ABSTRACT: ICEE 2004 Gainesville Florida

TITLE: An Enterprise Education Module for Engineers and Scientist

AUTHOR: Dr. J Driscoll
School of Engineering, University of Surrey, Guildford GU2 7XH, England

This paper describes the learning objectives, structure and results from a long running educational module aimed at introducing career engineers and scientists to the challenges of entrepreneurial management. Entitled 'Applied Industrial Management' (AiM), the learning module has been in continuous development and use since 1969, currently utilizing the sixth generation of computer software. AiM has trained six thousand one hundred individuals during one hundred and seventy applications

A self-contained competitive engineering business exercise for between sixteen and sixty-four participants organised into three to eight working groups. The minimum time commitment is twenty hours, with the ability to extend participation continuously there is no maximum time. Groups operate in one of twelve markets with each participant 'role playing' in one of the key areas of marketing, manufacture, finance and executive, this work being set against a demanding timetable.

The learning objectives fall into three categories; knowledge development: (on corporate functional roles, outline accountancy and financial analysis methods, types of industrial strategy and structured approaches to information analysis). skill development (group working skills, problem analysis and presentation skills) plus an entrepreneurial attitude towards industrial activity.

Operation of the module falls into three distinct phases; initial briefing, policy selection plus trading and finally debrief. The initial briefing starts with module introduction followed by a period of accountancy skill development in an open learning environment. The final part of the briefing familiarises individuals on the logistics of markets and company management. Policy plus trading introduces the entrepreneurial and competitive element as syndicates are formed and initially decide the allocation of jobs and company policy. This is rapidly followed by the intensive 'trading' period in which syndicates manage sixteen cycles of defending and building corporate activity.

Subject to a strict timetable during each cycle, syndicates are required to implement their selected policies by producing:decisions covering marketing, production and finance against agreed budgets, correct cash flow, trading, profit and loss accounts plus balance sheets, approved annual balance sheets at the end of each financial year for publication and circulation to each syndicate, estimates of future market and company behavior using historic information and forecasting. At the same time realistic responses are required to a portfolio of industrial incidents covering new technology innovation, environmental management, diversification and trading incidents selected to suit the participating individuals and organisations. Debriefing is in two parts; an analysis of events from the exercise director, using a computer maintained total record of all decisions and consequences and secondly a 'Directors' level presentation by each syndicate of their achievement.

The paper will illustrate key events and organization challenges related to the enterprise module and will draw upon the extensive experience of applications to identify conclusions on the value of this form of engineering education.