Maintaining engineering students' mathematics skills during a year in industry.

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The Engineering Education Centre, Mathematics Education Centre and Computing Services, at Loughborough University have developed an 'Engineering Mathematics Module' as a supported distance learning, self study module. This is undertaken by students as part of a Royal Academy of Engineering scheme where students attend a year in industry prior to starting a university engineering course. The aim of this module is to revise and reinforce their existing mathematical background, which can often decline during a year away from study, and to introduce new advanced topics that they will encounter during the first year of an undergraduate engineering course. The module has now run for three years and this year there are approximately 200 students a year undertaking the module.

This presentation will discuss our experiences in developing and delivering these engineering mathematics distance learning training resources. The resources include self study workbooks, formative and summative computer aided assessment and a digital video introduction. The scheduling of the programme was also found to be significant and will be highlighted in relation to the importance of regular exposure to mathematics during a year in industry . For example there is a formative assessment for each of the mathematics topics, with extensive provision of feedback. The assessment questions are selected from extensive libraries (over 1500 questions) and practice tests be taken as many times as the student wishes, this means that the students can gain experience of answering a variety of questions, ensuring that they don't get the same test twice and re-enforces the learning process. The summative assessments are carried out on the CD and then uploaded to a linked secure server for marking, these summative tests can only be uploaded and marked once. The utilisation of materials in this form reduces both the time spent online and the dependence on web based technologies for distance learning students. The online submission system provides an easy method by which both staff and students can access and track, submissions, marks and progress for the submitted tests.

The paper will also discuss how staff engaged the distance learning students to ensure regular submissions and continuing participation in the distance learning programme, plus feedback received from students and will include practical implementation issues and lessons learned.