FACULTY OF SCIENCE

DEPARTMENT OF MATHEMATICS AND STATISTICS

ADVANCED COMPUTATIONAL MATHEMATICS

Master of Science in Advanced Computational Mathematics
Postgraduate Diploma in Advanced Computational Mathematics
Postgraduate Certificate in Advanced Computational Mathematics

These regulations are to be read in conjunction with General Academic Regulations – Postgraduate Taught Degree Programme Level.

Admission

1. Notwithstanding the General Academic Regulations – Postgraduate Taught Degree Programme Level applicants shall possess:

   i. a first or second class Honours degree) from a United Kingdom university (in mathematics or a closely related subject); or
   ii. a qualification deemed by the Programme Director acting on behalf of Senate to be equivalent to (i) above, or
   iii. have demonstrate competence in mathematics obtained at a level of performance acceptable to the Programme Leader.

2. In all cases, applicants whose first language is not English, shall be required to demonstrate an appropriate level of English.

Duration of study

3. Notwithstanding the General Academic Regulations – Postgraduate Taught Degree Programme Level the maximum period of study shall be as follows:

   i. Masters by full-time study 36 months
   ii. PG Diploma by full-time study 24 months
   iii. PG Certificate by full-time study 12 months

Mode of study

4. The programme is available by full-time study.

Place of study

5. On-campus or “face to face learning in an approved physical location” is the default Mode of Delivery.

Curriculum

6. All students shall undertake an approved curriculum as follows:

   i. for the degree of MSc only, no fewer than 180 credits including a 60-credit research project,
   ii. for the Postgraduate Diploma no fewer than 120 credits,
   iii. for the Postgraduate Certificate no fewer than 60 credits.

Compulsory Modules

Module Code	Module Title	Level	Credits
MM506	Finite Element Methods for Boundary Value Problems and Approximation	5	20

MM571	Numerical and Deep Learning Methods for Partial Differential Equations	5	20
MM521	Mathematics of Machine Learning	5	20
MM966	Research Project	5	60

Optional Modules

No fewer than 60 credits chosen from:

Module Code	Module Title	Level	Credits
MM502	Modelling and Simulation with Applications to Financial Derivatives	5	20
MM503	Applicable Analysis 3	5	20
MM505	Fluids and Waves	5	20
MM509	Mathematical Introduction to Networks	5	20
MM967	Optimisation: Theory	5	10
MS987	Optimisation for analytics	5	10
CS989	Big Data Fundamentals	5	10
CS988	Big Data Tools and Techniques	5	10
CS978	Legal, Ethical and Professional Issues for the Information Society	5	10
MM909	Medical Statistics	5	20
MM913	Quantitative Risk Analysis	5	10
MM915	Bayesian Spatial Statistics	5	10
MM916	Data Analytics in R	5	20
MM960	Statistical Machine Learning	5	10
MM962	Data dashboards with RShiny	5	10
MM964	Foundations of Statistics	5	10
MM969	Deep Learning	5	10

Or other modules approved by the Programme Director. Not all optional modules on this list will be available in each academic year.

With the approval of the Programme Director, students may substitute other Level 5 optional modules offered by the University up to a maximum of 40 credits.

Progress

7. The General Academic Regulations – Postgraduate Taught Degree Programme Level shall apply.

8. The final award will be based on the student's performance in their assessments.

Award

9. **Degree of MSc**: In order to qualify for the degree of MSc in Advanced Computational Mathematics, a candidate must have performed to the satisfaction of the Board of Examiners and must have accumulated no fewer than 180 credits, of which 60 credits must have been awarded in respect of the research project.

10. **Postgraduate Diploma:** In order to qualify for the award of the Postgraduate Diploma in Advanced Computational Mathematics, a candidate must have accumulated no fewer than 120 credits from the modules of the programme.

11. **Postgraduate Certificate:** In order to qualify for the award of the Postgraduate Certificate in Advanced Computational Mathematics, a candidate must have accumulated no fewer than 60 credits from the modules of the programme.