

1. Course Code F1J7-AMS/F1J5-AMS/F1J0-AMS	2. Course Title Applied Mathematical Sciences with Climate Change Impacts Modelling	3. School/Institute Mathematical & Computer Sciences	4. Type	5. Awards MSc, PG Diploma, PG Certificate
6. Course Accredited by		7. QAA Subject Benchmarking Group(s) Mathematics		8. Date of Production/Revision April 2008

9. Composition	10. Arrangement of Modules						11. Awards, Credits & Level
	Mandatory and Optional Modules						
	Semester 1		Starting From Semester 2		Starting From Semester 2/3		
	Module Code & Title	Effort Hours	Module Code & Title	Effort Hours	Module Code & Title	Effort Hours	
8 modules (5 mandatory & 3 optional) plus project/dissertation for MSc. 8 taught modules (5 mandatory & 3 optional)	<u>Mandatory Modules:</u>		<u>Mandatory Modules:</u>		MSc Only :		
	F11AN Mathematical Ecology	150	A11AM Climate Change: Mitigation and Adaptation Measures	150	F11GM MSc Dissertation	600	
	F11MT Modelling and Tools	150	<u>One or more from</u>				
	A11CC Climate Change : Causes and Impacts	150	F11AN Mathematical Biology and Medicine	150			
	<u>Optional Modules:</u> <u>Any 1 from</u>		F11AS Dynamical Systems	150			
	F11AP Approximation of Continuous Systems	150	F11AL Applied Linear Algebra	150			
	F11MM Optimisation	150	<u>Optional Modules: 0,1,2 (for a total of 4 modules)</u>				
	F71SM Statistical Methods	150	F11ND Numerical Analysis of PDEs	150			
	A19FO Foundation Molecular Biology	150	F71PT Modern Portfolio Theory	150			
	Or other suitable module(s) at the level 11	150	F11MP Partial Differential Equations	150			
		F11AD Fractals & Chaos	150				
		Or other suitable module(s) at level 11	150				

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12. Mode and Location of Study Full-time <input checked="" type="checkbox"/> Part-time <input checked="" type="checkbox"/> Home Campus <input checked="" type="checkbox"/> Other Campus <input type="checkbox"/> (specify) Collaborative Partner <input type="checkbox"/> Approved Learning Partner <input type="checkbox"/>	13. Duration of Study (months)																								
14. Mode of Delivery Conventional <input checked="" type="checkbox"/> Blended <input type="checkbox"/> Independent <input type="checkbox"/>																									
15. Level of Modules Level 11 <input type="checkbox"/> Levels 7-10 (UG) <input type="checkbox"/> Mixed <input checked="" type="checkbox"/> Modules not at Level 11 (codes): A19FO Foundation Molecular Biology																									
	16. Collaborative/Approved Learning Partner Course (<i>Please specify details of partner institutions</i>)																								
	<table border="1"> <thead> <tr> <th rowspan="2"></th> <th colspan="2">Standard</th> <th colspan="2">Maximum</th> </tr> <tr> <th>Full-time</th> <th>Part-time</th> <th>Full-time</th> <th>Part-time</th> </tr> </thead> <tbody> <tr> <td>Masters</td> <td>12</td> <td>24</td> <td>24</td> <td>84</td> </tr> <tr> <td>Diploma</td> <td>9</td> <td>15</td> <td>24</td> <td>48</td> </tr> <tr> <td>Certificate</td> <td>9</td> <td>15</td> <td>24</td> <td>48</td> </tr> </tbody> </table>		Standard		Maximum		Full-time	Part-time	Full-time	Part-time	Masters	12	24	24	84	Diploma	9	15	24	48	Certificate	9	15	24	48
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Course Notes

1. Nominal Pass Mark/Grade <ul style="list-style-type: none"> Masters: C Diploma: D Certificate: D 	2. Summary of Assessment Methods Assessment methods across the course are set to provide an appropriate balance of exams and coursework <ul style="list-style-type: none"> % coursework: Variable according to module choice. Details can be found on relevant module descriptors % examination: Variable according to module choice. Details can be found on relevant module descriptors
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3. Re-assessment Opportunities
There will be a single resit opportunity in each taught module being available at the next diet of examinations, (eg next academic year).

4. Award Criteria	Number of Module Passes	Overall Mark/Grade	Basis of Overall Mark/Grade	Other Requirements
<ul style="list-style-type: none"> Master (Distinction): 	8+ Dissertation	70%	Average taken across the 8 taught modules with the majority of modules at grade A and no module pass less than grade C. Dissertation at grade A. Allowing 5% compensation between these.	

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• Master:	8+ Dissertation	50%	Average taken across the 8 taught modules with the majority of modules at grade C or above and no module pass at less than grade D. Dissertation at grade C or above. Allowing 5% compensation between these.
• Diploma (Distinction):	8	70%	Average taken across the 8 taught modules with the majority of the modules at grade A and no module pass at less than grade C.
• Diploma:	8	40%	Average taken across the 8 taught modules with the majority at grade D (or above) and no module pass at less than grade E.
• Certificate:	4	40%	Average taken across the 4 taught modules with the majority at grade D (or above) and no module pass at less than grade E.

5. Module Choice/Dissertation

Students will normally take the mandatory modules and in particular the two climate change modules. The dissertation will be in the field of mathematical modelling of the impacts of climate change and must be approved by the course leader or programme director.

An optional module may not run if there is insufficient demand for it. Some choices of modules may not be available to students in some years because of timetabling constraints.

6. Additional Information

None

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21. Course Accredited by:		22. UCAS Code NA	23. QAA Subject Benchmarking Group(s) Mathematics	24. Date of Production/Revision October 2007

10. Educational Aims of the Course

The aims of the course are to enable students to:

13. Develop detailed knowledge and understanding into the central areas of mathematical modelling and the impacts of climate change
14. Cultivate skills in key areas of computational, applied mathematics and statistics
15. Develop original and creative solutions to problems in the applied mathematical sciences
16. Communicate and work effectively with peers and academic staff demonstrating appropriate levels of autonomy and responsibility
17. Plan and execute a significant research project or investigation in mathematical sciences demonstrating extensive details and critical understanding of the area and context of mathematical modelling of the impact of climate change.

11. The Course provides opportunities for learners to achieve the following outcomes:

Subject Mastery	<p><i>Understanding, Knowledge and Cognitive Skills</i></p> <ol style="list-style-type: none"> 7. Extensive detail and critical understanding of the core areas and issues in mathematical sciences, mathematical biosciences and impact of climate change. 8. Crucial comprehension of central topics in computational mathematics, statistics and areas of mathematics of the impact of climate change
	<p><i>Scholarship, Enquiry and Research</i></p> <ol style="list-style-type: none"> 1. Expertise in range of techniques in applied and computational mathematics and statistics with applications in the biosciences 2. Extensive skills in use of computers to solve problems in mathematics and statistics with application to the biosciences and modelling the impact of climate change

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Personal Abilities	<p><i>Industrial, Commercial and Professional Practice</i></p> <ul style="list-style-type: none"> Develop critical awareness of current practices within the applied mathematical sciences, its applications in biology and ecology and the context of climate change. Develop a capability for critically reflecting on roles and responsibilities. <p><i>Autonomy, Accountability and Working with Others</i></p> <p>16. Communicate effectively at all levels using a range of media. 17. Plan and organise through self management and time management, assess issues associated with working as part of a team. 18. Proficient skills in computer environments to present and communicate and problem solve</p> <p><i>Communication, Numeracy and ICT</i></p> <p>19. Develop and demonstrate skills in writing and giving presentations 20. Develop and demonstrate skills in computer environments to present and communicate and problem solve</p>
	<p style="text-align: center;">12. Approaches to Teaching and Learning:</p> <p>The approach in the course is student focussed and is designed to encourage students to take responsibility for their own development and learning.</p> <p>Students interaction with the material is through a number of different methods. Within the timetable modules offer traditional lecture based material and a variety of laboratory based practicals. All the modules have a measure of coursework ranging from traditional solution to mathematics problems, use of specialized software, to discursive type assignments and interpretation of mathematical results to real-life problems.</p> <p>Approaches to teaching and learning are continuously reviewed with regard to the students and the subject area. Specific details are provided in the appropriate module descriptors.</p>
	<p style="text-align: center;">13. Assessment Policies:</p> <p>Student performance is determined by separate elements of assessment within the course.</p> <p>Coursework assessment takes place throughout the taught component. Assessment contains summative and formative components which enable students to achieve learning outcomes which cannot be appropriately tested in traditional examinations. Each module will have an examination (normally two hours) and the examination mark will be combined with the coursework mark to produce a single mark for the module.</p> <p>Dissertations marks will be agreed with the internal readers, external examiner and the Board of Studies.</p> <p>Approaches to assessment are continually reviewed.</p>