

Students and staff in Mathematics, together with colleagues from the Teaching Centre, are working to enhance significantly the experience of second-year undergraduate mathematics students. This newsletter is intended to raise awareness of the project objectives, what has been achieved so far, and our plans for the coming months.



*PhD student Francis Duah together with SYMB $\Omega$ L interns Robert Cleaver, Matthew Tranter, Naomi Parkinson and John Cockcroft.*

During the summer of 2011 four mathematics undergraduate students have been working as interns on a six-week placement. Naomi, Robert, John and Matthew conducted several focus groups with second year undergraduates to find ways of making student learning more effective and their modules more engaging.

Working very closely with staff, the interns are reworking lecture notes, advising on sections where the clarity might be improved and producing additional resources. These include video screencasts that illustrate step-by-step solutions to second-year mathematics problems that students find particularly difficult. In addition they are developing resources and activities to be used in peer-led problem sessions in the coming year.

## The HE STEM Programme and SYMB $\Omega$ L

The National HE STEM Programme is a £21 million, three year initiative which aims to increase and widen participation in Science, Technology, Engineering and Mathematics (STEM) and to enhance the skills and knowledge base of the workforce in these areas.

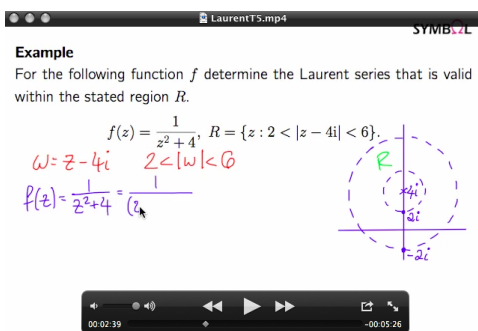
The Mathematics Education Centre, the Department of Mathematical Sciences, and the University's Teaching Centre have bid successfully to the HE STEM Programme for funding for the curriculum innovation project now known as SYMB $\Omega$ L – *Second Year Mathematics Beyond Lectures*.

The long-term goal of the project is to produce well-qualified mathematics graduates who report a positive experience of studying mathematics. This will be accomplished through innovations to the second-year experience that improve engagement, enthusiasm and satisfaction. The pedagogical changes will be within two key modules: *Vector Spaces* and *Complex Variables* delivered in 2011/12.

There is currently huge impetus in the UK higher education sector generally to improve student engagement and encourage students to become active partners in shaping their learning experience, individually, locally and nationally. The SYMB $\Omega$ L project is drawing extensively on students' ideas and aspirations, as we hope these newsletters show.

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Further details on the items in this newsletter can be found on  
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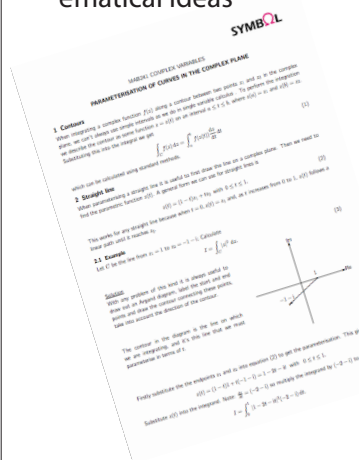
A screenshot from an intern-produced video screen-cast for the module *Complex Variables* on calculating a Laurent series.



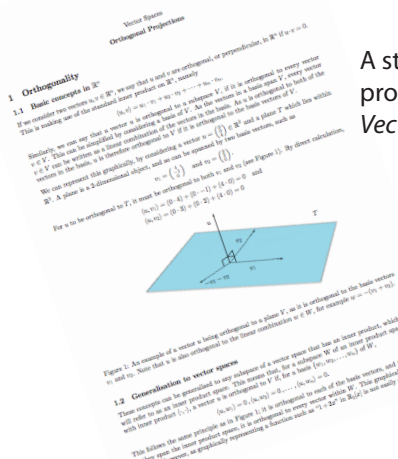
Intern John Cockcroft and Tony Kay sharing ideas at the regular afternoon get together in *Eugenie Hunsicker's Tea Rooms*.



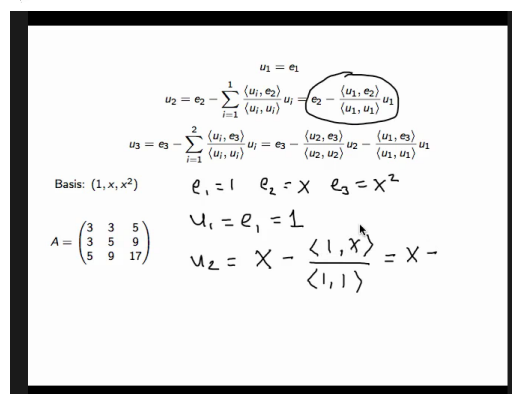
Interns exploring ways of developing activities for use in peer-led problem sessions that will get second year students talking together about mathematical ideas



A student-produced handout for *Complex Variables* on parameterisation of curves in the complex plane. These will be available on LEARN and in the Mathematics Learning Support Centre.



A student handout produced for the module *Vector Spaces*.



A screenshot from an intern-produced video screen-cast for the module *Vector Spaces*.

An important element of all HE STEM funded projects is sustainability - how the ideas developed during the project will continue to endure and enhance the student experience long after the funding has ceased. One of the aims of the SYMBOL project is to generate sufficient confidence in these developments that staff in the wider School consider introducing similar enhancements to other modules. We hope that through careful evaluation and dissemination we will be able to influence colleagues in other parts of the University and beyond, as we learn more about improving student engagement.

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