



**Science**  
LEARNING CENTRES

# Radiation Protection Supervisor Training

## A One-day Course for Teachers

- **Thursday 24 April 2008, University of Nottingham, 9.30am-4pm**

This one-day course delivered by **CLEAPSS** will support practical work involving radioactive substances by providing guidance on their safe storage, handling and use.

The day is designed for the school or college Radiation Protection Supervisor (RPS); the designated person responsible for the safe storage, use and monitoring of radioactive sources within the science department. The RPS will normally be a member of the teaching staff and is often the Head of Physics; however, the day will also be of benefit to any teacher who uses radioactive sources in their teaching.

Throughout the day there will be the opportunity to ask questions and raise issues. The day will cover:

- Legislation and DCSF guidance
- Nuclear physics, radioactivity and radiation – teaching and resources
- Storage of radioactive substances
- Using radioactive sources to demonstrate the properties of ionising radiations
- Doses and biological effects of ionising radiations
- Radiological protection and its management
- Responsibilities of the RPS, including the Local Rules
- Different types of radioactive sources and their care (including preparing sources for half-life investigations)
- Monitoring and record keeping
- Disposal of radioactive sources

The day will also include a number of practical demonstrations.

*"Very enjoyable course, not too long but all inclusive. Tutor very friendly and approachable."*

*King Edward VII School, Leicestershire*

## How to book

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- 1 telephone us on 0116 252 3771 or
- 2 complete and return the form below

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If you need further information, please contact us on:

• Tel: 0116 252 3771 • Fax: 0116 252 5772 • E-mail: [slcem@le.ac.uk](mailto:slcem@le.ac.uk)

Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Radiation Protection Supervisor Training - A One-day Course for Teachers	Nottingham	24/04/08	£100	.....	£85	.....

\* Subsidised fees are applicable for all maintained schools in England.

## Invoice details: (Please use CAPITALS)

Invoice contact name .....

Delegate name(s) .....

Delegate email(s) .....

School/College.....

Address .....

.....Postcode.....

Telephone .....Date .....

## Please return to:

Science Learning Centre East Midlands, University of Leicester, School of Education, 21 University Road, Leicester LE1 7RF

## 50% Discount

If you attend 4 of our courses in an academic year you can have 50% off your next course! Contact us for further details.



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## Full or Subsidised fee?

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[www.le.ac.uk/slcem](http://www.le.ac.uk/slcem)



**Science**  
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# Physics for Non-Specialists

- **Tuesday 20 May 2008 & Wednesday 21 May 2008, University of Leicester, 10am-4pm**

This course responds to frequent requests from teachers with limited specialist knowledge in physics who wish to increase their confidence and pedagogical skills. Run over 2 days the course will comprise a series of practical workshops addressing the teaching of some fundamental concepts in physics including:

- forces
- energy
- waves
- electricity
- optics
- electromagnetism

The aim of this course is to provide teachers with the confidence to enable them to effectively teach physics at Key Stages 3 and 4.

The course has been designed and will be led by **Laurence Rogers** an experienced physics teacher and lecturer.

Throughout both days there will be lots of hands-on practical activity, providing ideas for both demonstrations and class practicals. This will also include appropriate applications of ICT, chosen to amplify understanding as well as plenty of opportunity for discussion of concepts and teaching techniques.

In addition, common pupil misconceptions will be explored, together with models to address misunderstanding.

Delegates are also invited to submit topics or particular queries for inclusion in the day beforehand via email ([slcem@le.ac.uk](mailto:slcem@le.ac.uk)).

The Science Learning Centre East Midlands can organise overnight accommodation, at an additional cost, for delegates should they wish.

## How to book

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Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Physics for Non-Specialists	Leicester	20/05/08 & 21/05/08	£265	.....	£200	.....

\* Subsidised fees are applicable for all maintained schools in England.

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Delegate email(s) .....

School/College .....

Address .....

.....Postcode.....

Telephone .....Date.....

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[www.le.ac.uk/slcem](http://www.le.ac.uk/slcem)



# Clone that gene!

## A 2 Day Gene Technology Course for Post 16 Teachers & Technicians

- **Wednesday 11 June 2008, 10am-5.30pm & Thursday 12 June 2008, 9.15am-5pm, University of Leicester**

New drug discovery, gene therapy and genetically modified food, to name a few, are all based on recombinant DNA technologies or 'gene cloning'. These new technologies and their applications are often misunderstood by society.

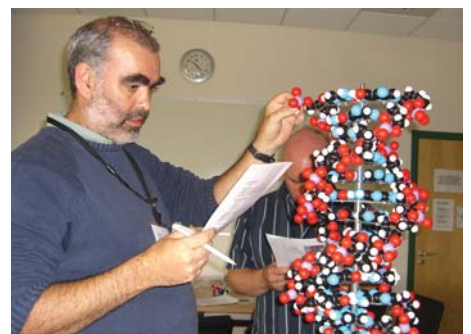
This new and exciting **two day residential course** is focussed on the practical aspects of DNA recombinant technologies and has been designed by **GENIE** - the Centre for Excellence in Teaching and Learning (CETL) in Genetics, based at the University of Leicester - in collaboration with the **Science Learning Centre East Midlands**.

The Department of Genetics at the University of Leicester is renowned for its pioneering research and excellence in teaching and learning. It is also widely known as the 'birthplace' of DNA fingerprinting discovered by Professor Sir Alec Jeffreys.

The course has been specially designed for teachers and technicians involved in the teaching and support of post 16 biology who wish to acquired practical experience of 'gene cloning', working alongside colleagues who are at the forefront of genetic research.

Aspects of gene technology can be found in all the post 16 specifications and this course will offer delegates the opportunity to see, and participate in, at first hand, the stages involved in these technologies and how they can be used.

The cost of the course includes **all** materials, refreshments throughout both days and one nights' accommodation. It is hoped that all delegates will attend a course dinner at the end of the first day.



Students & teachers at GENIE





Building on the synergy between world-class science and genetics education, the GENIE CETL is leading the development of innovative approaches in and resources for genetics teaching and learning, not only for the Higher Education sector, but also for schools and colleges, healthcare professionals and the general public.

Central to this is the Virtual Genetics Education Centre ([www.le.ac.uk/genetics/genie/vgec](http://www.le.ac.uk/genetics/genie/vgec)), an expanding web-based collection of evaluated resources and cross-references. The GENIE CETL was also awarded funding for the complete refurbishment of a number of teaching laboratories, as well as the establishment of two GENIE outreach laboratories, where this new CPD course will be held.

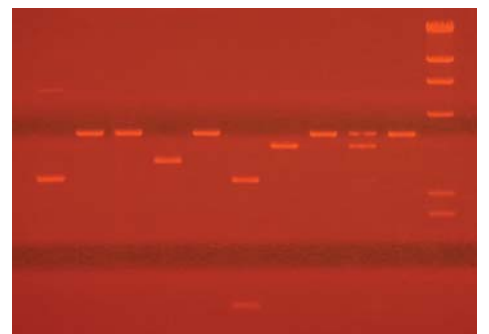
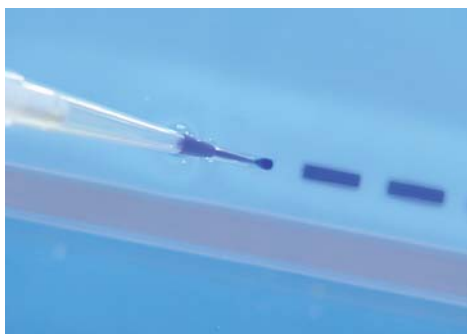
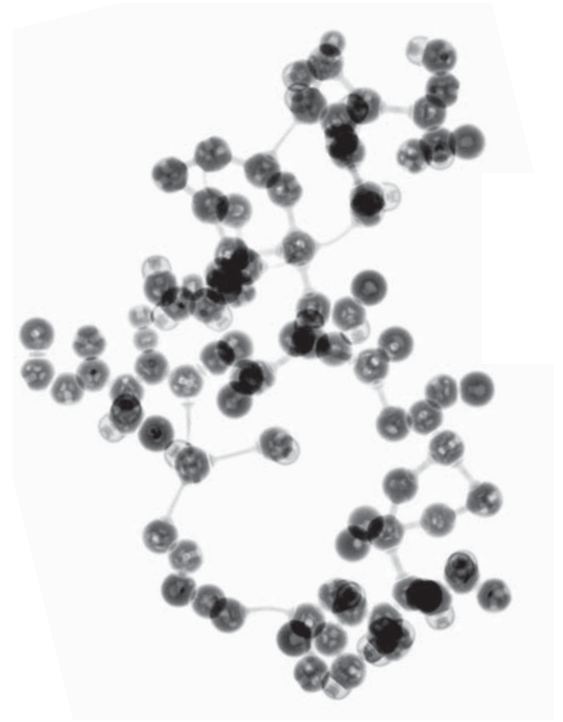
The aim of the course is to allow teachers and technicians to:

- Become aware of the techniques used in cutting edge genetic research
- Practice techniques in a safe, controlled environment
- Be aware of the health & safety regulations
- Become confident in carrying out the techniques so they can be replicated in school/college
- Receive more up to date information than current textbooks on gene technology

The two days will be spent performing a series of practical experimental techniques used by researchers to clone and insert genes into plasmids and then testing to see if their practice has been successful. The techniques covered will include:

- Ligation
- Manipulation of live bacteria
- Selection of clones
- Plasmid extraction
- Restriction digestion
- Gel electrophoresis

In addition to the practical elements there will be a presentation on the ethics of cloning, advice on experimental planning and regulation, as well as plenty of opportunities to ask questions throughout both days. There will also be a session concentrating on transferring what has been learnt into a school/college environment. All delegates will receive complete and thorough protocols for replication of the techniques in school or college.



# Programme

## Day 1: Wednesday 11 June 2008

- 10.00am Registration & refreshments
- 10.30am Introduction to laboratory safety, planning and cloning regulation for schools/colleges
- 11.00am Protocols overview
- 11.30am Practical session: Principles of ligation  
Ligation of insert into recipient plasmid
- 12.30pm Lunch
- 1.30pm Practical session: Principle of *E.coli* transformation  
Transformation with products of ligation
- 3.30pm Practical session: Manipulation of live bacteria and disposal of biological waste  
Health & safety: Do's and Don'ts!  
Practical session: Petri dish inoculation
- 4.30pm Presentation: 'Ethics of cloning'
- 5.30pm Day ends

Those delegates staying overnight then travel to accommodation.

- 7.00pm Evening meal

## Day 2: Thursday 12 June 2008

- 9.15am Registration
- 9.30am Practical session: Blue/White screening principle
- 10.00am Practical session: Plasmid extraction  
Principles of extraction; how the column works
- 10.45am Morning coffee (with opportunities for questions & answers)
- 11.15am Practical session: Restriction digests of extracted plasmids  
Principle of digestions including restriction endonucleases
- 12.00pm Transferring protocols to the classroom
- 1.00pm Lunch
- 1.45pm Principles of gel electrophoresis (video)  
Practical session: Gel preparation & loading
- 2.45pm Practical session: Gel electrophoresis
- 4.15pm Results analysis  
Q & A session, evaluation
- 5.00pm Day ends



# Science Learning Centre East Midlands Course booking form

Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Clone that gene!	Leicester	11/06/08 & 12/06/08	£250	.....	£185	.....

\* Subsidised fees are applicable for all maintained schools in England.

## How to book

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To make a booking:

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- 2 complete and return the form below

On receipt of your form we will confirm your booking and issue a pro forma invoice. Payment is required before the date of the course. We make reserve the right to make a cancellation charge of £20 for any booking cancelled less than a week before the date of the course. The full fee is payable if you do not cancel your booking and do not attend the course. We also reserve the right to amend course programmes where circumstances dictate.

## Invoice details: (Please use CAPITALS)

Invoice contact name .....

Delegate name(s).....

Delegate email(s).....

School/College .....

Address .....

.....Postcode .....

Telephone .....Date .....

Accommodation required (included) Yes  No  (please tick)

Delegate will attend evening meal (included) Yes  No  (please tick)

## Please return to:

Science Learning Centre East Midlands, University of Leicester, School of Education, 21 University Road, Leicester LE1 7RF

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[www.le.ac.uk/slcm](http://www.le.ac.uk/slcm)





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# Basic Practical Microbiology for Secondary Schools

- **Wednesday 11 June 2008, University of Leicester, 9am-5pm**

This accredited, comprehensive, one day course for secondary teachers and their technicians will provide basic training in the techniques needed to carry out interesting microbiology investigations safely in school or college. The course is suitable for both complete beginners and those wishing to 'brush up' their practical microbiology skills.

The course will be led by **Dr John Grainger**, Chairman of MISAC and **Dr John Schollar** from the National Centre for Biotechnology Education. The Society for General Microbiology also aims to give delegates the opportunity to keep up-to-date with current issues and research in microbiology, within the context of the National Curriculum and examining body specifications.

The day will be comprised of a number of short presentations and plenty of hands-on activities. Safety in all aspects of microbiology practice will be emphasised throughout the day. The course will conclude with a short answer theory test of 20 questions and a practical examination, in order to gain accreditation (from the Society for General Microbiology). In addition to course materials that accompany the activities, each delegate will receive a set of factsheets and Microbiology for Secondary Schools - a set of 21 investigations for use back in school or college.

The day will cover a range of microbiological techniques and processes including:

- An introduction to microbiology, aseptic technique and safety
- Preparation: risk assessment and good microbiological laboratory practice
- Resources: equipment, apparatus and materials
- Media, equipment and sterilisation
- Basic practical techniques
- Microbiology in action:
  - Testing sensitivity to antibacterial substances
  - Staining bacteria and yeasts
- Examination for certification
  - Theory examination
  - Practical examination (preparing a streak plate; transferring culture from tube to tube by loop; transferring measured volume of sterile solution from bottle to bottle by pipette)

*"Expectations exceeded!  
Excellent blend of practical  
techniques and theory. Easily  
the best in service training I  
have been on."  
Northampton College*

The Science Learning Centre East Midlands is pleased to announce that the SGM will be supporting this course further by offering £100 towards supply cover costs for all teachers completing the course and achieving the standard required in the examination. In addition, should delegates' schools be members of SGM the course cost will be discounted by a further £10.

## How to book

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Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Basic Practical Microbiology for Secondary Schools	Leicester	11/06/08	£65	.....	£45	.....

\* Subsidised fees are applicable for all maintained schools in England.

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Delegate email(s) .....

School/College .....

Address .....

.....Postcode.....

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# Advanced Practical Microbiology for Secondary Schools

## Measuring Microbial Growth

- **Thursday 12 June 2008, University of Leicester, 9am-5pm**

Many practical microbiology investigations in schools and colleges involve an assessment of microbial growth. However, there are several different approaches to measuring growth and it is of vital importance to choose one that is appropriate for a particular activity.

This accredited (by the Society for General Microbiology), one-day, practical based course for secondary teachers and their technicians will deal with a variety of suitable methods. Delegates must be competent in basic microbiological techniques through having completed an appropriate training course.

The course will be led by **Dr John Grainger**, Chairman of MISAC and **Dr John Schollar** from the National Centre for Biotechnology Education. The Society for General Microbiology (SGM) also aims to give delegates the opportunity to keep up-to-date with current issues and research in microbiology, within the context of the National Curriculum and examination body specifications.

There will be an emphasis throughout the day on hands-on activities in the context of investigations relevant to the curriculum, e.g. food production and preservation, with careful attention to safety issues. The methods used will include:

- turbidity measurement
- acid production
- colony counts
- microscopical procedures.

The use of data loggers and generation of data for statistical analysis will also be considered.

The Science Learning Centre East Midlands is pleased to announce that the SGM will be supporting this course further by offering £100 towards supply cover costs for all teachers completing the course and achieving the required standard. In addition, should delegates' schools be members of SGM the course cost will be discounted by a further £10.

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Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Advanced Practical Microbiology for Secondary Schools	Leicester	12/06/08	£65	.....	£45	.....

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Delegate email(s) .....

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# Science in the News

## Bridging the Gap Between Classroom Curriculum & the Real World

- **Tuesday 24 June 2008, University of Leicester, 10am-4pm**

Everyday newspapers report science stories in an interesting and varied way. In doing so they provide colleagues in school or college with freely available articles that can be used to engage students with science and in doing so help to bridge the gap between classroom curriculum and science in the real world.

'Science Newswise' is the outcome of a major project funded by the Wellcome Trust developed at Queen's University, Belfast. The guide aims to show how newspaper articles can be used in school to teach about key aspects of science; its content, methods of inquiry and links to everyday life as well as exploring how science is presented in the media.

This new and exciting course, based upon the 'Science Newswise' material, will help delegates develop a curriculum to aid their KS3 and KS4 students understand and respond critically to media reports of issues with a scientific component. The day will have particular relevance to the new GCSE coursework element: 'Science in the News'.

Designed and led by [Sarah Golley](#) from [Campion School](#), Northamptonshire, the day will provide delegates with approaches and activities that encourage students to deconstruct and critically examine newspaper articles. The day will also demonstrate how newspapers can be used to enrich and enliven teaching and learning. In addition, each delegate will receive a free copy of the 'Science Newswise' resources.

*"Impressed - very informative. Best one so far!"*  
*Dukeries College, Nottinghamshire*

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Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
'Living textbooks' & Science in the News	Leicester	24/06/08	£225	.....	£125	.....

\* Subsidised fees are applicable for all maintained schools in England.

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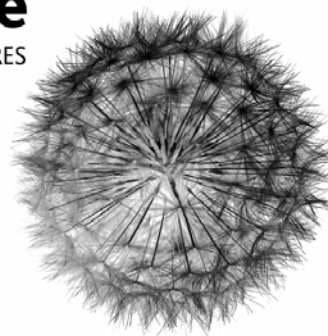
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## Learning Skills for Science at Key Stages 4 & 5

- **Wednesday 25 June 2008, 1pm-4.30pm, University of Leicester**

This afternoon session is an opportunity to learn about and explore the resources produced for the Learning Skills for Science (LSS) programme which has been designed to help students develop skills in:

- Information retrieval
- Listening and observing
- Scientific reading
- Data representation
- Scientific writing
- Knowledge presentation

LSS was developed by the Science Enhancement Programme (SEP) in collaboration with the Weizmann Institute in Israel and Nuffield Curriculum Centre. It has produced resources for use at both Key Stage 4 and Key Stage 5 that integrate learning skills into the delivery of scientific content.

The resources contain flexible tasks suitable for different levels of students and a variety of learning styles. The materials are currently being piloted in a number of schools across the country. Participating teachers at KS4 report that the LSS programme is particularly helpful for students preparing for *Twenty First Century Science* and other new GCSE specifications as it develops students' ability to engage in inquiry activities and independent learning.

The KS5 resources are relevant to A level Physics, Chemistry, Biology, Applied Science and Science in Society.

This event is **FREE** but limited to 20 places. Please respond quickly if you would like to attend.

### **How to book:**

Please book by email if you or a colleague wish to attend.

**Contact:** Keith Shaw at [keith@keithshaw.co.uk](mailto:keith@keithshaw.co.uk)

**Telephone:** 0114 235 6007

***Please note that the Science Learning Centre East Midlands will be organising a one-day course on using LSS in KS3/4 on Tuesday 30 June 2009. The above event would be an excellent introduction to LSS for the longer course next year.***



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# Chemistry for the KS4 Non-Specialist

A four day course, all days taking place at John Cleveland College, Hinckley. The first day will start at 9.15am and finish around 4.30pm. (Timings on subsequent days will be similar.)

- **Monday 30 June 2008 & Tuesday 1 July 2008**

**(Days 3 and 4 will be in the autumn and spring terms and will be advised.)**

This new and exciting suite of courses is designed to support science teachers who are not chemistry specialists. The course aims to raise the confidence and expertise in teaching chemistry among non-specialist science teachers. The high quality training programme is designed and managed by the Royal Society of Chemistry (RSC) with sponsorship from GlaxoSmithKline and funding from the DCFS.

The course comprises four days and takes place over 3 terms. The first two days of the course are residential and are followed by 2 one-day courses. The course will be delivered by an experienced chemistry trainer trained by the RSC.

The courses will cover the key concepts in chemistry at KS4 and provide delegates with hands-on experience of student practical work and teacher demonstrations. The course will endeavour to help delegates develop the knowledge, skills and understanding to enable them to convey the excitement and relevance of chemistry in their teaching by:

- Gaining confidence in using relevant & interesting practical experiments & demonstrations
- Developing an understanding of student (and teacher) misconceptions
- Managing health & safety issues to allow the teaching of exciting but safe practical chemistry
- Exemplifying key ideas within contemporary contexts
- The effective use of models
- Making the learning fun and enjoyable for all!

The course will be supported by animations, videos and other RSC resources together with a comprehensive course handbook and ongoing support provided by the course trainer including direct email facilities and access to a dedicated discussion website. In addition, the course will be RSC certified.

The total charge for the course includes attendance for **ALL** four days, accommodation for the two-day residential, all refreshments, course materials and access to the support facilities offered.

## How to book

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We will then confirm your booking and issue a pro forma invoice. Payment is required before the date of the course. We reserve the right to make a cancellation charge of £20 for any booking cancelled less than a week before the date of the course. The full fee is payable if you do not cancel your booking and do not attend the course. We also reserve the right to amend the course programmes where circumstances dictate.

If you need further information, please contact us on:

• Tel: 0116 252 3771 • Fax: 0116 252 5772 • E-mail: [slcem@le.ac.uk](mailto:slcem@le.ac.uk)

Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Chemistry for the KS4 Non-Specialist	Hinckley	30/06/08 & 01/07/08	£120	.....	£120	.....

\* Subsidised fees are applicable for all maintained schools in England.

Delegate(s) requires accommodation? Yes  No  (please tick)

Delegate(s) will attend evening dinner? Yes  No  (please tick)

## Invoice details:

Invoice contact name .....

Delegate name(s) .....

Delegate(s) email(s) .....

School/College .....

Address .....

.....Postcode.....

Telephone .....Date .....

## Please return to:

Science Learning Centre East Midlands, University of Leicester,  
School of Education, 21 University Road, Leicester LE1 7RF



**Science**  
LEARNING CENTRES



The national network of Science Learning Centres is a joint initiative by the Department for Children, Schools and Families and the Wellcome Trust. Science Learning Centre East Midlands is run by a consortium of the University of Leicester, the University of Nottingham and Bishop Grosseteste University College Lincoln.

[www.le.ac.uk/slcem](http://www.le.ac.uk/slcem)



## **AstroProjects**

### **Astronomy & Space for Gifted & Talented Students**

- **Friday 4 July 2008, 10am-4pm, University of Leicester**

**AstroProjects** is a new educational resource which aims to use astronomy and space to stimulate an interest in science, technology and mathematics. It has been developed by **Dr Richard Beare** from the University of Warwick with funding from the Science and Technology Facilities Council (STFC).

This exciting one-day workshop, led by Richard, has been designed for teachers who will be able to bring with them up to 2 students, from year 9 and above, to participate in the day. Delegates will have the opportunity to work with students in carrying out a number of **AstroProjects**, enabling them to gain a deeper insight into the pedagogic as well as scientific aspects of the projects.

**AstroProjects** was originally designed for gifted and talented students although there are activities at a range of different levels of challenge. **AstroProjects** is therefore also suitable for keen students of different ages and abilities, not just those officially designated 'G&T'.

The projects aim to involve students in realistic and genuine science at a level which is appropriate, giving choices as to what to investigate and how to do so. They will also stimulate students scientific thinking and give them the opportunity to experience the thrill of scientific discovery.

Another key aim of **AstroProjects** is to encourage students to collaborate scientifically with others in the UK and around the world by using the internet and course management software, Moodle. This allows them to upload their own images, data and measurements, and discuss ideas with each other in forums and chat rooms.

During the day delegates and students will carry out two of the projects:

- ***Galaxy Challenge***  
Explores the various types of galaxy and challenges students to make a 'galaxy calendar' using a ready-prepared template.
- ***Celestial Treasure Hunt***  
This project allows students to explore a small patch of sky chosen at random from a thin strip running through the North Galactic Pole (the direction directly 'above' the centre of our Milky Way galaxy). Students then have to find out how many stars and galaxies of different brightness there are, and by sharing their data with others they can investigate a number of other questions, e.g. whether the numbers of stars and galaxies varies depending on the direction of the telescope.

## Science Learning Centre East Midlands Secondary Course Booking Form

Title	Venue	Date	Full fee	No. required	Sub. Fee*	No. required
AstroProjects	Leicester	04/07/08	£110	_____	£95	_____

\* Subsidised fees are applicable for all maintained schools in England.

### How to Book

All our courses are available on a first come first served basis. The fee for a whole day course covers a buffet lunch and refreshments throughout the day plus all course materials. To make a booking either:

- 1 telephone us on 0116 252 3771; or
- 2 complete and return this booking form

On receipt of your form we will confirm your booking and issue a pro forma invoice. Payment is required before the date of the course. We make reserve the right to make a cancellation charge of £20 for any booking cancelled less than a week before the date of the course. The full fee is payable if you do not cancel your booking and do not attend the course. We also reserve the right to amend course programmes where circumstances dictate.

### Invoice details: (Please use CAPITALS)

Invoice contact name \_\_\_\_\_

Delegate name(s) \_\_\_\_\_

Delegate(s) email \_\_\_\_\_

School \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_ Postcode \_\_\_\_\_

Telephone \_\_\_\_\_ Date \_\_\_\_\_



**Please return to:**  
Science Learning Centre East Midlands  
University of Leicester  
School of Education  
21 University Road  
Leicester LE1 7RF

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[www.le.ac.uk/slcm](http://www.le.ac.uk/slcm)