Summary of the Periodic Review of Mathematics

Programmes covered by the Review
1. The programmes covered by the Periodic Review were:
   • BSc Computational Mathematics
   • BSc Mathematics
   • BSc Mathematics and Applied Statistics
   • BSc Mathematics and Economics
   • BSc Mathematics and Meteorology
   • BSc Mathematics and Physics (final cohort entered in October 2007)
   • BSc Mathematics and Psychology
   • BSc Mathematics and Statistics
   • MMath Mathematics
   • MMath Mathematics and Meteorology
   • MMath Mathematics and Physics (final cohort entered in October 2006)
   • MSc Mathematical and Numerical Modelling of the Atmosphere and Oceans
   • MSc Mathematics of Scientific and Industrial Computation
   • Postgraduate Diploma Mathematical and Numerical Modelling of the Atmosphere and Oceans
   • Postgraduate Diploma Mathematics of Scientific and Industrial Computation

Date of the Review

Objectives of the Review
3. The objectives of the Periodic Review were to:
   • Review the effectiveness of the means by which Schools manage and assure the academic standards of the degree programmes under Review and the quality of the learning opportunities provided
   • Enable the Department of Mathematics to consider how it might enhance its portfolio of taught programmes and the learning experience of its students, and to consider the effectiveness of its approach
   • Consider the future plans of the Department of Mathematics for its taught programmes
   • Enable an independent Panel to review this self-evaluation through consideration of documentation and discussions with staff and students
   • Provide a means by which the Department of Mathematics was able to reflect on the success, enhancement and future development of the taught programmes that it offered
   • Identify examples of good and effective practice
• Consider whether the programmes under Review should continue to run for a further or initial period of up to six years, as appropriate

Conduct of the Review
4. The Review Panel was chaired by the Faculty Director of Teaching and Learning for the Henley Business School. The Panel also comprised two further internal members of academic staff from outside the Department of Mathematics and three external members, two from university Mathematics departments and one from industry.

The Panel received a range of documentation in advance of the Review including a Self-Evaluation Document prepared by the Department and relevant programme specifications. During the Review visit, the Panel considered other documentation and saw the Department’s facilities. The Panel met relevant staff from the Department and current students studying from a selection of the degree programmes under review.

Evidence base
5. In addition to meetings held with academic staff and current students the Panel considered a wide range of evidence, including examples of student work with staff feedback, copies of programme handbooks, minutes of Boards of Studies and External Examiners reports.

External peer contributors to process
6. External members of the Review Panel were appointed by the Faculty of Science Board for Teaching and Learning, after considering nominations from the School of Mathematics, Meteorology and Physics. The role of these external members was to provide subject expertise and to provide an expert judgement of the validity and appropriateness of the programmes under Review.

During the Review the external members focussed on aims and learning objectives and curricula and assessment.

Overview of the main characteristics of the programmes covered by the Review
7. At undergraduate level the Department of Mathematics offers single subject Mathematics degrees that account for approximately half of its undergraduate students and a broad suite of joint degrees. Four-year MMath degrees also follow this pattern. The Department offers two MSc programmes (with associated Postgraduate Diploma awards), one of which is run jointly with Meteorology. The Panel was satisfied that the content of these programmes is broadly appropriate and that the Department’s delivery of them prepares students well for their examinations and onward progress. There is a strong sense of community within the Department that adds greatly to the student experience.
Conclusions on innovation and good practice

8. The Panel identified the following examples of innovation and good practice that it wishes to commend:
   - RISIS – the Department is making pioneering use of RISIS as a tool to monitor student attendance and send automated email reminders to students who are missing classes;
   - Visit days – the Panel commends the energy and commitment of staff organising visit days and the structure of the events, including a strong contribution from current students;
   - CMS - MA24F Communicating Mathematics is an excellent example of how CMS content can be integrated with the wider curriculum and tailored to specific subject requirements. The module is also a good example of employer engagement with the Department’s teaching;
   - Support and guidance – both academic and administrative staff in the Department provide strong, pro-active support and guidance to students. Students summarised this as “The door is always open” (although there is a risk that staff will repeatedly be asked questions face-to-face that might be better answered by other means);
   - Mathematics library and common room – the Mathematics library represents a valuable academic resource for postgraduate students and the common room is an important tool in fostering the sense of community between staff and students in the Department;
   - MSc projects – these are of high quality and often cover topics that have been developed in conjunction with or from suggestions by employers

Conclusions on quality and standards

9. The Panel concluded that:
   - Intended learning outcomes of the programmes reviewed are being obtained by students, although these could better be expressed in terms of qualities and attributes;
   - Required quality and academic standards are being achieved;
   - Programme specifications are broadly appropriate, although some adjustment to undergraduate core modules is desirable

Conclusions on currency and validity of the programmes under Review

10. The Panel concluded that the programmes under review remained current and valid, although there was scope to offer a wider range of option modules that would draw on existing research expertise within the Department.

Recommendations

11. The Panel recommended to the Joint Faculty Board for Teaching and Learning for Science and Life Sciences that all the programmes under review should be **re-approved** to run for a further six years.

   The Panel found no issues that had to be addressed as a condition of the re-approval of these programmes.
The Panel recommended that the Department of Mathematics should consider the following issues:

- The introduction of more explicit specialist ‘pathways’ through its undergraduate degree programmes. In doing so, the Department should review the learning outcomes that students taking different routes through programmes are expected to achieve;
- The Department should consider offering a wider range of part 1 mathematics options for those students who do not wish to take statistics;
- The Department should consider increasing the amount of mechanics and probability taught within core part 1 modules;
- The Department should consider introducing final year modules on subjects such as wave motion and analytical methods for differential equations, reflecting the research strengths of the Department;
- Information from student module evaluation forms should be distributed more widely, including the Boards of Studies and Departmental Teaching & Learning Committee and perhaps the Staff-Student Liaison Committee;
- Module convenors must demonstrate reflection on student module evaluation forms, typically in the form of short annual module convenor reports. This and comments from external examiners may help the Department identify where it is adding value to its students, given the broad range of students admitted to undergraduate degrees and the relatively large proportion who are awarded first class degrees;
- The Department should consider allowing students the opportunity to chair the Staff-Student Liaison Committee and to sit on the relevant Board of Studies;
- The Department should consider whether a wider range of assessment methods could help it to distinguish and challenge its most able students throughout their studies;
- The Department should consider how it can ensure consistency in the form and quality of feedback across its modules;
- The Department should consider the inclusion of tutorial sessions in part 3 modules;
- The Department should investigate how it can provide more help to MSc students looking for industrial placements;
- The Department should examine the scope for simplification of its committees at an appropriate time