De Montfort University

Course Template

1. Basic information

- Course Name: Mathematics
- Course Code: CC320A
- Level (UG, PG): Undergraduate
- Academic Period: 2014
- Faculty: Faculty of Technology
- Department: Business Computing & Mathematics
- PMB COMP
- Offered at: DM - DMU Leicester
- Type (single, joint.): SI
- Highest Award : Bachelor of Science (Honours)
- All possible exit awards : Bachelor of Science; Certificate of Higher Education; Diploma of Higher Education; Institutional Undergraduate Credit
- Award notes : As stated in DMU regulations:
  CertHE is awarded after exiting DMU with 120credits.
  DipHE is awarded after exiting DMU with 240 credits.
  Bachelor of Science (non-honours) degree is awarded after exiting DMU with 300 credits
  Bachelor of Science (honours) degree is awarded after exiting DMU with 360 credits.

Professional Body Recognition

- Accreditation by Professional/Statutory body:

No

- Exemption by Professional/Statutory body:

No

- Details

Accreditation to be sought from The Institute of Mathematics and its Applications (IMA)

- Modes of attendance: Main MOA: Full-Time
  Other MOA: Part-Time; Year Out/On Placement
- Mode Notes: Full time (three years) or Full time sandwich (four years including one year industrial placement). In 2013/14 the programme will be offered in Full time mode only.
  Part time (up to six years)
  Once the programme has become established, should there be a demand for studying the programme on a part-time basis, this will be allowed provided the PT students can study the normal timetabled modules.
  Apart from all level 4 modules being studied before level 5 modules and the level 5 modules being studied before level 6 modules, a PT student can take the respective level modules in any particular order, except that the IMAT3451 project module has to be the last module studied.

- Course leader: Joanne Bacon

2. Entry Requirements and Profile

Award: BSc (Hons) Mathematics Candidates should offer one of the following: · 300 UCAS tariff points from a minimum of two GCE A-Levels including at least a grade B in A-Level Mathematics. · Any qualification deemed equivalent to the above. · In addition candidates should have a minimum of five GCSEs at grade C or above, including Mathematics and English.

Applications are welcomed for individual consideration from candidates offering experience or prior learning in place of part or all of the formal entry qualifications.

3. Course Description

Characteristics and Aims

BSc (Hons) Mathematics is a structured undergraduate programme containing core mathematics, statistics and operational research themes, together with computing and engineering options. This allows students to tailor their studies to their own individual requirements as the course progresses.

The programme teaches the firm foundations of mathematics whilst at the same time emphasising the utility of mathematics in solving a range of real-world problems. It also examines the complexities involved in creating and using mathematical models, developing an awareness of the limitations of the modelling process.

This vocational course provides extensive hands-on practice and interpretation of results of industrial standard software in the solution of mathematical problems and can be studied as a three year full time course or a four year sandwich course.

Teaching, Learning and Assessment Strategies

Delivery

Course delivery is through a combination of lecture, laboratory, tutorial, presentation, group and individual projects.

A first year student will have 15 hours class contact per week and from the second year onwards class contact will be 12 hours per week. In a typical academic year there are 24 teaching weeks plus examinations.

Teaching and learning

Appropriate teaching and learning strategies are used to develop the abstract reasoning, logical deduction and problem-solving skills of mathematics undergraduates. Students will benefit from lectures by acquiring technical knowledge and by seeing the development of mathematical arguments. These lectures are then be supported by smaller group activities such as a tutorial and laboratory based session to allow students to work on problem-solving activities.

Within laboratory based sessions, the use of appropriate software is taught and students learn how to correctly interpret the results generated. Industrial standard software is embedded within all core mathematics (e.g. MATLAB), statistics (e.g. Minitab, SAS), operational research (e.g. Excel) and computing modules (e.g. C++), which supports the students learning and increases their employability. The optional modules provide further learning opportunities, e.g. Oracle, SQL, R, Arena.

Within tutorials, students generally work on problem-solving activities to reinforce the lecture content learned. Additionally, in some modules, students will work in small groups to produce a solution to a tutorial exercise and will present their solution to the rest of the group. This enables students, from the outset, to gain confidence in orally communicating mathematical concepts and results to others.

Placement

Equipped with mathematical knowledge, problem-solving skills, use of industrial standard software, report writing and giving presentations, students will be excellently prepared for their placement year. The placement is encouraged but optional. It is an opportunity to apply and communicate mathematical concepts and results to others, consolidate existing skills and knowledge obtained after two years of study. Students often find that the placement eases their path into employment on graduation.

Assessment

A variety of assessment strategies, both formative and summative, are used throughout the

course. Assessments fall into two main types: coursework assessments and formal examinations.

Coursework assessments include computer-based assessments, reports, short tests, assignments, presentations. A deadline is set for each assessment, which students are expected to meet - this introduces a sense of discipline and professionalism.

Students may also be assessed by formal examinations, which are typically 2 hours long.

4. Outcomes

Generic outcome headings	What a student should know and be able to do upon completion of the course
• **Knowledge & understanding**	Knowledge and understanding of mathematics, statistics and operational research and of using and interpreting the results from industrial standard software. Be thoroughly at home with applications in computing.
• **Cognitive skills**	Ability to use mathematical methods and to apply a range of concepts and techniques appropriate to their programme. Knowledge of results from a range of mathematical, statistical and operational research areas, supporting the understanding of models and how and when they can be applied. Ability to use mathematical models to analyse and solve the underlying problem or to consider a range of scenarios resulting from modifications to the model, as well as how to interpret the results of these analyses.
• **Subject specific skills**	Subject-specific skills in mathematics, statistics, operational research and computing, will have been developed to a sufficiently high level throughout each year of the programme. Skill in abstracting the essentials of problems, formulating them mathematically and in symbolic form, so as to facilitate their analysis and solution. Ability to use information technology and computing facilities as an aid to mathematical processes, and be able to present mathematical arguments and conclusions from them with accuracy and clarity. Statistical skill in the design and conduct of experimental and observational studies and the data analyses from them. Operational skills in the formulation of complex problems of optimisation and the interpretation of the solutions in the original contexts of the problems.

• **Key Skills**	Time management, organisational skills, the ability to work professionally and to learn independently, using a variety of learning resources e.g.) texts, internet, journals. Effective communication skills - giving presentations, teamwork, writing technical reports and interpreting results clearly and concisely in both oral and written expression. Ability to assess problems logically and to approach them analytically, displaying readiness to address new problems from new areas. Appreciation of ethical issues, including the need for sensitivity in handling personal data.

5. Structure and Regulations

Relationship Details

Module	Credits	Level	Take/Pass	Semester	Locations
IMAT1202	**30.00**	**1**	**Must Take**	**Y**	**DM**
IMAT1203	**30.00**	**1**	**Must Take**	**Y**	**DM**
IMAT1204	**30.00**	**1**	**Must Take**	**Y**	**DM**
IMAT1212	**30.00**	**1**	**Must Take**	**Y**	**DM**

Structure

Structure notes

1 Note
120 credits are studied at each Level.
'Maybe' denotes at least one of these options must be taken.

Course Specific Differences or Regulations

1

Numbers at sites, including partner institutions

1

Relevant QAA Subject Benchmarking statement(s)

1

6. Quality Assurance Information

QA of Workbased Learning

Liaison with Collaborative Partners

Procedures for Maintaining Standards

Course Handbook Descriptor