

## **444a The Transition from Agricultural and Food Engineering to Biosystems Engineering - an Irish Perspective on This International Paradigm Shift**

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University College Dublin is the largest university in Ireland. The university has a student population of approximately 22,000, including a significant international presence, with over 2,000 students from overseas countries currently enrolled. In the early 1960s a Department of Agricultural Engineering was established within the faculty of Engineering and Architecture providing an undergraduate agricultural engineering (BE) degree programme as well as graduate research programmes at masters and doctoral level. As was common at the time, its original focus was an application-dependent discipline directed to the needs of the agricultural industry. However, a gradual metamorphosis occurred broadening agricultural engineering first to include food engineering and more recently to embrace biological engineering, a discipline more science-based and less application-dependent. The Department's undergraduate programme reflected this change. An undergraduate agricultural and food engineering (BE) degree programme was introduced in the early 80s and more recently new degree programmes in Biosystems Engineering have been introduced at both undergraduate and postgraduate levels. These teaching programmes are designed to complement our research-intensive vision by supplying high quality graduates to enter our research programme, as well as to serve the needs of the agrifood, bioresource and related industries through the provision of appropriately trained graduate engineers. At undergraduate level, the new programme features specialisms in Food and Process Engineering, Bioenvironmental Engineering and Bioresource Systems. The current four year professional engineering undergraduate programme is accredited by The Institution of Engineers of Ireland and is internationally recognised. The implementation of the European wide Bologna protocol has led to the proposed introduction of a three year Bachelor Engineering Science programme followed by a two years Masters programme in Biosystems Engineering. This programme is due to start in 2006. The major strength of Biosystems Engineering at University College Dublin resides in its research intensive programme. The nine members of academic staff supervise approximately 45 postgraduate students at master and doctoral level. International recruitment has been successful with 19 currently enrolled graduate students (14 at doctoral level). from China (5), Ethiopia (2), Peru (2), Iran (2), Argentina, Belgium, Brazil, Cuba, Greece, Italy, Macedonia and Spain. Research is conducted in each of the three major focal areas of the Department, namely: Food and Process Engineering (including bioprocessing, food safety, risk assessment, computer vision, refrigeration, active packaging, rheology, texture, diagnostic techniques and sensors); Bioenvironmental Engineering (including waste management and recycling, integrated pollution control and management systems to protect the natural environment) and Bioresource Systems (including bioenergy, biofuels, biometrics, precision technologies (GPS, GIS), systems modelling, climatology, ecowood engineering and peat technology).