

Certified Optical Network Engineer (CONE) Core Networks



On this Certified Optical Network Engineer training programme you'll learn how next generation optical networks can be engineered to use the power of light to meet the challenging demands of telecoms systems today. You'll learn about the clever things that can be done with light to deliver higher data rates over longer distances at lower cost than ever before. You'll also appreciate the supporting role played by recent advances in electronic communications technology in overcoming some of the impairments inherent in using existing infrastructure.



Duration:
5 days

Objectives

At the end of this course you will be able to:

- design optical networks that give the best price/performance ratio
- specify key parameters of optical systems
- identify issues with existing infrastructure and how to cope with them
- decide which technologies are best suited to your requirements
- discuss the key issues knowledgeably with suppliers, customers and colleagues
- control the deployment of optical networks

Why does this course exist?

The demands being made of telecoms systems today are challenging to say the least. Networks are required to deliver exponential growth in capacity, ubiquitous coverage, total security, five-nines reliability, instantaneous flexibility and they mustn't cost the earth - in more ways than one!

If you are a fibre network engineer or manager, then a grasp of some of the individual technology offerings is no longer enough, you need to be able to see the big picture to truly understand the impact of the different approaches to building and operating Next Generation Optical Networks.

Is this course for you?

This is an advanced level course, so you'll need some background in fibre optics and communications systems. The Certification is based on successful completion of an assignment and an examination during the course.

What does it cover?

The course provides a unique, structured, approach to all the issues, the technologies and covers all the acronyms and terminology you'll need to decipher, including: AONs, AWG, BER, Circulators, CS-RZ, CWDM, DCMs, DGD, DQPSK, DWDM, EDFAs, EDWAs, FEC, Filters, FWM, G.652 (A,B,C,D), G.653, G.654, G.655 (A,B,C,D,E), G.656, G.657 (A,B), IEC, IEEE, Isolators, ITU-T, NGNs, Non-linear effects, NRZ, OADMs, OC-192, OFDM, OSNR, OTN-1, OTN-2, OTN-3, OTN-4, PCF, PDL, PMD, Raman amplifiers, ROADMs, RTZ, SOAs, STM-64, VOAs, WDMs, PXC, OSA, Solitons, SPM, XPM and more....

If you want to check whether something is covered just drop us an email to check

Key Benefits

- Clear explanations, delivered in plain English will help you understand concepts that underpin modern optical networks
- Come to terms with the key technologies free of any vendor bias, spin or marketing hype
- Review all of the issues so that you get the full picture of optical networking
- Use case studies and assignments to apply your learning to real world scenarios
- Learn directly from Richard Ednay, UK Principal Expert on IEC fibre optic systems working group and ITU-T Study Group 15 on fibre optic systems
- Gain Certified Optical Network Engineer status to demonstrate your knowledge and professionalism

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providing answers in fibre optics and communications cabling

TELECOMS TODAY: THE CHALLENGES

Appreciate how we got where we are today and the nature of the challenge ahead:

- *the bandwidth boom*
- *the competitive marketplace*
- *meeting customer expectations*
- *reducing capital expenditure*
- *reducing operational expenditure*
- *reducing carbon footprint*

CHARACTERISTICS OF LIGHT

Develop an in-depth understanding of light as an electromagnetic wave and singlemode optical fibre as a waveguide and explore the clever things that can be done with light and learn how to put these to use in optical networks:

- *sending light over very long distances*
- *amplifying light*
- *make different wavelengths of light go in different directions*
- *make different wavelengths of light travel at different speeds*
- *manipulate the polarisation characteristics of light*
- *balance power levels by selectively attenuating different wavelengths of light*
- *convert phase difference into intensity differences*

USING LIGHT TO TRANSPORT INFORMATION

Develop a comprehensive view of the many different ways in which light can transport information:

- *advanced modulation formats*
- *coherent transmission systems*
- *multiplexing & modulating using intensity, frequency, polarisation, phase*
- *network topologies from point-to-point through ring & mesh to Agile Optical Networks*

WHAT CAN GO WRONG AND WHAT CAN WE DO ABOUT IT?

Make sure you are aware of the various limiting factors and their implications in different situations:

- *optical signal impairments*
- *measures of signal quality, BER, Q, OSNR*
- *too little power*
- *too much power*
- *chromatic dispersion*
- *polarisation mode dispersion*
- *non linear effects*
- *noise*
- *degradation function*

HOW CAN ELECTRONICS HELP?

See clearly where electronics can fit into the picture and be able to compare optical and electronic solutions:

- *forward error correction*
- *electronic dispersion compensation*
- *digital optical networks*

REAL WORLD ISSUES

Spend time exploring how it all works in practice:

- *using existing infrastructure & case studies including: Backbone links - NGN upgrade, Undersea unrepeated link with Raman, A National Network - NGN*

ASSESSMENT

Take the assessments and gain the unique CONE certification:

- *optical network design assignment*
- *examination*

FOLLOW-UP PLANS

Take a moment to review how you will use the knowledge you have gained on the course:

- *putting it into practice & action plans*