Mathematics

CPD activities

2017/18

Secondary, post-16 and FE

We provide all involved in the teaching of STEM subjects access to subject-specific, high-quality resources and CPD, so they can teach effectively and inspire the young people they work with.

We offer bursary support to help with associated costs of attending CPD
www.stem.org.uk/bursaries

Our online resource collection hosts thousands of free teaching materials to support your mathematics lessons.

www.stem.org.uk

NATIONAL STEM LEARNING CENTRE

STEM Learning is pleased to announce a suite of continuing professional development (CPD) to support teachers of secondary mathematics – 2017/18

Resourcing the secondary mathematics curriculum

Do your current resources prepare your students to meet the needs of the new mathematics specifications? Not got time to write new activities? Join us to discover tried and tested methods to make existing resources suitable for the demands of the new curriculum.

The STEM Learning website contains thousands of high quality mathematics resources. Experience a number of techniques which enable these free resources to be used to prepare students to meet the needs of the new GCSE mathematics specifications.

Activity fee: £80

One day course: 26 September 2017 and 20th April 2018

www.stem.org.uk/my202

Teaching the new mathematics A level

The new mathematics A level specifications require all students to study aspects of pure mathematics, statistics, and mechanics in the new linear format. In addition, three overarching themes of mathematical argument and proof, problem solving and mathematical modelling must be applied across the whole A level content. New material is included at both AS and A level. This course will explore approaches to teaching that strengthen the overarching themes, and aspects of the new content will be considered in detail.

Topics covered are problem solving, use of technology, understanding mechanics, mathematical argument and proof, large data sets, modelling using technology, distributions: Normal and Binomial. The traditional division of mathematics into separate teaching areas will also be discussed, together with the implications that the common content has for developing integrated schemes of learning

Your school will receive £1,400 ENTHUSE Award bursary funding (100% discount available)
Activity fee: £1,200

Residential period 1: 4 to 5 Oct 2017
Residential period 2: 8 to 9 Jan 2018

www.stem.org.uk/my216

How to deliver: “Extending the most able at GCSE mathematics"

A two day residential activity, run in conjunction with MEI, in which teachers will experience how to deliver the course “Extending the most able at GCSE”. The course is designed for teachers of mathematics who have, at most, limited experience in leading professional development (PD). This course will support participants in developing as a leader of PD. Participants will be expected to deliver the CPD to colleagues, preferably through their local Maths Hub.

During the activity participants will experience a series of rich tasks appropriate for use with GCSE students which extend GCSE topics, draw upon mathematics from beyond the GCSE syllabus and develop strategies for delivering the CPD activity “Extending the most able at GCSE” to teachers with no experience of teaching mathematics beyond GCSE. Across the two days a range of topics from A level mathematics: pure, mechanics and statistics are introduced, each as a development of GCSE mathematics, deepening participants’ subject knowledge and giving them the experience of effective pedagogy at this level.

Your school will receive £600 ENTHUSE Award bursary funding
Activity fee: £600

Date: 9 to 10 Oct 2017 or 19 to 20 Mar 2018

www.stem.org.uk/my217

Challenging and supporting your mathematics department (one day conference)

What should a mathematics department look like if it is to succeed in delivering the new mathematics specifications? This one day conference is designed for anyone who has a role challenging and supporting mathematics in a secondary school or college including senior leaders and heads of department.

The day will consist of three key note speakers and two workshops to choose from.

Keynote 1: what makes good maths teaching? - Dr Colin Foster
Dr Colin Foster is Assistant Professor at the Centre for Research in Mathematics Education in the School of Education at the University of Nottingham whose research interests in mathematics education focus on the learning and teaching of mathematical problem solving and the design of rich tasks and their use in the mathematics classroom.

Keynote 2: challenging and supporting your mathematics department: a view from Ofsted - Jane Jones HMI
Jane Jones, Her Majesty's Inspector, is Ofsted's National Lead for Mathematics. This role includes provision of advice to Her Majesty's Chief Inspector, Ministers, the Department for Education and other stakeholders, based on Ofsted's evidence of mathematics provision in primary and secondary schools.

Keynote 3: support available for mathematics departments from the NCETM maths hubs – Carol Knights, Director for Secondary for the NCETM Carol Knights spent 15 years teaching in Hampshire, as a Head of Department and an AST. Since 2012 Carol has worked for MEI and has responsibility for devising and managing the FMSP's KS4 Extension and Enrichment CPD programme and is now Director for Secondary at NCETM

Plus a series of workshop sessions and a publisher exhibition.

Your school will receive £100 ENTHUSE Award bursary funding
Activity fee: £80

One day course: 20 October 2017

www.stem.org.uk/my505

Using manipulatives to enhance understanding in secondary mathematics

Encourage active learning in secondary mathematics lessons with the use of manipulatives.

Manipulatives - or 'objects to think with' - include counters, interlocking cubes, Cuisenaire rods, tiles and more. Research suggests that their use is beneficial to mathematical understanding, and can help student retention, problem solving and reasoning.

This two day, residential, hands-on, practical experience is suitable for all teachers of mathematics in secondary school.

Sessions include:

- the amazing world of interlocking cubes
- a hundred and one things to do with dice and dominos
- games on geoboards
- bar modelling
- proof by origami

Your school will receive £600 ENTHUSE Award bursary funding
Activity fee: £600

Date: 9 to 10 Nov 2017 or 18 to 19 June 2018

www.stem.org.uk/my210

Building confidence as a newly qualified mathematics teacher

Participants will explore what makes good mathematics teaching by considering questioning, promoting positive behaviour, planning for learning and giving feedback that makes a difference. Participants will experience methods for developing problem solving skills, increasing progress for low attaining students, mathematics outside the classroom and activities to generate stimulating displays.

Your school will receive £1,400 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 16 to 17 Nov 2017
Residential period 2: 5 to 6 Feb 2018

www.stem.org.uk/my205

Teaching mathematics GCSE content with understanding

In this intensive residential professional development course participants explore the content of the new mathematics GCSE. Sessions include how to develop problem solving skills and resilience in the context of hard to teach topics such as trigonometry, linear graphs and proportional reasoning at foundation level and equations of circles, turning points, vectors and proof at higher level.

Your school will receive £1,200 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 23 to 24 Nov 2017
Residential period 2: 22 to 23 Feb 2018

www.stem.org.uk/my207

Effective feedback and assessing progress in mathematics without levels

In this intensive residential professional development course participants will consider the purpose of assessment, when and how assessment should take place, peer and self-assessment and what constitutes active assessment. Participants will explore questioning, what constitutes good feedback and assessment without levels.

Your school will receive £600 ENTHUSE Award bursary funding
Activity fee: £600

Residential period: 27 to 28 Nov 2017

www.stem.org.uk/my208

Mastering mathematics at key stage 3

It is important that mathematics at key stage 3 builds upon the mathematical experiences students experience at primary school. Designed for teachers of mathematics at key stage 3, explore what is meant by mastery, consider the transition between primary and secondary school and the mapping of progression through key stage 3.

Develop techniques to establish problem solving skills and resilience in the context of hard to teach topics encountered in key stage three including fractions, proportional reasoning, standard form and powers, the geometry of arithmetic and geometric sequences, exploring graphs using Geogebra, solving problems in three dimensions and Venn diagrams in probability.

Undertake a gap task and produce an action plan to embed into your teaching the skills developed in the course.

Your school will receive £1,400 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 4 to 5 Dec 2017
Residential period 2: 5 to 6 Mar 2018

www.stem.org.uk/my218

Developing shared approaches to maths in science and science in maths

There is significant overlap between science and mathematics curricula, but students' experience of shared topics is often very different in the two subjects. Are applications from science regularly used to explore concepts in maths lessons? Are the mathematical techniques that students learn in science developed with understanding?

"This has been the best CPD I have ever been on"

Past participant, 2016

This course aims to identify common content and explore ways of teaching that develop sufficient mathematical understanding whilst providing fluency in the skills required for science. The course is designed for teachers of GCSE science and teachers of GCSE maths. Experience shows that the most is gained from this course if a science teacher and a maths teacher from the same school attend together.

Your school will receive £1,400 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 11 to 12 Dec 2017
Residential period 2: 14 to 15 Mar 2018

www.stem.org.uk/my214

Advancing your secondary mathematics teaching

After establishing classroom craft in the early years of your career, do you feel ready to explore new challenges and take your teaching in new directions?
Consider recent research in mathematics education and explore case studies of innovative practice to improve current and future practice. Put your ideas into practice in the form of action research, reflecting and sharing through an online community, before meeting again to review progress and celebrate the success of your project.

Your school will receive £1,200 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 15 to 16 Jan 2018
Residential period 2: 16 to 17 Apr 2018

www.stem.org.uk/my211

Teaching assistants in secondary mathematics

Discover ways of working that support students' progress in mathematics, and also develop your knowledge of both mathematics content and pedagogy. Explore:

- proportional reasoning
- fractions, decimals and percentages: making the links
- algebra with understanding
- progression in calculation

Your school will receive £1,200 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 22 to 23 Jan 2018
Residential period 2: 8 to 9 May 2018

www.stem.org.uk/my212

New and aspiring leaders of mathematics

"The course has been brilliant. I have been able to identify the root of my frustrations and identify my own strengths and weaknesses, as well as reflect on others within my department. In doing this I will now be able to return and move forward in a positive and motivational way. Leading others and the department to further success." Past participant

We are pleased to be offering another round of our New and aspiring leaders of mathematics programme for teachers looking to lead a mathematics department in secondary schools. This intensive two part residential professional development course has been developed for teachers new or aspiring to lead a mathematics department in secondary schools and will equip you with the knowledge and skills you need to run a successful department.

Your school will receive £2,100 ENTHUSE Award bursary funding
Activity fee: £1,800

Residential period 1: 29 to 31 Jan 2018
Residential period 2: 20 to 22 June 2018

www.stem.org.uk/my200

Building confidence as a non-specialist secondary mathematics teacher

Perfect for teachers of mathematics who aren't specialists, increase your skills and knowledge of the subject and become more confident in your teaching of mathematics.

Do you want to feel more inspired and confident? Want to increase your knowledge and skills when teaching mathematics even though mathematics is not your specialism? Explore the characteristics of good mathematics teaching and develop strategies that promote good learning and deeper understanding. Develop strategies to teach algebra for understanding, build ratio and proportion on a firm foundation of multiplicative reasoning, use manipulatives and multiple representations, and approaches to problem solving.

Your school will receive £1,400 ENTHUSE Award bursary funding
Activity fee: £1,200

Residential period 1: 26 to 27 Feb 2018
Residential period 2: 11 to 12 June 2018

www.stem.org.uk/my213

Teaching GCSE mathematics post-16 in a year

Do you want to offer something different for students required to take GCSE mathematics post-16? This two day residential course, run in conjunction with MEI, is designed for mathematics teachers, in schools or colleges, faced with the challenge of inspiring young people who are yet to achieve the required grade.

Explore the requirements of the new curriculum such as problem solving, justification, reasoning and proof. Different ways of teaching and learning which is more suited to GCSE resit students are examined, look at adapting and contextualising existing resources, as well as how to restructure your scheme of work.

Your school will receive £600 ENTHUSE Award bursary funding
Activity fee: £600

Residential period: 2 to 3 July 2018

www.stem.org.uk/my504

Teaching for deep understanding in A level mathematics

Are you a teacher of A level mathematics who wishes to reflect on their A level teaching in preparation for the new curriculum? Explore subject pedagogical knowledge in order to develop confidence to teach for understanding and engagement. Discuss the impact of previous professional development and reflect on the effectiveness of pedagogical strategies in the mathematics classroom. Work with other teachers to develop and present effective approaches to the introduction of key ideas in A level mathematics. The advantages of using technology to enrich your teaching will also be explored. In addition you will be introduced to the overarching themes for the new specifications and the changes to applied maths.

Your school will receive £600 ENTHUSE Award bursary funding
Activity fee: £600

Residential period: 16 to 18 July 2018

www.stem.org.uk/my501

New to teaching A level mathematics summer school

Our highly acclaimed annual four day summer school, run in conjunction with MEI and the University of Sheffield, is designed for teachers who have little, or no, experience of teaching A level mathematics. Develop pedagogical knowledge in order to improve teaching skills, thus giving the confidence to teach for understanding and engagement, rather than 'teaching to the test'. Experience a range of teaching techniques delivered through 12 sessions: eight featuring topics from pure mathematics, two from mechanics and two from statistics. Also, plan and deliver a team taught twenty minute lesson.

Designed for teachers who are:

- New to teaching, eg. have no more than three years teaching experience. Ideal for teachers who have just completed their initial teacher training programme and are about to take up their first post

Or

- more experienced teachers of mathematics who are new to teaching A level

Your school will receive £1200 ENTHUSE Award bursary funding
Activity fee: £1200

Residential period: 20 to 23 Aug 2018

www.stem.org.uk/my500