seminars	16
Practical Classes & Workshops	8
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	76
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	100

Period: Semester 1
Occurence: E
Coordinator: Nick Foster
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Presentation and Report	90				
002	Attendance	10				
003	Written Report	100				Y

Intended Learning Outcomes

Students will develop their communication and business awareness skills in preparation for interviews and work. Students will explain the current issues in the financial/actuarial sector and will be able to articulate these both verbally and in writing to a variety of audiences, including their peers.

Teaching and Learning Methods

Guest speakers drawn from the University and the actuarial sector will be used to motivate a particular aspect of communication or a current issue each week within a seminar environment. Students are then required to reflect on those issues raised and prepare a short piece of work in response. The responses will either be written or oral (with a 50/50 split over the semester). Some aspects of group work will be incorporated.

Assessment Methods

Written and spoken presentations will be marked against a predetermined scale of descriptors determined in conjunction with each guest speaker.
Attendance at 80% of seminars will be required for full attendance marks. In the event of absence from presentation sessions a written assignment will be set.

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Individual and group presentation work, written assignments, employer research.

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA3515 Actuarial Mathematics Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 30

Student Workload (hours)

Lectures	
Seminars	1
Practical Classes & Workshops	4
Tutorials	
Fieldwork	
Project Supervision	15
Guided Independent Study	280
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	300

Period: Academic Year
Occurence: E
Coordinator: Nick Foster
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous work	50				
002	Final report	50				

Intended Learning Outcomes

Students will complete a significant individual project concerning the application of actuarial science mathematics to an actuarial/business problem.
Demonstrate appropriate techniques, select and implement as appropriate.
Test and evaluate the solution against the requirements of the problem.
Appropriate documentation of the process and presentation of the results.

Teaching and Learning Methods

Individual research and meetings with supervisor

Assessment Methods

Continous work (50%) is split:
Specification of the group project (5 marks, week 3, semester 1)
Interim report (15 marks, end semester 1)
Specification of individual project (5 marks semester 2)
Final presentation (or other as determined by supervisors) (25 marks, semester 2)
Final report (50%)

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Individual and group presentation work, individual and group written assignments, individual and group research.

UNIVERSITY OF LEICESTER

Module Specification

MA3517 Mathematics Research Journal

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	3
Seminars	10
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	187
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Bogdan Grechuk
Mark Scheme: UG Honours Level Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				
002	Paper Submission	100				Y

Intended Learning Outcomes

On successful completion of the module, students should be able to:
1. Engage with academic literature by preparing an assigned academic paper for presentation to peers. This presentation should: clearly highlight the importance of the research topic; the underlying theory and how this relates to modules already studied; the research methodology and analysis used; key conclusions.
2. Write short scientific papers, based on their synoptic knowledge of the course so far, using existing knowledge in novel situations for publication in an open access, online undergraduate journal.
3. Review peers' papers and presenting their critique and decision regarding publication in a clear and concise manner so that their review is an effective resource for an editorial board.
4. Participate in editorial board duties (chairperson, note keeper and ordinary member) and make unbiased, critical decisions on which papers should be published in light of referee comments.

Teaching and Learning Methods

Lectures, seminars.
Coursework: Presentation of academic papers to peers in journal seminars
Coursework: Respond to questions posed by peers and academics on the academic paper presented
Coursework: Participation in editorial boards Coursework: Submitting referee reports in peers' work
Coursework: Publication of short scientific papers in online undergraduate journal

Assessment Methods

Coursework

Pre-Requisites

Co-Requisites

Excluded Combinations

Guided Independent Study: Indicative Activities

Preparation for workshops (including reading, videos) Production of referee's reports and short scientific papers. Engage with the University Press Office if a student paper is selected for a Press release or is otherwise picked up by the wider media.

UNIVERSITY OF LEICESTER

Module Specification

MA3561 Mathematics With Management Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 40

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	385
Demonstration	
Supervised time in studio/workshop	5
Work Based Learning	10
Placement	
Year Abroad	
Total Module Hours	400

Period: Academic Year
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous assessment	100		0		

Intended Learning Outcomes

To manage other students in delivering a project.
Do take part in a business game.
To experience some components of setting up a business of their own.
To develop IT skills relevent to the commercial world.
Pursue a course of self-study with guidance from a member of staff.
Write a structured project report on a computational mathematical topic.
Receive instruction on making a formal oral presentation.
Give an oral and visual presentation to a group of peers and staff.

Teaching and Learning Methods

Students will be able to identify and mathematically model the business problem. They will be able to implement a mathematical algorithm for solving the problem if appropriate.
They will be able to test and evaluate the end product. They will be able to document the process.

Assessment Methods

Project Plan
Enterprise activity
Oral Presentation
Project report
External Client Score
Interim report
Case Study

Pre-Requisites

Co-Requisites

none

Excluded Combinations

MA3562

Guided Independent Study: Indicative Activities

Module Specification

MA3562 Mathematics With Management Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 30

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	285
Demonstration	
Supervised time in studio/workshop	5
Work Based Learning	10
Placement	
Year Abroad	0
Total Module Hours	300

Period: Academic Year
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous assessment	100				

Intended Learning Outcomes

To manage other students in delivering a project.
Do take part in a business game.
To experience some components of setting up a business of their own.
To develop IT skills relevent to the commercial world.
Pursue a course of self-study with guidance from a member of staff.
Write a structured project report on a computational mathematical topic.
Receive instruction on making a formal oral presentation.
Give an oral and visual presentation to a group of peers and staff.

Teaching and Learning Methods

Students will be able to identify and mathematically model the business problem. They will be able to implement a mathematical algorithm for solving the problem if appropriate.
They will be able to test and evaluate the end product. They will be able to document the process.

Assessment Methods

Project Plan
Enterprise activity
Oral Presentation
Project report
External Client Score
Interim report
Case Study

Pre-Requisites

Co-Requisites

Excluded Combinations

MA3561

Guided Independent Study: Indicative Activities

Module Specification

MA3580 Financial Mathematics Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	185
Demonstration	
Supervised time in studio/workshop	5
Work Based Learning	10
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous assessment	100				

Intended Learning Outcomes

Students will be able to identify and mathematically model diverse problems in finance and economics. They will be able to implement a mathematical algorithm for solving the problem if appropriate. They will be able to test and evaluate the end product. They will be able to document the process which they will then use to implement numerical methods relevant to their project.

Teaching and Learning Methods

Students will be able to identify and mathematically model the business problem including a numerical component. They will be able to implement a mathematical algorithm for solving the problem using their appropriate software training. They will be able to test and evaluate the end product. They will be able to document the process.

Assessment Methods

Project Plan
Case study
Oral Presentation
External Client Score
Dissertation

Pre-Requisites

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

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Module Specification

MA3581 Financial Mathematics Project

Academic Year: 2018/9
Module Level: Year 3
Scheme: UG
Department: Mathematics
Credits: 30

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	280
Demonstration	
Supervised time in studio/workshop	5
Work Based Learning	15
Placement	
Year Abroad	0
Total Module Hours	300

Period: Semester 2
Occurence: E
Coordinator: Jeremy Levesley
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Continuous assessment	100				

Intended Learning Outcomes

Students will be able to identify and mathematically model diverse problems in finance and economics. They will be able to implement a mathematical algorithm for solving the problem if appropriate. They will be able to test and evaluate the end product. They will be able to document the process which they will then use to implement numerical methods relevant to their project.

Teaching and Learning Methods

Students will be able to identify and mathematically model the business problem including a numerical component. They will be able to implement a mathematical algorithm for solving the problem using their appropriate software training. They will be able to test and evaluate the end product. They will be able to document the process.

Assessment Methods

Project Plan
Case study
Oral Presentation
External Client Score
Project report
Enterprise Activity

Pre-Requisites

Co-Requisites

none

Excluded Combinations

MA3580

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA4011 Computational Partial Differential Equations with Finite Elements

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	
Practical Classes & Workshops	10
Tutorials	10
Fieldwork	
Project Supervision	
Guided Independent Study	150
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Andrea Cangiani
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Computer Practicals	20				
002	Examination (Final)	80		2		
003	Exam	100		2		Y

Intended Learning Outcomes

This module provides learners with the mathematical foundation as well as implementation aspects of computational schemes for Partial Differential Equations (PDEs), using both finite difference and finite element methods. At the end of this module, learners should be able to:
- classify a PDE and recognize the significance of the various terms and boundary conditions appearing in classical PDE models from mathematical physics;
- apply standard analytical solution techniques, such as the method of characteristics and separation of variables, to linear first and second order problems.
- demonstrate the basic concepts and methods from numerical analysis of PDEs, such as: construct an appropriate scheme for the discretization of PDEs based on the finite difference method, analyse its consistency, stability and convergence properties;
- demonstrate basic knowledge of linear functional analysis and its relevance in PDE theory, with the ability to deduce the right functional setting for a given PDE problem and to write its variational formulation;
- construct finite element formulations for linear PDE models;
- analyse the stability and convergence properties of basic finite elements;
- implement these numerical methods in MATLAB or using freely available finite element libraries.

Teaching and Learning Methods

Class sessions/lectures, computer labs and feedback classes.

Assessment Methods

The coursework will consist of regularly assigned exercise sheets, including problem sets and computer assignments. A substantial individual work will be required for a student to grasp the theoretical material (problem sets) and to get enough computational practice (computer exercises) to be able to solve PDEs numerically. The examination will have 4 questions based on the thought theory and some exercises. Full mark are obtained by answering all 4 questions correctly.

Pre-Requisites

Co-Requisites

none

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA4022 Data Mining and Neural Networks

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	11
Practical Classes & Workshops	11
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	145
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Alexander Gorban
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	50		2		
002	Coursework	20				
003	Computational Tasks	30				
004	Exam	100		3		Y

Intended Learning Outcomes

Students will demonstrate the structure of the data mining process and explain the basic notions and operation:data preprocessing, data cleaning. dimensionality reduction, binning, sampling, supervision and unsupervising learning, classification, clustering, regression, probability distribution estimation, entropy, information, information gain, independence and conditional independence, time series, stationary time series (in strong and in weak sense).
Calculate a data mining problem, recognize its type and select the adequate approach to solution, from evaluation and cleaning of the dataset to selection of the algorithms for data analysis. Calculate and validate the results.
Demonstrate the basic methods and algorithms to data analysis, in particular: for classification kNN and Decision tree algorithms, for clustering k-means, hierarchical clustering and density based algorithms, for prediction multivariate regression (linear regression and the kernel trick), for probability distribution estimation Bayes networks, for dimension reduction principal component analysis, for time series use the basic models(white noise, random walk, moving average processes, autoregressive processes, integrated and ARIMA processes), apply mean filter and median filter, analyze trend and perform segmentation. Construct basic neural networks for data analysis (Hopfield, Kohonen, cascade correlation and back-propagation of errors).

Teaching and Learning Methods

Lectures, feedback classes, computer practicals.

Assessment Methods

Marked fortnightly work, computer logs, written examination.

Pre-Requisites

MA2032

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA4061 Topics in Mathematical Biology

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	30
Seminars	10
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	160
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Sergei Petrovskiy
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	90		2		
002	Class test	10				
003	Exam	100		2		Y

Intended Learning Outcomes

The student is required to demonstrate knowledge of the main principles of model building and analysis in population biology and ecology.

Teaching and Learning Methods

Lectures, seminars.

Assessment Methods

Continuous assessment is achieved through regular assessment of the student's work at problem classes. Summative assessment is also based on the results of written examination

Pre-Requisites

MA2032, MA2021

Co-Requisites

Excluded Combinations

-

Guided Independent Study: Indicative Activities

UNIVERSITY OF LEICESTER

Module Specification

MA4072 Financial Mathematics II

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	33
Seminars	11
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	156
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Sergey Utev
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	100		3		

Intended Learning Outcomes

By the end of this module a student should be able to define the main concepts of financial market instruments; the student should be able to apply the martingale technique and stochastic analysis to option pricing.

Teaching and Learning Methods

Lectures, feedback classes.

Assessment Methods

The final assessment of this module will consist of 100% from a three hour examination.

Pre-Requisites

MA3071

Co-Requisites

Excluded Combinations

-Only available to MMath degree Year 4 students only

Guided Independent Study: Indicative Activities

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UNIVERSITY OF LEICESTER

Module Specification

MA4080 Mathematical Modelling

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	10
Seminars	10
Practical Classes & Workshops	20
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	160
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Alexander Gorban
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Mini-projects	60				
002	Conference Presentation and Paper	40		3		
003	Exam	100		3		Y

Intended Learning Outcomes

The module will give an introduction to methodology of mathematical modelling and to mathematical methods of their analysis including analysis of critical effects.
At the end of the module a student should be able to:
•Explain the basic concepts and instruments of mathematical modelling.
•Create simple models for real phenomena with special focus on economic, financial and social systems.
•Demonstrate these models for real phenomena and interpret the results.
•Analyse these models with special attention to anticipation of critical transitions and communicate the results.
•Explain existing models for real phenomena when presented.

Teaching and Learning Methods

An electronic textbook will be provided for self study and lectures.

Assessment Methods

Mini-projects, assessed by 3,000 word report (60%)
Internal conference presentation (20%) and paper (20%)

Pre-Requisites

-

Co-Requisites

-

Excluded Combinations

-

Guided Independent Study: Indicative Activities

Module Specification

MA4161 Galois Theory

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	

Period: Semester 1
Occurence: E
Coordinator: Teimuraz Pirashvili
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (Final)	50		3		
002	Test	50				

Intended Learning Outcomes

To enable student to:
Understand and define the Galois Group of a field extension and the Galois group of a polynomial.
Understand and prove the Galois correspondence, including the relationship between normal subject structure of the Galois groupd and normality of the intermediate extensions.
Understand the definition of a solvable group and be able to determine whether or not a group of reasonable size is solvable.
Appreciate the significance of the Galois group of a polynomial as a group of permutations of the roots.
Prove that the alternating group of degree at least 5 is simple.
Understand the definition of a radical extension and prove that such an extension has a solvable Galois group.
Understand that the symmetric group is the Galois group of the general polynomial.
Be able to construct polynomials whose Galois group is not solvable.
Be able to apply Galois Theory for certain transcendence proofs in Number Theory.

Teaching and Learning Methods

Lectures, Problem classes

Assessment Methods

Test and exam

Pre-Requisites

-

Co-Requisites

none

Excluded Combinations

-

Last Published: 28 September 2020

Module Specification

MA4504 Mathematics Project

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 40

Student Workload (hours)

Lectures	28
Seminars	
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	372
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	0
Total Module Hours	400

Period: Academic Year
Occurence: E
Coordinator: Teimuraz Pirashvili
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

The student will establish the lines of enquiry to be followed and produce an interim report at the end of the first semester, demonstrating both progress to date and a detailed plan of the further steps needed to complete the work. In the second semester, the student will complete the project work planned and produce a substantial Mathematics dissertation.

Teaching and Learning Methods

Weekly supervisions and independent study

Assessment Methods

Project description document, diary, presentations, written thesis.

Pre-Requisites

Only 4th year students on the MMath students are allowed to take this module.

Co-Requisites

Excluded Combinations

Guided Independent Study: Indicative Activities

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UNIVERSITY OF LEICESTER

Module Specification

MA4701 Advanced Readings in Mathematics

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	
Seminars	20
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	180
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 1
Occurence: E
Coordinator: Andrea Cangiani
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

At the end of this module, students should be able to demonstrate knowledge and understanding of the chosen topic studied in this reading module, and have communicated this through seminar discussions, written work and oral presentations.

Teaching and Learning Methods

Seminars, guided reading, problems/project.

Assessment Methods

Problem classes, writing exercise, oral presentation

Pre-Requisites

Co-Requisites

Excluded Combinations

- Students may not take both MA4701 and MA4702

Guided Independent Study: Indicative Activities

Last Published: 28 September 2020

UNIVERSITY OF LEICESTER

Module Specification

MA4702 Advanced Readings in Mathematics

Academic Year: 2018/9
Module Level: Year 4
Scheme: UG
Department: Mathematics
Credits: 20

Student Workload (hours)

Lectures	
Seminars	20
Practical Classes & Workshops	
Tutorials	
Fieldwork	
Project Supervision	
Guided Independent Study	180
Demonstration	
Supervised time in studio/workshop	
Work Based Learning	
Placement	
Year Abroad	
Total Module Hours	200

Period: Semester 2
Occurence: E
Coordinator: Teimuraz Pirashvili
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework (Final)	100				

Intended Learning Outcomes

At the end of this module, students should be able to demonstrate knowledge and understanding of the chosen topic studied in this reading module, and have communicated this through seminar discussions, written work and oral presentations.

Teaching and Learning Methods

Seminars, guided reading, problems/project.

Assessment Methods

Problem classes, writing exercise, oral presentation

Pre-Requisites

Co-Requisites

Excluded Combinations

- Students may not take both MA4701 and MA4702

Guided Independent Study: Indicative Activities