Applied Mathematics (1 Year) [MSc] (Industrial Modelling pathway)

Structure of the programme

Students can take the MSc in Applied Mathematics or alternatively can choose to take one of the structured *pathways*, leading to an MSc in Applied Mathematics with Numerical Analysis or an MSc in Applied Mathematics with Industrial Modelling.

Students will take 8 taught course units (120 credits) throughout semesters 1 and 2. This will give a broad training in advanced Applied Mathematics. For the MSc in Applied Mathematics there are 5 compulsory units and 3 optional units (chosen from 6 optional courses). For students taking the pathway courses, all 8 taught courses are compulsory.

Dissertations undertaken over the summer can be taken in collaboration with industry and various sponsored projects are available. Choices of dissertations will be made after the January exams. Some of the work undertaken in the transferable skills will then be focused on the areas of importance for the dissertation topic chosen.

Aims of the programme

The aims of the programme are to train students in a broad range of Applied Mathematical Methods and techniques both analytical and computational with a focus on application areas. The aim is that students will pick up a variety of skills of great use for entrance onto a PhD programme or entrance into employment within an industrial sector where knowledge of applied mathematics is of great use.

Emphasis is on engagement with industry where possible and to train students not only to do mathematics but also to gain additional transferable skills of importance in academia and industry. Notably, in the transferable skills unit, students will focus on group work, mathematical modelling problems, communication of work undertaken via written projects and oral presentations and develop their research skills.

Industrially sponsored dissertations (Applied MSc)

Every year we offer a number of industrially-sponsored dissertation topics in a wide variety of areas, which in the past have included numerical analysis, continuum mechanics, and analysis of consumer data.

These topics will be presented in week 1 of semester 2 by representatives of the companies sponsoring projects. After this session you will be required to choose a list of your desired projects from these industrial projects and other academic projects supervised by members of the Applied group. Allocations are made based on a combination of academic achievement, academic suitability and in some cases via interview of students in question by appropriate parties.

You will begin work on the dissertation in semester 2 by reading background material about the project, for which you will write a literature review to be submitted at the end of the semester. Full-time work on the dissertation will then begin after the June exams.

If you are interested in studying for an industrial dissertation then it should be noted that a normal requirement of being selected for an industrial dissertation is an average mark of 65% in semester 1 examinations as well as continued satisfactory performance in semester 2 exams. Students will also be selected on suitability for the project.

The final decision as to allocation of industrial projects rests with the Programme Director and industrial collaborators.

Industrial dissertation funding is £3000, paid in two equal instalments, one in early August after commencement of the project and one upon submission of the thesis in September. The projects usually have no nationality restrictions but this will be dealt with on a case- by-case basis.

Course descriptions on each course unit includes information on assessment criteria's, lecturer, syllabus, learning outcomes, etc., and they are available from the 'My Course' tab in 'My Manchester' by searching the subject code or you can browse them from the Schools 'Study' website.

Level 6 course units

Description	Semester	Requirement	Credit Rating	Level
MATH64051 - Mathematical Methods (as MAGIC022)	1	Mandatory	15	6
MATH64071 - Introduction to Uncertainty Quantification	1	Mandatory	15	6
MATH65061 - Continuum Mechanics	1	Mandatory	15	6
MATH69111 - Scientific Computing	1	Mandatory	15	6
MATH64062 - PDEs: Theory and Practice (MAGIC058)	2	Mandatory	15	6
MATH65740 - Transferable Skills for Applied	1 and 2	Mandatory	15	6

Description	Semester	Requirement	Credit Rating	Level
Mathematicians				
MATH64041 - Applied Dynamical Systems	1	Optional	15	6
MATH64082 - Advanced Uncertainty Quantification	2	Optional	15	6
MATH65122 - Transport Phenomena and Conservation Laws	2	Optional	15	6
MATH65132 - Stability Theory	2	Optional	15	6