Dr Kevin Houston (University of Leeds)
The transition to thinking like a mathematician

Much of pre-university level mathematics is recipe book mathematics. Students are shown a type of problem, shown how to answer it and then given many practice opportunities before the exam. Many of the attitudes and strengths of a good mathematician are not fostered by this approach. In essence students do not think in the way that a practising mathematician would think. In this talk, I will describe my experiences in, and techniques of, attempting to move students from a mindset of "I can't answer this because you didn't show me how" to "this is what I should do to understand this". This will include my recent experiment with flipping the classroom for my first year module.

Dr Lara Alcock (Loughborough University)
Tilting the Classroom: Engaging Students in Large Lectures

There is much discussion currently about flipping the classroom or otherwise making dramatic adjustments to teaching. But for most lecturers, especially those with large classes, this is not practical. My view is that lectures are not inherently bad, and that that there are numerous ways to make them more engaging without dramatic changes. This talk will be about 18 approaches that I use - these work well together, but each can be implemented independently so they can be tried out according to personal taste. There will be lots of examples and some light-touch discussion of how this approach relates to evidence from psychological research on learning.

Dr Barrie Cooper (Exeter University)
Deconstructing assessment and feedback

With assessment and feedback, we have at our disposal two of the most powerful tools that shape student learning and over which we have significant control. Yet, while lamenting the present "consumer" culture and how our students are prepared prior to university, we remain addicted to modes and patterns of assessment that serve to compound these problems. Two key themes emerge:

1. we are often not clear enough about what we want to achieve to make good choices regarding assessment and feedback;
2. our choices alienate students from the product of their labour, breeding disaffection in respect of both the student and staff experience.

We will explore the complexity underpinning assessment and feedback, and discuss practical examples illustrating how we might do them better in light of the issues identified.
Dr Eleni Katirtzoglou (UCL)

Round Table model

The Round Table model is a comprehensive course design based on a five-step teaching and learning process. I designed this model in order to engage students to learn abstract mathematics, to teach them how to learn and how to ask questions. The teaching components of the model are delivered in a variety of ways such as lectures, and short pre-recorded videos. The teaching method is mostly based on the inductive approach where ideas are motivated with examples and graphical illustrations. This diversity in resources and methods ensures that teaching is delivered in ways that meet the diverse learning needs of the students.

One of the challenges in the delivery of mathematics courses that are proof based, is to train students to reflect on ideas, critically study proofs and eventually write short proofs. To this end, the learning is based on activities and questions, designed to equip students with research tools and methods and develop their ability to think critically. The learning activities are aligned to the course learning objectives and assessment methods and develop different levels of cognitive skills as well as soft skills such as presentation and group work. Student learning takes place during solitary individual work, as well as peer-instruction within a classroom and under the guidance of a teacher.

In this presentation I will discuss:

- The model components.
- How I implemented it in second year large undergraduate mathematics courses, as well as in a short intensive course for economics students.
- How I supported students with a weak background on the course pre-requisites.
- How the model enhances student engagement and teacher-student interaction.
- How I managed a team of teaching assistants and student expectations.

Sophie Guiry and Dr Michael Grove (University of Birmingham)

Mathematicians Supporting Mathematicians: Our Role in Teaching and Learning

For twelve years there existed an organisation designed to support those teaching mathematics, statistics and operational research within higher education with the enhancement of their teaching and learning practices. While there have been, and continue to be, many organisations with a similar mission, the Maths, Stats & OR Network was different: it was established and led by mathematicians for mathematicians; its focus was upon practical and usable advice, guidance and resources, grounded in our discipline, that colleagues could discuss (with other mathematicians) and adopt as part of their own teaching practices.

Two of the Network’s most successful activities were its support for new academic staff as they make the transition to teaching mathematics and statistics within higher education and for postgraduate students who teach or demonstrate as part of their programme of study. When the Maths, Stats & OR Network closed in 2012, much of its activity also ceased, but in part, the support for postgraduate students has continued and its influence has now extended to aiding those postgraduates who work within mathematics and statistics support. Working in mathematics support is a challenging teaching duty and there is increasing evidence, at least within some institutions, that a significant number of the students who choose to access mathematics support are in fact specialist mathematics students, many of whom are in the later years of their programmes of study.
This talk will not only provide an overview of what we have learned from providing training and support for those postgraduate students who teach and demonstrate within the mathematical sciences, but it will also share emerging findings from a current research project that explores why specialist mathematics students choose to access mathematics support. It will explore these findings in the context of how mathematical sciences departments themselves may develop their approaches to better support the specialist mathematics learner.