Faculty of Science

Summary of the Periodic Review of Degrees in Systems Engineering

1. Programs covered by the Periodic Review

Undergraduate programmes:
BSc Applied Artificial Intelligence and Cybernetics
BSc Applied Computer Engineering
BSc Applied Computer Science
BSc Applied Computer Science and Cybernetics
MEng Applied Computer Science and Cybernetics
BSc Applied Information Technology
BSc Artificial Intelligence and Cybernetics
MEng Artificial Intelligence and Cybernetics
BSc Biomedical Engineering & Cybernetics
BSc Business Information Technology
BSc Computational Science
BSc Computer Engineering
BSc Computer Science
BSc Computer Science and Cybernetics
MEng Computer Science and Cybernetics
BSc Consumer Electronics
BSc Cybernetics & Control Engineering
MEng Cybernetics
BEng Electronic Engineering (4 year) (includes Foundation Year)
BEng Electronic Engineering
MEng Electronic Engineering
BEng Electronic Engineering and Computer Science
MEng Electronic Engineering and Computer Science
BEng Electronic Engineering and Cybernetics
MEng Electronic Engineering and Cybernetics
BSc Information Technology
BSc Information Technology with Economics
BSc Information Technology with Management
BSc Robotics
MEng Robotics
BSc Systems Engineering

Postgraduate programmes:
Advanced European MSc in Network Centred Computing
MSc Cybernetics
MRes Systems Engineering

A fourth postgraduate programme of recent introduction, the Advanced European Erasmus Mundus MSc in Network and e-Business Centred Computing, which involves various European partner institutions, will be reviewed at a later date.

2. Date of the Periodic Review

The Periodic Review took place on 21 and 22 February 2008.
3. **Objectives of the Periodic Review**

The objectives of the Periodic Review were to:

- Monitor the quality and standards of the degree programmes under Review;
- Enable the School of Systems Engineering to evaluate its taught programme provision, and in particular to evaluate student achievement of the appropriate academic standards, and the learning opportunities offered to students to support their achievements;
- 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 School of Systems Engineering was able to reflect on the success, development and possible improvement of the taught programmes that it offered;
- Ask fundamental questions about the rationale, structure and resourcing of the programmes under Review;
- Consider the educational aims and objectives of the programmes, and success in meeting these;
- Review teaching, learning and methods of assessment in their contexts;
- Consider whether the programmes under Review should continue to run for a further period of up to six years.

4. **Conduct of the Periodic Review**

The Periodic Review was conducted by a Panel chaired by the Director of Teaching and Learning for the Faculties of Science and Life Sciences. In addition to the Chair, the Panel comprised three internal members of academic staff (from the School of Chemistry, Food Biosciences and Pharmacy, the School of Human and Environmental Sciences, and the School of Mathematics, Meteorology and Physics) and two external members of academic staff (from the Department of Computer Science at the University of Bath, and from the Department of Electrical Engineering and Electronics at the University if Liverpool). The Sub-Dean acted as Secretary to the Review Panel.

The Panel received a range of documentation in advance of the Review, including a Self-Evaluation Document prepared by the School, relevant programme specifications and External Examiners’ Reports. During the Review Visit, the Panel considered other documentation and met with a number of staff from the School and from the University Library. In addition, the Panel met with students registered for degree programmes under Review, and was also provided with a tour of School facilities, including the Microchip Lab and the Student Information Centre.

5. **Evidence base**

In addition to the meetings held with academic staff and current students, the Panel considered a wide range of evidence, including examples of student work, copies of programme and project handbooks, minutes of relevant Committee meetings (including Annual Boards of Studies Reports) and statistical data. The Panel was able to see External Examiners’ Reports for the three previous years, as well as the Department’s responses to these Reports. The Panel also considered relevant programme specifications and module descriptions, along with output matrices prepared for the Engineering Accreditation Board.
6. **External peer contributors to process**

External members of the Review Panel were appointed by the Joint Faculty Board for Teaching and Learning in Science and Life Sciences, after considering nominations from the School of Systems Engineering. 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.

The external members of the Review Panel were present for the duration of the Review. The member from Liverpool University had particular subject expertise in Electronic Engineering and related areas; the member from Bath University had particular subject expertise in Computer Science and Information Technology.

7. **Overview of the main characteristics of the programmes covered by the Review**

The School offers a large number of degree programmes in the areas of Computer Science, Information Technology, Cybernetics and Electronic Engineering, designed to give much flexibility to students to choose a programme closely suited to their abilities and interests. The School is actively pursuing possibilities for increasing its range of MSc programmes to take advantage of staff expertise. Its mainstream degrees are accredited by appropriate professional bodies where this is relevant. The Panel was much impressed by the collegiate atmosphere in the School and the evident willingness of the staff to go that extra step to help students. The students met by the Panel endorsed this, were very supportive of the School’s efforts, and were clearly engaged with their degree programmes.

The School has a first-rate record of making industrial placements, with evidence that the placement year adds significant value to the student experience and the propensity for achieving aims and objectives. The impact of the year out on student motivation and maturation may explain the high proportion of ‘good’ degree classifications achieved within the School.

8. **Conclusions on innovation and good practice**

The Panel identified a number of areas of innovation and good practice, including:

- The School negotiating deals with publishers for the creation of bespoke textbooks for use by students;
- The creation of the Student Information Centre, which provides a ready source of help and advice to students;
- The arrangements for industrial placements, and the work undertaken by the School’s placement officer;
- The positive impact Knowledge Transfer / KTPs has on teaching;
- The refurbishment of labs, and their use in widening participation and school outreach;
- The use of project posters for Open Days and Visit Days;
- The monitoring of student ‘engagement’ during Part 1;
- The School-wide co-ordination of coursework deadlines.

9. **Conclusions on quality and standards**

The view of the Panel was that the programmes under Review meet the stated aims and objectives, and that they are of appropriate standard and quality. This view was informed and supported by a range of indicators including accreditation reports by professional bodies for the associated disciplines, scrutiny of the documentation provided by the School including the output standards matrices required by the Engineering Accreditation Board, and discussions with staff and students.
10. **Conclusions on currency and validity of the programmes under Review**

The Review Panel concluded that the programmes under review remained current and valid in the light of developing knowledge in the discipline, practice in its application and developments in teaching and learning. The degree programmes meet the needs of employers and professional bodies, and benefit from knowledge transfer activities being undertaken within the School.

11. **Recommendations**

The Panel recommended that, subject to the programme teams addressing the issues outlined below, the following degree programmes be **re-approved** to run for a further six years:

*Undergraduate programmes:*
- BSc Applied Artificial Intelligence and Cybernetics
- BSc Applied Computer Engineering
- BSc Applied Computer Science
- BSc Applied Computer Science and Cybernetics
- MEng Applied Computer Science and Cybernetics
- BSc Applied Information Technology
- BSc Artificial Intelligence and Cybernetics
- MEng Artificial Intelligence and Cybernetics
- BSc Biomedical Engineering & Cybernetics
- BSc Business Information Technology
- BSc Computational Science
- BSc Computer Engineering
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- BEng Electronic Engineering (4 year) (includes Foundation Year)
- BEng Electronic Engineering
- MEng Electronic Engineering
- BEng Electronic Engineering and Computer Science
- MEng Electronic Engineering and Computer Science
- BEng Electronic Engineering and Cybernetics
- MEng Electronic Engineering and Cybernetics
- BSc Information Technology
- BSc Robotics
- MEng Robotics
- BSc Systems Engineering

*Postgraduate programmes:*
- Advanced European MSc in Network Centred Computing
- MSc Cybernetics
- MRes Systems Engineering

The Panel also recommends that the following programmes be **re-approved** to run until such time as the next Periodic Review of programmes in Economics and in Management:

- BSc Information Technology with Economics
- BSc Information Technology with Management
In making this recommendation, the Panel is confirming that these programmes are of appropriate quality and standard. The Panel has, however, recommended to the School that it should rationalise its portfolio of programmes.

Issues to be addressed:

**Necessary**

(a) Ensure that marks are checked in accordance with University policy

**Advisable**

(a) Review procedures to eliminate unnecessary variation between the three subject areas within the School, both in general and in terms of the arrangements for final year projects

(b) Ensure inconsistencies in the documentation relating to the pre-requisite A-level requirements for module SE1CB5 Engineering Mathematics are rectified

(c) Devote more effort to consistency management across the School

(d) Disseminate good practice in quality and timeliness of feedback across the School, to ensure a high and consistent standard is provided to students

(e) Develop a School-wide policy for the monitoring of coursework for plagiarism and collusion

(f) Expand the reporting back to the staff–student liaison committee, to ensure that students who have recently ended their period on the committee can be informed of the results of items they initiated

(g) Students should see that there is someone other than the lecturer in the module evaluation ‘loop’, and that student comments can cause change, rather than just handing-in module evaluation forms to the lecturer teaching the module concerned

(h) Review how to make the study leave scheme more effective in future

(i) Review procedures in terms of ‘closing the loop’ generally, e.g. in providing feedback to External Examiners and students in terms of actions taken in response to issues raised

(j) Give consideration to developing a formal process by which staff access information on syllabuses, to ensure the effective vertical integration of module subjects across the different Parts of each degree

(k) Reflect from time to time on how programmes and their delivery can be enhanced

**Desirable**

(a) Review the module description for CY3G2 Modern Heuristics

(b) Review the School’s portfolio of undergraduate programmes, so that fewer, clearly distinct titles are offered. The School might also wish to review the degree titles in some cases to make them more exciting, and also to consider changing the nomenclature of degrees involving
placement years from ‘Applied’ to something more recognisable by applicants and employers, particularly since not all of the degrees with ‘Applied’ in their title devote themselves primarily to applications, as might reasonably be expected

(c) Continue to give attention to improving plagiarism advice and keep abreast of emerging good practice