

# Senior Technicians Course

## An Introduction to the Role of the Senior School Laboratory Technician

- **Wednesday 3 November 2004, 9.45am-4pm**

The day will be led by Mike Bell and will include input from practising technicians and the Head of Science at John Cleveland College, Hinckley. The day will include:

### Role & Responsibilities of Senior Technicians

This first session will give delegates the opportunity to share their experiences and brainstorm the key responsibilities and competencies required in the core of the senior technicians' job. There will be additional perspectives from a Head of Science.

### Skills & Competencies

Delegates will be encouraged to identify their needs related to competencies in microbiology, chemistry and physics. These needs analyses will lead to the development of a personal training plan to inform future sessions.

### Development of Management Skills I

Science departments are large and involve working with a wide range of people. This session will give advice on working in a team and communication skills.

### Development of Management Skills II

Prioritising, negotiation and delegation skills are important in a busy school laboratory environment. This session will focus on these skills.

### Health & Safety: Identifying Issues and Discussion of Management Strategies.

### Performance Management

Linking back to individual needs analysis and looking forward.

## Chemistry & the Senior School Laboratory Technician

- **Wednesday 10 November 2004, 9.45am-4.15pm**

The course will be led by Paul Kay and will include:

### Setting up vacuum filtration via water based reduced pressure pumps

The issues regarding the types of tubing required will be discussed for this Buchner set up.

### Burettes & Pipettes

This session will cover questions such as: what different types of burette volumes are available? What types of interchangeable tap are there? How do you set them up? Pipette fillers including the various types for use with standard volumetric experiments plus disposable varieties will also be discussed.

### Organic Chemistry

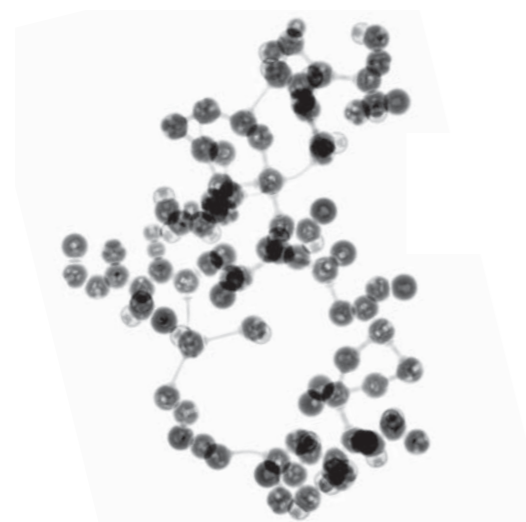
Quickfit apparatus and how to assemble typical preparation systems such as reflux and distillation arrangements will be considered in this session. Melting point apparatus to measure the purity of organic solids and including the sealing and filling of fine capillary tubes will be covered.

### Water baths, Meters & Probes

This session includes the use of water baths, including spheres to reduce evaporation and aquasan sterilisation tablets; the setting up and calibration of pH meters using standard buffer solutions; using data logging probes and advice on ways to use them to measure temperature, conductivity, pH, light adsorption and electrolytic current.

### Molecular Models

Using model building systems to make a range of solids, allotropes, ionic lattices and complex organic molecules will be addressed in this session.



### Preparation of Solutions & an Old Chestnut!

This session includes how technicians work out how to make 100ml of 2M NaCl and using a kipp's apparatus that can give an immediate supply of CO<sub>2</sub>, O<sub>2</sub> and H<sub>2</sub>.

## Physics & the Senior School Laboratory Technician

- **Friday 19 November 2004, 9.45am-4.15pm**

The course will be led by Keith Munnings and will include:

### Introduction and Supporting Physics Subject Knowledge

This tutor led session will cover the key concepts in school physics. It will outline the topics that are taught to Key Stage 4 and what skills technicians need to support them including electricity, forces, waves and radiation.

### Practical Physics – Key Demonstrations

Delegates will consider demonstrations associated with the first session. This will include setting up a Van de Graaf Generator, electrical circuits to measure resistance, power lines, using a CRO (microphone, signal generator), ticker timers, setting up a GM tube, demonstrating Half Life, demonstrating motor and generator effects.

### Hands-on Practical Activities

This session will include a number of practical, hands-on activities including setting up an electrical circuit to measure resistance, using a soldering iron to solder components, step up/down voltages/current measured on a Power Lines model, using a CRO with a microphone and signal generator to measure PD and frequency, setting up a ticker timer to find the acceleration of a trolley down a slope, locating the position of an image in a plane mirror using search pins, measuring critical angle and showing internal reflection, detecting radiation from a smoke alarm, measuring Half Life, as well as showing the motor and generator effect, model motor and model generator.

### Discussion

Issues concerning technician's work including the support role of Classroom Assistants, ongoing professional development and enhancing subject knowledge will also be covered.

## Microbiology, Biotechnology & the Senior School Laboratory Technician

- **Thursday 25 November 2004, 9.45am-4pm**

The course will be led by Malcolm Ingram and will include:

### Introduction to Handling Microbes Safely

This first session will give delegates an overview of aseptic technique.

### Choosing Microbes

In this session a range of microbes will be described and advice given on how best to use them.

### Making Sterile Media

### Inoculating Plates

### Preparation & Incubation

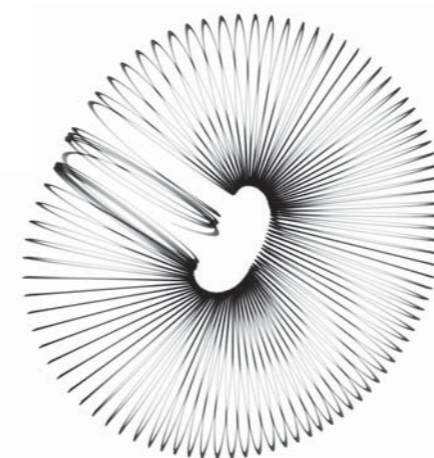
This session will cover the use of autoclaves and microwave ovens for sterilization and preparation as well as the conditions required for the incubation of different organisms.

### Using Microbes in Investigations

Preparation, timing and organisation for a range of investigations will be considered.

### Safety Issues

Finally, the day will consider how to dispose of cultures and contaminated materials in a safe manner.



The national network of Science Learning Centres is a joint initiative by the Department for Education & Skills 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 College.

[www.sciencelearningcentres.org.uk/em](http://www.sciencelearningcentres.org.uk/em)

# Science

LEARNING CENTRES



# Courses for Science Technicians

### Inexperienced technicians:

- **Tuesday 2 November 2004, University of Leicester, 9.45am-4pm**
- **Thursday 11 November 2004, University of Leicester, 9.45am-4.15pm**
- **Wednesday 24 November 2004, University of Leicester, 9.45am-4pm**
- **Tuesday 30 November 2004, University of Leicester, 9.45am-4pm**

### Senior technicians:

- **Wednesday 3 November 2004, University of Leicester, 9.45am-4pm**
- **Wednesday 10 November 2004, University of Leicester, 9.45am-4.15pm**
- **Friday 19 November 2004, University of Leicester, 9.45am-4.15pm**
- **Thursday 25 November 2004, University of Leicester, 9.45am-4pm**

This is an exciting and new series of days for the continued professional development of school laboratory technicians, which has been designed in conjunction with [ASE Inset Services](#) and practising technicians. The days will provide hands-on experience, as well as identifying and supporting the specific needs of those attending.

There are two courses, one for those who are inexperienced or 'new to the job' and another for more experienced and senior technicians. Each course has the same pattern: an introductory day followed by three days dedicated to issues in biology, chemistry and physics. Ideally delegates would attend all 4 days but there is the option to choose subject days that match particular needs. (Please contact us for details). An integral part of each course is a needs analysis exercise, which will lead to the development of a personal training plan and inform future sessions.

The days will be led by a team of skilled course presenters, who have relevant and recent school science experience. In addition, there will be input from [senior technicians](#) and [Ruth Richards](#), Head of Science from John Cleveland College, Hinckley. The workshops will be presented by Mike Bell, Lynn Moon, Keith Munnings, Malcolm Ingram and Paul Kay from ASE Inset Services.

[Mike Bell](#) has vast experience as a teacher of science and subject leader for over 20 years, including working closely with technician support. An examiner, moderator and Key Skills Adviser, Mike is an experienced technician course provider for ASE Inset Services.

[Lynn Moon](#) is a highly experienced technician who has worked in a variety of settings. She was instrumental in starting the ASE West Midlands Regional Technician's Committee and has been a member of the National Technician's Committee for a number of years.

[Keith Munnings](#) has extensive experience in science education as a teacher, tutor, examiner, consultant and course provider for ASE Inset Services.

[Malcolm Ingram](#) taught for 30 years and now divides his time between training teachers and technicians on a variety of practical based courses.

[Paul Kay](#) is an experienced teacher of chemistry and examiner. He has been a head of faculty and a member of the senior management team.

Apart from the introductory days, each course will be very hands-on and practical. Delegates are therefore asked to bring with them a laboratory coat for these sessions.



## Inexperienced Technicians' Course

### An Introduction to the Role of the School Laboratory Technician

- **Tuesday 2 November 2004, 9.45am-4pm**

The course will be led by Mike Bell and will include input from practising technicians and the Head of Science at John Cleveland College, Hinckley. The day will include:

#### Role & Responsibilities

This first session will give delegates the opportunity to share their experiences to date and reflect upon the key responsibilities and competencies required in the core of a technicians job. There will be additional perspectives from Ruth Richards, Head of Science and Senior technicians from John Cleveland College, Hinckley.

#### Skills & Competencies

Delegates will be encouraged to identify their needs related to competencies in the three scientific disciplines: biology chemistry and physics. These needs analyses will lead to the development of a personal training plan to inform future sessions.

#### Management of Self

Science departments are large and involve working with a wide range of people. This session will give advice on working in a team and time management.

#### Development of Management Skills

Organisational and prioritising skills are paramount in a busy school laboratory environment. This session will cover the important daily routines and weekly planning that are important to ensure the smooth running of the department.

#### Health & Safety: Risk Assessments

#### Performance Management

The final session of the day will link back to individual needs analysis and look forward to future sessions.

Advice on further professional accreditation (NVQ, Btech or Foundation degree) will be given.

### Physics & the School Laboratory Technician

- **Thursday 11 November 2004, 9.45am-4.15pm**

The course will be led by Keith Munnings and will include:

#### Supporting Physics Subject Knowledge

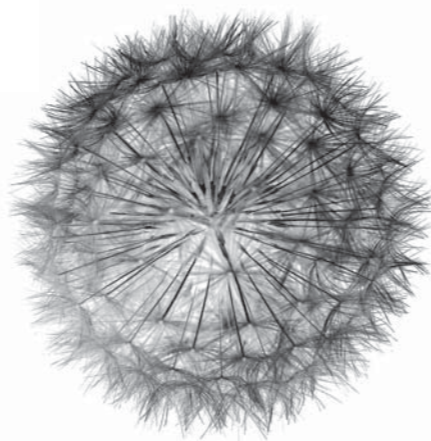
This tutor-led session will cover the key concepts in school physics. It will outline the topics that are taught to Key Stage 3 and what skills technicians need to support them, including particles, energy, electricity, forces, waves and radiation.

#### Practical Physics – Key Demonstrations

Delegates will consider setting up demonstrations of some of the concepts associated with the first session, including ripple tanks, spectrum of light, reflection of light using laser beams and plane mirrors, Gold leaf electroscopes, electrical circuits (using Ammeter and Voltmeter) and wiring plugs and using correct fuses.

#### Hands-on Practical Activities

This session will cover a number of practical, hands-on activities, including setting up an electrical circuit to find the power of a bulb, using a soldering iron, deducing the value of resistors (given the colour banding codes), finding the focal length of a lens, using a ray box to show the laws of reflection and refraction, setting up light gates to determine the speed between two points, measuring the extension of a spring and weighing objects using a lever arm balance (or by a moments experiment) as well as setting up a ripple tank.



#### Discussion

Issues concerning technician's work, including the support role of Classroom Assistants, ongoing professional development and enhancing subject knowledge, will be discussed.

### Biology & the School Laboratory Technician

- **Wednesday 24 November 2004, 9.45am-4pm**

The course will be led by Mike Bell and will include:

#### Supporting Biology

This first session will give delegates an overview of the role of the technician in biology. It will include advice on biological chemicals e.g. the preparation of stains, indicators, enzymes and solutions. Materials used in biology, such as plants and seeds as well as the care of live animals, aquaria and ponds will also be covered. An integral part of the session will be health & safety and risk assessments.

#### Biological Equipment: What it is and how it is used

This session will consider a range of biological equipment commonly used, including using and maintaining microscopes as well as using flexi cams. The setting up of potometers, respirometers, osmometers will also be included, alongside the care and use of waterbaths, incubators and autoclaves.

#### Practical Activities

There will be a number of practical, hands-on activities, including taking cuttings, preparing microscope slides, setting up a simple potometer and osmometer, food tests, leaf starch test and data logging.

#### Discussion and Summary

Questions, hints and tips. Evaluation.

### Chemistry & the School Laboratory Technician

- **Tuesday 30 November 2004, 9.45am-4pm**

The course will be led by Lynn Moon and will include:

#### Supporting Chemistry

This first session will give delegates an overview of the role of the technician in chemistry. It will include advice on hazards with reference to the classes of chemicals and their symbols. The storage and handling of chemicals, and their shelf life will also be explored, alongside protective equipment. Dispensing chemicals for class use, labelling and quantities along with disposal of and dealing with spills will be covered. An integral part of the session will be health & safety and risk assessments.

#### Skills

This session will cover balances (care of, using, taring), solutions (strength accurate or approx, molarity and calculations, serial dilutions, glassware for making solutions, standardising, titrating and indicators to use) and glass (cutting, bending, inserting into bungs, flame test wires, Bunsen valves).

#### Practical Activities

There will be a number of practical, hands-on activities, including glass working, cutting and bending such as making a delivery tube or flame test wire. Weighing and measuring, titration using an indicator, serial dilution of a coloured liquid such as  $\text{KMnO}_4$ , using pipettes and volumetric flasks. Plotting a cooling curve for stearic acid using a temperature probe and data logger will also be covered, as well as the Hoffmann voltammeter/electrolysis cell and cleaning carbon electrodes.

#### Discussion and Continuing Development

Summary of the day, questions, hints, tips and where to get further information. Evaluation.

#### 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. Additional discounts are available in some circumstances e.g. there will be a reduction if more than one technician from the same school books on the same course. Please contact us for more details.

To make a booking:

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

We will then confirm your booking and issue a pro forma invoice. Payment is required four weeks before the date of the course. We reserve the right to make a cancellation charge for any booking cancelled less than two weeks 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: **emslc@le.ac.uk**

#### Science Learning Centre East Midlands Primary Course booking form

Course title	Venue	Date(s)	Full Fee	No. required	Sub. Fee*	No. required
Course for Inexperienced Technicians**	Leicester	02/11/04 11/11/04 24/11/04 30/11/04	£825		£225	
Course for Senior Technicians**	Leicester	03/11/04 10/11/04 19/11/04 25/11/04	£825		£225	

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

\*\* The introductory day plus one or two additional days can be booked. Please contact us for details and fees.

#### Invoice details:

Invoice contact name .....

Delegate name(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