

# Fibre Optics



## Training at the Speed of Light

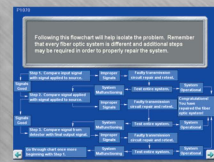
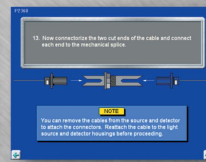
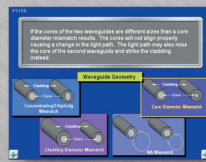
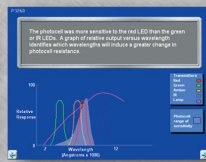
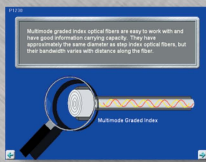
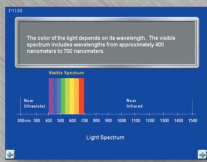
Fibre optic connections have become an integral part of the communication systems used around the world. Computer controlled machinery, complex telephony circuitry, and long distance transmission equipment are all using fibre optics for instantaneous communications. It is important in today's high speed technological world that technicians are able to troubleshoot and repair fibre optic systems to keep equipment communicating at the peak of their performance.

The E & L-Nida Fibre Optics courseware is designed to give technicians the skills and knowledge to identify, isolate, and repair fibre optic cables, connectors, and systems. The course is based on theoretical concepts reinforced by hands-on experiments on live fibre optics circuitry. Incorporated into your industrial maintenance, avionics, telecommunications, or other optical transmission course, the E & L-Nida Fibre Optics courseware is sure to enlighten your training programme.



# E & L-Nida Fibre Optics

The E & L-Nida Fibre Optics courseware can be used independently or as a part of a complete E & L-Nida advanced communications programme. Each lesson is divided into sections that provide theory, experimentation, and assessment. The theoretical sections teach the principles of light, signals & signal loss, fibre optic components, and fibre optics systems construction. The hands-on sections introduce the skills for fibre optics cable construction, connection, and troubleshooting. Students learn to build, troubleshoot, and repair fibre optic cables using safe and inexpensive materials designed specifically to emulate the properties of industrial fibre optic cable.



## Topics

### Introduction to Fibre Optics

Nature of Light, Visible & Optical Spectrum  
Reflection & Refraction, Snell's Law  
Light Sources & Detectors, Fibre Optic Cable  
Fibre Optic System Operation

### Fibre Optic Components

Attenuation & Bandwidth, Aperture Ratings  
Single Mode & Multimode Waveguides  
Homojunction & Heterojunction LEDs  
Optical Detectors, PIN Photodiodes & APDs

### Signal Transmission

AM, FM, PCM, & Intensity Modulation  
Time Domain, Frequency Domain, & Wave Domain  
Multiplexing, SNR & BER  
Fibre Optic System Construction

### Fibre Optic Cable Connections

Misalignment, Damage, & Signal Loss  
Waveguide Geometry & Splicing  
Fibre Optic Connectorisation  
Non-Permanent Mechanical Splices  
Signal Loss Testing

### Fibre Optic System Troubleshooting

Fibre Optic Fault Identification  
Troubleshooting Strategies  
Transmitter, Transmission Line & Receiver Fault  
Isolation

## Supporting Hardware

- Model 130E Test Console
- Model 1406 Fibre Optics Experiment Boards Set
- Model 4050 Test Instrument Module
- Model 1434 Introduction to Fibre Optics Boards Set

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