Periodic Review of Food and Nutritional Sciences

Introduction

An internal review of programmes in Food and Nutritional Sciences was held on Thursday 31 January and Friday 1 February 2013. The members of the Panel were:

- Dr Mike Fry, Director of Teaching and Learning, Biological Sciences (Chair)
- Dr Paola Nasti, School of Literature and Languages
- Professor Nazlin Howell, Faculty of Health and Medical Sciences, University of Surrey
- Professor Jack Pearce, Emeritus, Queen’s University Belfast
- Dr Carien van Reekum, School of Psychology and Clinical Language Sciences
- Dr Julian Stowell, Danisco (UK) Ltd
- Ms Kara Swift, Vice-President Academic Affairs, Reading University Students’ Union
- Ms Kate Findlater, Faculty Support Officer, Faculties of Science and Life Sciences (Secretary)

The Panel met the following:

- Professor Matthew Almond (School Director of Teaching and Learning)
- Dr Alan Bell (BSc Department Director of Teaching and Learning, MSc Food Science Programme Director)
- Dr Sandrine Claus (Lecturer)
- Dr Danny Commane (BSc Nutrition with Food Consumer Science Programme Director)
- Mrs Eve Davey (School Administrator)
- Dr Colette Fagan (BSc Food Science, Food Science with Business Programme Director)
- Dr Richard Frazier (Director Advanced Training Partnership)
- Professor Mike Gordon (MSc Nutrition and Food Science Programme Director)
- Dr David Jukes (MSc Department Director of Teaching and Learning, MSc Food Technology Quality Assurance Programme Director)
- Ms Lilly Mae Liddicott (Industrial Placement Manager)
- Professor Bob Rastall (Head of Department)
- Professor Jeremy Spencer (BSc Nutrition and Food Science Programme Director)
- Professor Adrian Williams (Head of School)

The Panel met students who represented the following degree programmes:

- BSc Food Science with Business
- BSc Food Science
- BSc Food Technology with Bioprocessing
- BSc Nutrition and Food Science
• BSc Nutrition with Food Consumer Science
• MSc Food Science
• MSc Nutrition and Food Science
• MSc Food Technology Quality Assurance
• Food Advanced Training Partnership

The Panel also met with recent graduates.

General observations

4 The overall impression conveyed was one of enthusiasm, dedication and pride in the Department of Food and Nutritional Sciences (FNS) – both from staff and students. Despite a diverse student intake, there is a feeling of camaraderie and belonging with the department though care does need to be taken to ensure international students are integrated into the larger student community.

The Review Panel was impressed by the Self-Assessment Document produced by the Department which it considered to be a comprehensive, constructive and self-critical assessment. This, together with the wide-ranging background papers, greatly facilitated the Review and appropriately set the scene.

The meetings with staff were constructive, forward looking and open and the Panel was impressed with the efficient and helpful way in which Departmental staff assisted the Periodic Review.

It was clear to the Panel that the curricula are up-to-date, forward looking and well-focussed on the needs and requirements of the food profession, especially the industry component. There are good mechanisms for ensuring this focus through the Industry Advisory Board, industry placements course accreditation and research.

Academic standards of the programmes

Educational aims of the provision and the learning outcomes

5 The educational aims of the undergraduate programmes are clearly stated. The Department wishes to produce graduates who are capable of entering the food profession and especially working well in the food industry. These aims are achieved through a mixture of theoretical and practical learning and are strongly confirmed by the fact that almost all undergraduate students spend a year working in industry.

The Review Panel was impressed by the BSc Taught Programme information which is provided for each degree by level (Part 1, Part 2 and Part 3). This information is clear, comprehensive and provides the students with a summary of the programme aims, transferable skills, programme content, industrial experience/training, progression requirements, assessment and classification, support for students and their learning, career prospects including opportunities for research and further study, opportunities to study abroad and intended programme outcomes (knowledge, understanding and skills).

Several of the first year undergraduate students commented on not seeing the relevance of the ‘foundation’ science modules though this had clearly changed by the second year (see 6 below). Perhaps more emphasis needs to be put at the beginning of each programme on the progressive nature of learning, and therefore on the significance of theoretical learning in the first year of each programme.
The taught Masters programmes seem to have less clear learning outcomes. Whilst the Panel recognised and accepted that the taught Masters programmes are conversion courses for students who had studied a wide range of science-based degrees this might not be entirely clear to all students. Although these students attended modules alongside undergraduate students they were required to obtain a higher pass mark and expected to read more widely than the BSc students. However, it was considered that there should be greater differentiation between the BSc and MSc teaching and one possible approach for consideration was the introduction of more 20 credit modules by merging some current modules. The Department is recommended to consider this approach.

The Nutrition and Food Science related BSc and MSc programmes are accredited by the Association for Nutrition with other programmes meeting the requirements of the Institute for Food Science and Technology. Students considered accreditation to be another positive feature of the programmes.

Curricula and assessment

6 The Panel was content that the degree curricula are up-to-date and appropriate to degree-level teaching in the various subject areas. It was clear that the course content was able to be varied to include new areas of food science which are pertinent to the future development of the subject; one clear example is the application of nanotechnology in the food science and technology sector. The teaching is also informed by research conducted in the Department and, in this regard, it is noteworthy that Food and Nutritional Sciences (FNS) achieved the highest grade in the last Research Assessment Exercise.

In both the delivery and assessment of the curricula, the FNS staff have an innovative approach through the use of Blackboard. This includes the development of videos and podcasts of lectures. These are especially beneficial for students whose first language is not English and who would benefit from seeing or hearing the same lecture material more than once.

Consideration of the External Examiners reports for the BSc and MSc programmes over previous years and the degree classifications achieved clearly show that the curricula provide the opportunity to achieve the intended learning outcomes (knowledge, understanding, skills). In addition, the assessment process enabled the students to demonstrate their abilities, as assessed by progression data and examination results, and also enabled differentiation between the students.

Assessment is varied and allows students to develop different skills; it is also designed to create a balance between exams and coursework. This benefits students with different learning styles and approaches. The approach to marking is rigorous with work being double marked where appropriate and a third marker appointed in the event of a disagreement. Rigorous steps are taken to eliminate plagiarism with advice on avoiding plagiarism and the use of Turnitin built into Part 1 modules.

An issue raised by both the staff and students in the papers considered before the Review and with both groups at the Review itself was the teaching of pure science subjects at Part 1 where the FNS students are part of a much larger group of students who are enrolled on a number of science degree pathways for which these subjects are key underpinning subjects. The FNS students considered that these subjects were taught without empathy for Food and Nutritional Science and they did not see the relevance, at that stage, to their degree subjects. This is one reason why the buddy system referred to in 8 below is being implemented. FNS staff are also in discussion with the staff of other departments to introduce subject specific examples into the modules taken by FNS student to enhance the relevance of these subjects and reduce any feeling of isolation these students might feel from the Department. In addition, the inclusion of contextual information on Blackboard is being considered. The FNS Department is currently
considering how all their BSc programmes might be reconstructed around themes to provide a more integrated approach; this is also relevant to the Part 1 modules which are usually perceived as unrelated to the degree programmes. The Review Panel commends these initiatives.

It was evident from meeting the students and from the previous Staff Student Liaison Committee minutes that the provision of feedback on assignments was not as efficient and effective as it should be from some markers. The Department recognised there is a problem and has set up an internal working group to determine how good quality feedback will be provided. The Department has also implemented changes to the way in which the Industrial Year is assessed following concerns raised by students.

In relation to group work, two issues arose. One was the ‘mixing’ of students from different backgrounds in the groups and the Panel considered that the students should be mixed in order to achieve maximal diversity. The second issue was the assessment of the work and contribution of an individual within a group; there are a number of possible ways to do this which the Department are trialling but the Department is recommended to consider how this may be realised to clearly select the best one and inform students what method will be adopted.

In relation to projects it was noted that the undergraduate ones include a viva as part of the overall assessment but for MSc projects a viva is not included. The Panel recommends that the Department considers whether it is possible to introduce a Masters project viva or some other means of individual assessment.

A significant, relatively-recent (2011) development had been the introduction of a Food Industry Symposium for all BSc and MSc students. The aim is to provide students, through the involvement of food industry specialists, with information on future careers and opportunities available to them. This initiative is commended by the Panel.

It was noted that the Department is currently implementing a Food Advanced Training Partnership (Food ATP) which leads to a Masters degree. The Panel considers this to be an exciting initiative which should lead to further professional development of individuals employed in industry. However, the Panel did have some concern about how the Food ATP might impinge on other degree programmes in the Department, especially at Masters level and recommends that the Department monitors any such effects.

Use of student management information

There are well-developed systems for using student management information. The evaluation of all modules is carried out through student feedback questionnaires. The results from these are addressed by the module coordinator, the Teaching and Learning Committee and the Staff/Student Committees. Student opinion from the National Student Survey is also considered, as are the views of the student representatives on the various Boards and Committees. The Panel recommends that the Department consider how best to communicate to students actions taken in response to their feedback ensuring that the feedback loop is closed.

Another source of information is the external examiners reports and it is clear from the reports seen for the BSc and MSc programmes and the replies sent back to the examiners how the Department has responded to the views expressed by the external examiners.
Quality of learning opportunities offered by the programmes

Teaching and learning

8  The Panel felt that the quality of teaching and learning within the Department is excellent. Students clearly value their learning experience and acknowledge the quality of teaching. There is a range of teaching materials and work-based learning is diverse, of a high quality and relevant to the careers the students may move into.

There is clear evidence that staff are keen to develop teaching and learning methods and are embracing the use of technology and exploring different learning and teaching styles. Undergraduate students are given the opportunity to assist PhD students with their research projects and to be involved in industry lead ‘real-world’ research all of which enhances their learning experiences.

As noted above students sometimes experience delays with feedback being returned to them and the Panel recommends that students are told when they can expect feedback on work at the time of submission in line with current University policy.

A very positive aspect of student support in relation to learning is the development of a buddy system whereby Part 3 students provide support and guidance to Part 1 students. This was initiated by the student society in the Department and is being endorsed and supported by the staff. This will facilitate a feeling of community and belonging between the year groups and will also help Part 1 students to see the relevance of the more pure science modules at Part 1 in the context of how these fit into and underpin the chemistry and biology of Food and Nutritional Sciences degree programmes.

The students are also involved in their learning because they are well represented on various bodies including the Board of Studies, the Undergraduate and Postgraduate Staff-Student Consultative Committees and the Industrial Advisory Board. These representatives specifically include reps for the international students who enter at Parts 2 and 3. The extent of student representation is commendable though the Review Panel recommends that the Department develops mechanisms for closing the feedback loop to ensure students are informed of any actions stemming from issues they have raised.

Student admission and progression

9  Food and Nutritional Sciences has a commendable range of outreach programmes which help to attract potential students to Reading. These include a Summer School for possible students and secondary school teachers, involvement in the Association of Science Education Annual Conference, the ‘Big Bang Fair’, participation in the Royal County Berkshire Show, work experience placements for school pupils in the Department, technical workshops for secondary schools, attendance at school fairs and school visits to the Department.

Although undergraduate enrolment numbers have been fluctuating over the last 5 years the Department has seen marked increases in the number of applications over the past 2 years (including the current cycle, with a 47% increase compared to last year).

Another very positive feature of admissions is that all applicants are interviewed by the Department before being accepted in to BSc programmes. This is beneficial for FNS in that it enables all applicants to be further assessed and it has benefits for the applicant in that they feel there is individual interest in them as a potential new student. Interviewing students has clearly had an impact on conversion with the Departments conversion rate increasing from 30% to nearer 40%. The Panel commends this approach.
The Panel noted the Department's concerns regarding the University policy to change its entry requirements from tariff points to a grade system, believing that this disadvantaged students from non-traditional entry backgrounds. The Panel noted and agreed with this concern.

Masters programme admissions are very healthy and on the rise as well. The Department needs to think very strategically about sustainability. Growing numbers will put a strain on the student-staff ratio. It was noted that teaching loads are not always equally distributed and excessive teaching for research staff might impede their academic development.

In relation to Masters students it was considered, on the basis of the students' views, that the mechanisms for the induction and support of mainly international students should be reviewed.

In terms of progression, the data provided shows that the progression rates achieved by students are high and the Panel has no reservations in this area. However, the Panel considered that the tutor system (both personal and professional) could be improved. Although there is generally good pastoral support for the large number of overseas students in the department, especially Chinese, the Panel considered that improvements in the academic aspects of the tutorial system would especially benefit this group of students. The Panel recommends that the tutorial system should be improved.

Learning resources
10 The Department has the staff and physical resources required for effective teaching. As stated under General Observations, the staff show a commendable enthusiasm for their teaching and an interest in the students. This helps to ensure effective teaching and good staff-student interrelationships.

The Panel toured the Teaching Laboratories, the Sensory Evaluation Unit and the Pilot Plant. The Laboratories were considered satisfactory and it was explained that a programme of refurbishment was underway to improve laboratory provision. The Panel were pleased to note this because practical skills and practical competence are very important in FNS degree programmes. The Panel also noted that the Pilot Plant was showing its age and was urgently in need of refurbishment. Access to a Pilot Plant is essential in any department serious about teaching Food Science and Technology and so the Review Panel recommends that the University should refurbish this facility with the minimum of delay. Not only is it essential for undergraduate and Masters level teaching, it is a resource used by industry which facilitates industry links and research ideas as well as generating money from industry.

The Students the Panel met were happy with the learning resources and acknowledged how important practical experience in the Pilot Plant was to their studies. This satisfaction appears to be a consistent view as students over the past 6 years have never referred to learning resources as an issue in feedback.

Employer engagement
11 All of the Department's undergraduate degrees have a 'with Industrial Training' version and the Panel were informed that the vast majority of those students wishing to undertake a year in industry are able to do so. Students undertake placements with a variety of existing partners or are able to source their own placements. Some of the students expressed concerns about the Department's response to them finding their own placements. Although the Department stated that this was very much encouraged, the students did not feel supported when they had taken the decision to not go through the Department. The Panel recommends the Department clarify the process for students sourcing their own placements.
The Panel heard that the majority of students undertaking placements do so at companies based in the UK. The Panel would urge the Department to consider ways to promote international placement opportunities perhaps by getting students returning from such placements to present to students on their experiences.

A clear strength of FNS is its Industrial Advisory Board. This is a positive resource which links the department with a range of retail, manufacturing and related food industries. It provides advice on course content provides input into the industrial placement process, comments on research activities by meeting with the Research Advisory Board and assists with student recruitment by involvement in UCAS days.

Although the Industrial Advisory Board is an important resource it is not operating as effectively as it might because of poor attendance. The Department should consider how it can achieve better and more regular attendance by industrialists.

There are also less tangible but never-the-less valid links with the food industry though the uses, by industry, of the Pilot Plant facilities.

Hence, there is a wide range of employer engagement which impinges, directly and indirectly on the work of the Department and the teaching.

Enhancement of quality and academic provision

It was apparent that the Pathfinder process had helped the Department to focus on the quality and effectiveness of its degree programmes and their delivery. This had included consideration of the student view expressed through the Staff-Student Consultative Committees, and in other ways, and the views of external examiners. It was clear that there is a culture of continuous course development in the Department.

This was also evident in the Teaching and Learning Plan expressed in the Self-Evaluation Document. This expresses how the Department plans to build on current provision by introducing ‘themed’ material into each undergraduate degree course and how it intends to use Blackboard to a much greater degree for feed-forward/feedback in teaching as well as for improving staff communications.

The use of Blackboard is also being reviewed to improve the provision of information to visiting international students.

The development of the Food ATP is envisaged as the major focus of activity in the postgraduate teaching area in the next 2-3 years. This will integrate all aspects of the food production/food processing/retail/consumer chain (‘farm to fork’) and some of the modules developed may impinge on current teaching. This will need to be carefully planned to ensure that the workload and growth in student numbers do not overburden the physical and staff resources available in the Department.

Since 2011, individual modules are evaluated through student feedback forms allowing the Department to make adjustments to modules where necessary. With the high level of student representation on various committees in the Department, students are given the opportunity to have a direct impact on future academic provision.

It was apparent to the Panel that the students valued the opportunity to be involved with the Department and felt their opinions mattered. This added to the community feel and sense of belonging clearly articulated by all the students the Panel met.
Main characteristics of the programmes under review

13  The undergraduate and Masters degree programmes under review can all be classified as multidisciplinary vocational courses since they are aimed at producing high-quality graduates who will enter the food industry and other food and nutrition related professions. They all meet the educational aims set and notable strengths are the:

- Research-led teaching
- The links with industry though the Industrial Advisory Board and the work placements
- The range of out-reach activities
- The excellent staff-student relationships
- The excellent rates of progression of graduates to employment

Conclusions on innovation and good practice

14  The Panel commends the Department on the following examples of good practice:

(a) Summer School for school pupils and teachers
(b) Food Industry Symposium for all BSc and MSc students
(c) Facilities – Pilot plant is an essential teaching resource, but requires refurbishment
(d) Student representation on various committees and boards within the Department
(e) Industrial Advisory Board as a ‘sounding board’ for teaching, research and careers
(f) Professional accreditation of courses
(g) Research linked teaching
(h) Interviewing of all applicants before acceptance
(i) Innovative use of information technology in teaching, assessment and information dissemination especially through Blackboard, including the use of videos and ‘podcasts’
(j) Enthusiasm of students for the teaching provided
(k) Pro-active approach of staff to all aspects of their teaching and assessment roles

Conclusions on quality and standards

15  The Panel felt that the intended learning outcomes of the programmes are being obtained by students; that the quality and standards are being achieved to a good standard; and that the programme specifications for the degrees are appropriate.

Conclusions on new degree programme proposals [where appropriate]

16  Not applicable
Recommendations

The Panel recommends to the Joint Faculty Board for Teaching and Learning in Science and Life Sciences that the following degree programmes be re-approved to run for a further six years:

- BSc Food Science with Business
- BSc Food Science
- BSc Food Technology with Bioprocessing
- BSc Nutrition and Food Science
- BSc Nutrition with Food Consumer Science
- MSc Food Science
- MSc Nutrition and Food Science
- MSc Food Technology Quality Assurance
- Food Advanced Training Partnership

The Panel recommends that the following issues should be addressed by the Department:

**Necessary**

(a) The Panel strongly recommends that the Department ensures all students are told when they will receive coursework/feedback back at the time of its submission in line with current University policy. It is also important that feedback is clearly described as such to avoid any misunderstanding.

**Advisable**

(a) The Department should undertake a review of its tutorial system, both academic and pastoral to ensure all students benefit;

(b) The Department should take steps to ensure the closure of feedback loop to all students so they are clear when and what changes have/have not taken place and why;

(c) The Department should provide clearer guidelines on the process for students finding their own industrial work placements;

(d) The Department should take steps to foster better links with industrial contacts, strengthen the advisory board and develop its terms of reference. Staff should be encouraged to share personal industry contacts;

(e) The Department should develop ways of providing contextual introductions and/or material to service taught modules (especially Chemistry and Mathematics) at Part 1 to illustrate the relevance of these underpinning modules to the degree programmes;

(f) The Department should consider how the Food ATP will affect workloads and demands for other resources in the future and how it can be used to enhance the learning experience for Reading FNS students;

(g) The Department should consider what the optimal students numbers for each course are and review their programmes accordingly;

(h) The Department should consider how to provide better induction/support for MSc students, 90%+ who originate from outside the UK.
(i) The Department should ensure that all students should have at least 2 placement visits during their industrial year no matter where in the UK they are located and consider how to ensure students on international placements are kept in contact with;

(j) The Department should provide students with clearer guidance on peer marking / group assessment.

**Desirable**

(a) The Department should take steps to manage staff engagement with key teaching and learning issues (timeliness of feedback, etc.) through normal staff development review mechanisms and to ensure that individual staff underperformance is not to any student’s disadvantage;

(b) The Department should consider whether it would be possible to create more 20 credit modules at Masters level. This would result in fewer exams and allow higher level integrated assessments;

(c) The Department should consider whether a Research seminars module might fit within the postgraduate programme;

(d) The Department should consider how the uptake of international work placements might be encouraged and increased;

(e) The Department should do all it can to support and encourage the student buddy system;

(f) The Department should consider ways of ensuring groups of students have a mix of diversity during practicals, group work and other teaching events;

(g) The Department investigate if it would be possible to introduce a MSc viva or other means of individual assessment.

The Panel identified the following University-wide issues requiring further consideration:

(a) The University should consider the impact of moving from a tariff points to grade based entry system on programmes with a high number of ‘non-traditional’ students and no direct feeder subject at A-Level.

The Panel does not have a recommendation to the Joint Faculty Board for Teaching and Learning as to whether any proposal(s) for new degree programmes should be approved as this is not applicable.

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