PhD with Integrated Study in the School of Mathematics and Statistics

Introduction

The "PhD with Integrated Study in Mathematical Sciences" is a four-year PhD programme in the School of Mathematics and Statistics, which is overseen by a programme management committee comprising the ''Director of Postgraduate Research Studies'' of the School and the two deputies. The course has two components:

1. Taught component.
2. Research component.

Both these components are outlined below.

1. Taught component

a) The first 9 months comprises 120 credits of taught courses over semesters 1 and 2, of which at least 90 credits would be at masters (M) level.

b) The courses are drawn mostly from the school's existing M level modules listed in Appendix A, with courses drawn from other Schools' portfolios (e.g. programming from the School of Computer Science) if requested by the supervisor/student and approved by the programme management committee.

c) Note also that students are prohibited from taking an H level course if a similar M level course is available.

d) Within the constraints from a) and b) above the choice of courses is chosen on an individual basis by the prospective supervisor and the student, to suit both the gaps in the student's knowledge and the subject area of the PhD, and would be at the discretion of the supervisor.

e) Note, the only core compulsory module is the 20 credit **Research Practice** course in semester 2, which is taught by the PhD supervisor(s) and examined by a portfolio.

f) Due to the need to start the programme with taught courses, all students entering this programme must start in September at the same time as the other postgraduate taught (PGT) students in the school.

g) The taught component will be completed within the first 9 months because: (i) this gives a student comprehensive training before embarking on their research component; and (ii) it gives an early exit point if a student has not performed as required (see Progression requirements below) in the taught component.

2. Research component

a) Following *successful completion of the taught component* of the PhD in May of year 1, a student will transfer to the research component for the remainder of their 4-year period of study.

b) They are then treated in the same way as any other PhD student in the school and be subject to the school's yearly review process for PhD students.

c) They are then expected to undertake the Doctoral Researcher Training Programme run by COSE and other training or attendance requirements as specified by COSE.

d) For the award of PhD with Integrated Study, the research component must meet the assessment criteria for a PhD in the current University Regulations.

Progression to the research component

After the May exam diet in year 1, the student's overall grades are calculated, and the following rules are applied:

1. If, at the first attempt, a student has obtained: (i) an average of a B3 over the 120 credits; and (ii) all 120 credits at D3 and above; then they would transfer onto the research component of the PhD programme.
2. If, at the first attempt, a student failed to meet the criteria in 1, then they would be transferred to the MSc by Research in Mathematical Sciences, postgraduate diploma in Mathematical Sciences, or postgraduate certificate in Mathematical Sciences as appropriate and at the discretion of the programme management committee. The student would then be awarded the chosen qualification providing they have attained the requirements for the award as set out in the University regulations.

Appendix A – Current list of M-level modules in the School of Mathematics and Statistics

Note – the last two courses are the summer dissertation only to be taken if they do not meet the criteria outlined to continue to the research component of the PhD.

Course Title	*Code*
Research Practice	TBC
5M: Advanced Differential Geometry And Topology	MATHS5039
5M: Advanced Functional Analysis (SMSTC)	MATHS5040
5M: Advanced Methods In Differential Equations	MATHS5041
5M: Advanced Numerical Methods	MATHS5042
5M: Advanced Algebraic And Geometric Topology	MATHS5038
5M: Applied Mathematical Methods (SMSTC)	MATHS5043
5M: Biological And Physiological Fluid Dynamics Maths	MATHS5044
5M: Category Theory	MATHS5079
5M: Commutative Algebra And Algebraic Geometry	MATHS5045
5M: Elasticity	MATHS5046
5M: Fourier Analysis	MATHS5047
5M: Further Topics In Group Theory	MATHS5048
5M: Lie Groups, Lie Algebras And Their Representations	MATHS5049
5M: Magnetohydrodynamics	MATHS5050

5M: Operator Algebras	MATHS5052
5M: Solitons	MATHS5053
5M: Special Relativity And Classical Field Theory	MATHS5054
5E: Algebraic And Geometric Topology	MATHS5065
5E: Continuum Mechanics And Elasticity	MATHS5066
5E: Differential Geometry	MATHS5067
5E: Fluid Mechanics	MATHS5068
5E: Functional Analysis	MATHS5069
5E: Further Complex Analysis	MATHS5070
5E: Galois Theory	MATHS5071
5E: Mathematical Biology	MATHS5072
5E: Mathematical Physics	MATHS5073
5E: Number Theory	MATHS5074
5E: Numerical Methods	MATHS5075
5E: Partial Differential Equations	MATHS5076
5E: Topics In Algebra	MATHS5077
Introduction to R programming (Level M) (10)	STATS5020
Multivariate methods (Level M) (10)	STATS5021
Biostatistics (Level M) (10)	STATS5015
Data management and analytics using SAS (Level M) (10)	TBC
Big Data Analytics (Level M) (10)	STATS5016
Bayesian statistics (Level M) (10)	STATS5014
Stochastic processes (Level M) (10)	STATS5026
Advanced data analysis (Level M) (10)	STATS5051
Flexible regression (Level M) (10)	STATS5052

Financial statistics (Level M) (10)	STATS5053
Linear mixed models (Level M) (10)	STATS5054
Principles of probability and statistics (Level M) (10)	STATS5022
Design of experiments (Level M) (10)	STATS5017
Generalised linear models (Level M) (10)	STATS5019
Time series (Level M) (10)	STATS5030
Data analysis (Level M) (10)	STATS5018
Professional skills (Level M) (10)	STATS5023
Environmental statistics (Level M) (10)	STATS5031
Advanced Bayesian methods (Level M) (10)	STATS5013
Statistical genetics (10)	STATS5011
Spatial statistics (10)	STATS5012
Functional data analysis (Level M) (10)	STATS5056
Probability (Level M)	STATS5024
Statistical Inference (Level M)	STATS5028
Regression Models (Level M)	STATS5025
Mathematics MSc Projects	MATHS5030P
Statistics project and dissertation	STATS5029P