

Department of Process & Chemical Engineering

(Known as Department of Process Engineering at the time of the review)

Peer Review Group:

Professor J. Davenport, Department of Zoology, Ecology and Plant Science, UCC
(Chair)

Professor Y. Roos, Department of Food and Nutritional Sciences, UCC

Professor J. Monaghan, Department of Mechanical and Manufacturing Engineering,
TCD,

Ireland

Professor D. Knorr, Technische Universität Berlin, Germany

Brief description of conduct of site visit

The site visit was conducted over 2.5 days from 17^h to 19^h February 2003 and included meetings with

- i) Head and staff of the department as a group and individually
- ii) Representatives of undergraduate and postgraduate students
- iii) Representatives of employers and past graduates
- iv) Professor A. Hyland, VP
- v) Professor J. K. Collins, VP for research Policy & Support
- vi) Professor C. Daly, Dean, Faculty of Food Science & Technology
- vii) Professor R. Yacimini, Dean, Faculty of Engineering
- viii) Dr. J. van-Sinderen-Law, Director of Development

and visits to departmental and library facilities in UCC.

An exit presentation of the principal findings of the Peer Review Group was made to staff of the department in the afternoon of the second day.

Description of Department of Process Engineering

Head of Department: Professor F. Oliviera

No. of Staff: 7 academic staff, 35 research scientists (contract), 5 technical & support staff (2 part-time) and 1 administrative staff

Location of Department: Food Science & Technology Building

Degrees/Diplomas offered: BE (Process Engineering), MEng, PhD

No. of students: In 2002/03 the Department catered for 17 postgraduate students and 74 undergraduates in the food and process engineering programmes, plus 280 students majoring in other degrees taking courses offered by the Department)

Mission Statement

The University has a broad mission statement which is widely publicised and with which the Department identifies itself. It is not thought that having an additional, somewhat more specialised, mission statement would serve a useful practical purpose. The Department believes that it is important to strive to accomplish the mission statement of the University, and that an active quality policy underpins this effort. Modern university departments, particularly in areas of engineering, are challenged to fulfill three major functions: teaching, research and extension (service activities that promote transfer of technology and knowledge to the industrial and business community).

Aims & Objectives

- To provide higher education programmes in process engineering relevant to the Irish processing industries, focusing on those of greater importance to the Irish economy (pharmaceuticals, chemicals and foods).
- To run a B.E. degree that conforms to the highest standards recommended by the most relevant professional associations in Ireland and world-wide.
- To promote postgraduate research programmes which can further develop the skills base of a knowledge-intensive Irish and European processing industry and foster its innovation potential.
- To organise continuing and professional development initiatives tailor-made to the needs of the Irish and European processing industry.
- To provide the best possible training for our students, including practical experience.
- To adopt the best practices in teaching and promote the most effective modes of learning.
- To deploy the skills and resources of the Department to the benefit of the quality of education of our students.
- To avail of space and facilities suitable for the high quality and modern teaching that we seek to provide.
- To continuously strive to improve the quality and effectiveness of our training programmes, monitoring regularly the views and suggestions of our students and alumni.
- To be accessible and flexible to the needs and requirements of our students.
- To run training programmes that conform to the current and emerging needs of the prospective or current employers of our students.
- To be recognised nationally and internationally as a quality provider of rigorous training in process engineering.
- To be recognised within the University as a leading department in the best practices of learning and administration.

General Comment on Quality Review

The PRG complimented the Department on the progress made on various issues highlighted in their 1999 Strategic Plan, as outlined in the follow up review of the Plan in 2001. The report was well written. The report structure differed from that expected, but covered the essentials comprehensively. Relatively little benchmarking material was presented, but as the BE Food Process Engineering had recently been accredited by the IEI, this was felt to be entirely reasonable.

Strengths: From the PRG perspective the group largely agreed with the strengths identified by the Department. However we feel that there is some mismatch between current teaching programmes and traditional research areas, and it is not clear that the Departmental and UCC

and the Faculties of Engineering and Food Science and Technology research goals are fully compatible.

Weaknesses: The PRG agreed with the weaknesses identified by the Department. The Group felt that no clearly defined structure or adequate space was in place for handling extra postgraduates. In addition, although the department itself is highly motivated and well organised, there is an issue with maintenance of sufficient communication with cognate departments and faculties.

Opportunities: All of the opportunities identified appear to be satisfactory. The new degree title BE Process Engineering was felt to describe best the current teaching programme of the department and to yield new opportunities for enhanced potential employment of graduates. It would also appear that there are significant opportunities for interdisciplinary research collaboration within UCC.

Threats: The PRG concurs with the threats identified by the Department. The PRG believes that there is a potential threat posed by any over-reliance on a single industrial sector.

Progress on Implementation of Recommendations for Improvement

Introduction

The Department has worked hard to implement its quality improvement plan throughout 2003/04. However developments, both at undergraduate and postgraduate levels are severely restricted because of space limitations. Space remains a major difficulty for the department. Some of the space already allocated was refurbished and is excellent. However there is insufficient space to allow the department to expand its numbers, either at undergraduate or at postgraduate levels at present. Attempts to share space with a neighbouring department have not been successful due to scheduling conflicts. This remains a major difficulty for the department.

Abbreviations

PRG: Peer Review Group

VP: Vice-President

QPC: Quality Promotion Committee

QIP: Quality Improvement Plan

HR: Human Resources

Recommendation of PRG	Recommendation of the QPC	Follow-up Report October 2004
PRG felt that no clearly defined structure or adequate space was in place for handling extra postgraduates.	QPC recommended that this issue be clearly addressed in the Departmental QIP to be developed.	To date the additional space has not been assigned. The Dean confirmed that Deans-EMG had agreed that additional space should be allocated to the department. The Buildings Committee had confirmed that space allocated to another department would be shared with the Department of Process Engineering. However this has not happened. The Dean undertook to pursue the matter on behalf of the department without delay.

Recommendation of PRG	Recommendation of the QPC	Follow-up Report October 2004
		<p>The department has used departmental funds to purchase books to supplement the existing library holdings.</p> <p>The department has provided a part-time assistant with resources to produce a postgraduate handbook, which will be completed in 04/05.</p> <p>Research seminars have been organised and are on-going with all students presenting at them.</p> <p>Short courses are being provided to postgraduates to improve skills levels.</p>
<p>That the Department might consider reducing the number of internal committees.</p>	<p>QPC felt that the number of internal committees is a matter for the Department and acknowledged the collegial nature of decision-making in the Department, which was welcomed.</p>	
<p>PRG strongly felt that it is vital that the development of the Departmental research strategy is as inclusive as possible and so should not be devolved to a subset of the academic staff.</p>	<p>QPC strongly endorsed recommendation and requested the Department to address the actions to be taken in the QIP.</p>	<p>The departmental research strategy has been agreed by all staff of the department and the department is now working towards implementing the strategy.</p> <p>Regular research meetings have not yet been put in place. However the department is committed to implementing the strategy in full.</p> <p>A meeting with the VP for Research was held and discussions are on-going.</p> <p>A Master's programme is being developed with the School of Pharmacy, focusing on the physical properties of pharmaceuticals.</p>

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		The department is continuing to work to develop links with other departments.
That the quota of student intake be reassessed.	QPC strongly endorsed recommendation and requested the Department to address the actions to be taken in the QIP.	This is on-going, and done on the basis of available space, human resources and employability of the graduates. The quota has been increased in 2004/05. The department continuously alerts the Buildings Committee to the space requirements of the student intake. The department is committed to continue its publicity efforts and school liaison activities, which proved successful with the 04/05 intake.
PRG considered that the students specialise far too early in their course and that the thrust of the degree should be to produce flexible process engineers, capable of working in a variety of industries, and that specialisation should be limited to electives.	QPC strongly endorsed recommendation and requested the Department to address the actions to be taken in the QIP.	The department renamed the streams as electives. The degree is a general course (85%) with three groups of electives (15%). The 85% is a general Process & Chemical Engineering degree, enabling graduates to be flexible in their choice of industry to work in.
The Department needs to become more directly involved with the allocation of industrial work placements to ensure that Departmental staff have a close involvement and interaction with local industry.	QPC endorsed the comment of Department and acknowledged the efforts of the Department to meet with students on work placement and liaise with employers.	The department continues to work closely with the employers who provide work placements.
Identified the volume of laboratory work as excessive and encouraged the Department to reassess this component of continuous assessment in terms of amount of laboratory exercises, the credits awarded for these or both.	QPC noted response of Department and acknowledged the difficulties in matching accreditation requirements with curriculum change.	
All laboratory reports should be marked and returned to students within 2 weeks of hand-up.	QPC endorsed recommendation as a matter of good practice and giving timely feedback to students	Implemented. Lab reports have been made available for review by students. Lab reports are not returned to students until the

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	on their progress.	end of term.
Questionnaire usage (for lectures, labs and tutorials) should be encouraged for all academic staff, and feedback from the questionnaires should be given to the students.	QPC endorsed recommendation.	Implemented. Head continues to meet students at start of each academic year to provide feedback. Class tutors also provide feedback on students concerns. Department are using the facilities of the QPU for administering the questionnaires. The departmental web site has been further developed and students are encouraged to use it for information.
Students reported serious problems with Chemistry and Computing and Mechanics teaching in the First Year.	The QPC noted the efforts made by the Department to address the issues raised by the students and welcomed the positive actions taken.	
Department should, where necessary, aim to secure competence in the research areas associated with its teaching programmes, by appropriate collaboration inside and outside UCC.	QPC endorsed action by Department and requested that planned actions should be included in the QIP.	Ongoing. The department is continuing to develop links with other areas both within and outside UCC.
Department should look to their research expertise to create a small number of research groups (3?), each championed by a single individual.	QPC endorsed recommendation and commented that a critical mass was needed to conduct successful research, particularly in present times, and encouraged Department to consider having a smaller number of focussed research groups rather than all individual working singly.	The staff have organised into sectors, but the ability to implement is dependent on success in acquiring research funding. There is a lot of synergy in the department and areas to focus on are being developed. The department will focus on areas mirroring the undergraduate focus, including an emphasis on food, pharma areas, etc.
That a Postgraduate Advisor should be identified.	QPC noted and welcomed action by Department.	
Bioprocessing was identified (by senior UCC staff) as a research area of specific interest to UCC. The PRG concurred, believing that this is an area to	QPC requested the Secretary to the Committee to write to the VP for Research requesting him to identify opportunities and to	The department has held a meeting with the VP for Research Policy & Support

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which the Department could contribute strongly.	communicate directly with the Head of Department.	
That the Department discuss the possibility of the involvement of the Department in the FDA and GMP research/pilot production facility planned for the Food Processing Hall with appropriate UCC partners and authorities.	QPC endorsed recommendation and welcomed action already being taken by Department.	Head and staff of Department
That a strong mentoring system is put in place for staff.	QPC noted this recommendation and has referred it to the Department of Human Resources for consideration.	
Departmental academic staff become increasingly involved in the learning development initiatives of the University	QPC endorsed action by Department and encouraged further participation.	Staff involvement is continuously encouraged by the department in all such initiatives of the university. Many staff make use of these opportunities.
PRG recommended that the Department pursue the Supply-Chain research and teaching speciality as they propose, encouraging them to fund part-time external expertise, perhaps with funding from industry, or by income derived from professional course teaching. The PRG encouraged the Department to maintain the Food Engineering teaching speciality, even though current student interest is lacking.	QPC noted that this is a matter for the Department and noted that perhaps this should also be addressed in the QIP.	Supply chain teaching speciality is developed on the teaching side and is on-going. There is presently a lack of capacity on the research side which would require additional staff to address. The department will revisit this recommendation in the future. The department has initiated a Certificate and Diploma course, which is very successful. However it is very demanding on staff.
That the Department should recruit an external process engineering course Advisory Board.	QPC strongly endorsed recommendation	The department plans to address this in 04/05.
Recommended that the Department submit for full degree accreditation/re-accreditation as soon as appropriate.	QPC strongly endorsed recommendation and noted comments of Department in the response.	Ongoing. The IchemE will be visiting UCC in March 2005. The IEI have accredited the stream on Food Industry and a full accreditation for the other

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		streams is planned for 2005.