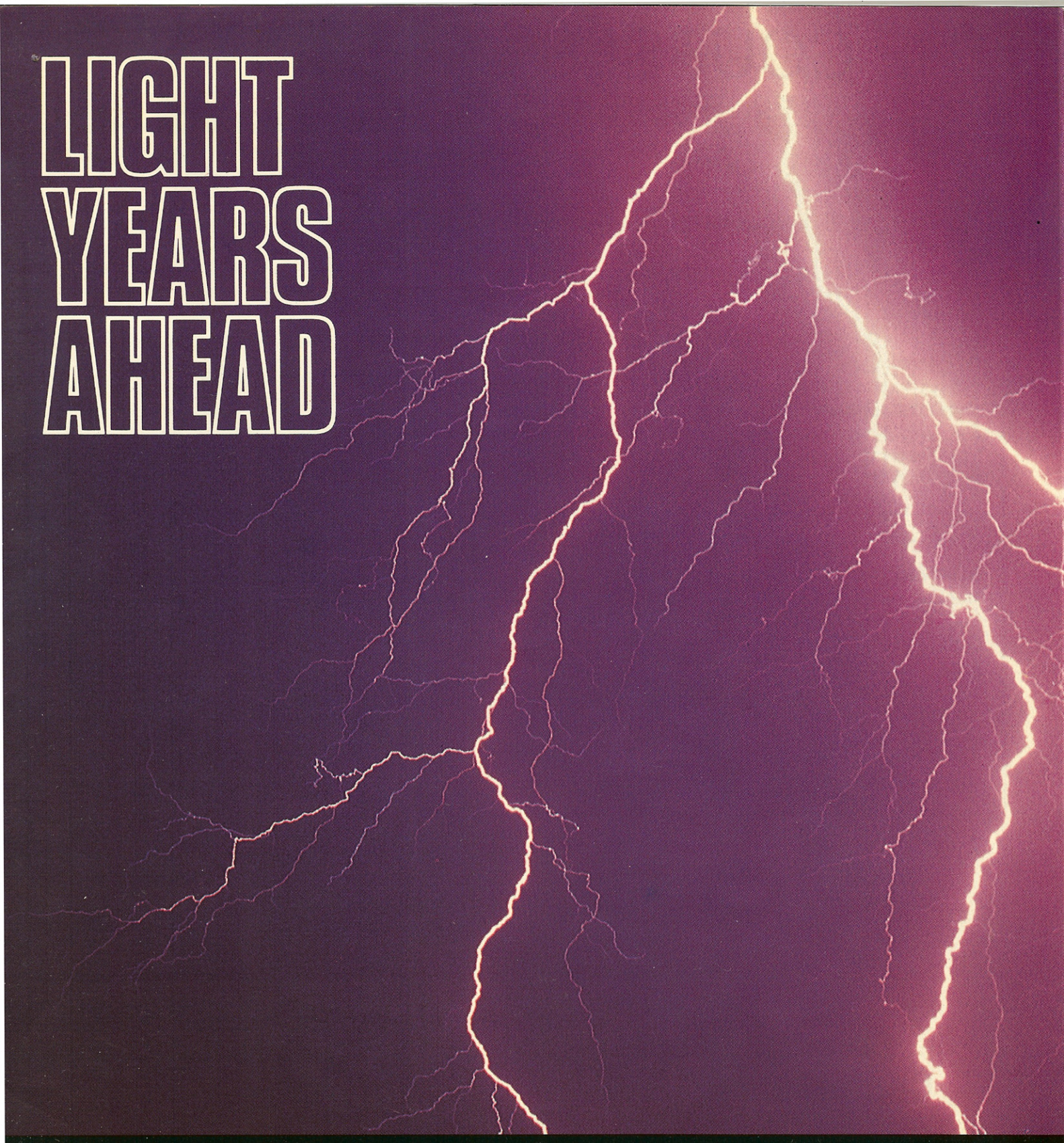
LIGHT YEARS AHEAD



Technical Training

EETPU

FPA

THE COURSES

Electronics

Introduction to Industrial Electronics
11½ days
- Electricity
- Signals & waveforms
- Resistors
- Capacitors
- Inductors
- Semiconductors diodes
- Bipolar transistors
- Transistor applications
- Field Effect Transistors (FET)
- Thyristors
- Opto devices

Introduction to Digital Electronics
11½ days
- Number systems
- Logic functions
- Logic basics
- Logic circuits
- Multivibrators, latches & flip flops
- Sequential logic circuits
- Logic families
- Digital faultfinding
- Interfacing techniques

Industrial Sensors & Amplifiers
11½ days
- Operational amplifiers
- Common operational amplifier circuits
- Optical sensors
- Temperature sensors
- Load sensors
- Position and displacement sensors
- Power supply circuits

Electronic Faultfinding
11½ days
- Faultfinding principles
- Faultfinding techniques
- Component reliability
- Test equipment & tools
- Fault diagnosis on:
  - regulated DC power supply
  - oven temperature control circuit
  - process control unit
  - signal amplifier circuit
  - digital capacitance meter
  - motor speed controller

Electronic Power Devices & Trigger Circuits
11½ days
- Silicon Controlled Rectifiers (SCR)
- Triacs
- SCR's in single phase circuits
- Lighting control circuits
- Zero voltage switching
- Three-phase connection of SCR's
- Triggering circuits

Programmable Logic Controllers (PLC's) and Microcomputers

Programmable Logic Controllers
11½ days
- Computer numbering systems
- The microcomputer
- PLC operation
- PLC terminology
- Ladder logic – rungs, contacts, coils and timers
- Understanding ladder logic programs
- Relating the program to the I/O devices
- Control of plant equipment

Microcomputers and their Industrial Applications
5½ days
- Numbering systems
- The microcomputer block diagram
- Microprocessor architecture
- Computer languages
- Computer arithmetic
- Jumping and looping
- Stack operations
- The Peripheral Input/Output (PIO) device
- Sequencers
- Motor control
- Analogue to Digital conversion (ADC)
- Digital to Analogue conversion (DAC)
- Stepper motor control

Pneumatics, Electropneumatics and Control Systems

Vocational Pneumatics
Pneumatic quantities and units
Properties and laws of air
Compressed air production
Safe use of compressed air
Pneumatic components and symbols
Practical applications of pneumatic components
Circuit design and construction

Electropneumatic Control
Open loop control
Closed loop control
Proportional control
Circuit diagrams and symbols
Logic functions
Solenoid valves
Relays and limit switches
Speed control
Proximity sensors
Time delay circuits
Multi-cylinder sequential control

Industrial Control Systems
Hydraulic and pneumatic principles
Hydraulic and pneumatic symbols
Cylinders
Valves
Hydraulic and pneumatic circuits
Programmable Logic Controller (PLC) operation
PLC programming techniques
Servo systems
Common communications systems

Instrumentation
Pressure measurement
Pneumatic transmission of measured variables
Electronic transmission of measured variables
Level measurement
Flow measurement
Differential pressure measurement systems
Velocity systems
Rate and quantity of flow measurement devices
Temperature measurement
Electrical methods of temperature measurement

Flexible Skills Training Mechanical – Electrical

Module 1
Basic electrical theory
Electrical components
Distribution systems
Earthing and safety
Wires, cables and terminations
Protection devices
Electrical test equipment

Module 2
Heaters
Industrial sensors
Electric panels
Lighting circuits
Batteries

Module 3
DC motors
AC motors
Motor starters
Disconnection of motors
Reconnection of motors
Brakes
Clutches

Regulations Courses

The Electricity at Work Regulations 1989
An introduction to the regulations for all electrical personnel.
1 day

The IEE Wiring Regulations
The C&G 238 examination on the 15th Edition of the IEE regulations is included in the course.
4½ days

Plumbing and Mechanical Engineering Services

New Model Water Byelaws
Water usage and contamination
Crossflow, backflow and back-siphonage protection
The law and new/old installations
Unvented hot water systems
Bidet installation criteria
Alternatives to the prohibition of lead in installations
1 day

Electrical Safety for Plumbing and Mechanical Engineering Services
Applicable electrical regulations
Safety
Basic electrical theory
Cables, protective devices and circuits
Use of simple test equipment
Immersion heaters
Earthing and earth bonding
2 days

Heating Control Systems
Thermostats and thermocouples
Pilot hold-on in gas valves
Motorised valves
Timers and programmers
Boiler control and ignition
Pumps
Split and divided circuits
2 days

Could our consultancy service help?

We can draw on a wealth of experience to help identify your training requirements and recommend the appropriate skills extension/flexibility programmes for electrical and mechanical personnel.

How is the training delivered?

Residentially at our Cudham Hall training centre in Kent.
Non-residentially at one of 12 regional training centres throughout the UK.
On company premises.
Open learning packages.
The methods of training provision are dependent upon the course.

How much does it cost?

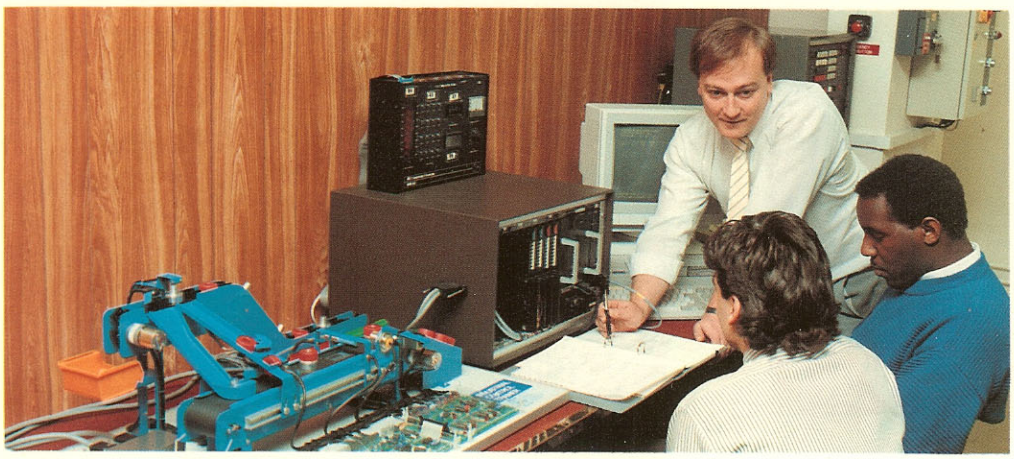
Residentially at Cudham Hall – £595 per person per 4½ days of training, inclusive of all meals & accommodation.
At regional training centres – £260 per person per 4½ days of training.
On company premises – £2250 per group per 4½ days of training.
Open learning – £210 per course package.
Consultancy service – £400 per day + expenses.
All prices are exclusive of VAT and may be subject to variation.
Please contact us for a quote on the shorter duration courses.

Light years ahead in engineering skills training

Dave Rogers BSc FITD,
National Officer –
Director of Training

Technological progress is vital to industrial survival. Productive, profitable and competitive employers offer better rewards and more long term security for their workforces. This can only be achieved if the correct investment is made in human resource development.

The Training & Technical Services Department of the EETPU has been a major national training provider for over 12 years. The objective of the Department is to update and provide new skills which meet the requirements of industry and its employees; skills which are so essential if the UK economy is to prosper and thrive in an ever competitive world.



Skills training to meet current industrial requirements

What are the benefits of our training?

Provision of practical core skills and new technology skills needed to make industry more efficient.
Increased versatility and effectiveness in the workplace creating the opportunity for improved reward structures.
Greater job satisfaction.
Improved quality of workmanship and a higher level of initiative and innovation.

What are the features of our training?

Topics relevant to the requirements of industry.
Short duration courses minimising time away from the workplace.
50% 'hands-on' involvement in the training.
City & Guilds practical assignment featured in most courses.
Maximum of 12:1 student to instructor ratio.
Comprehensive documentation issued to each participant.
Use of Interactive Video.
Courses which can be customised to your requirements.

Who is the training aimed at?

People involved in:
maintenance
installation
commissioning
assembly
testing
repair
equipment operation

How can you find out more?

To find out more about how we can meet your training requirements contact:

EETPU
Training and Technical Services Department
Cudham Hall
Cudham
Sevenoaks
Kent TN14 7QB
Tel: 0959 71888
Fax: 0959 76830

For information on availability of training at our regional centres please call the training officers at

Motherwell
Tel: 0698 69316/7/8

Newcastle
Tel: 091 266 7116

Stockton-on-Tees
Tel: 0642 607902

Wakefield
Tel: 0924 371765

Southport
Tel: 0704 46500

Manchester
Tel: 061 798 9420

Nottingham
Tel: 0602 784684

Birmingham
Tel: 021 743 5225/6/7

Swansea
Tel: 0792 470434

Bristol
Tel: 0272 734039 or 0272 735069

Plymouth
Tel: 0752 663404

Southampton
Tel: 0703 474688

Electrical Electronic Telecommunication and Plumbing Union