Register by 27th June 2009 for a 10% discount!

Fibre optic access network & principles of optical multiplexing and radio transmission

COMMONWEALTH TELECOMMUNICATIONS ORGANISATION

www.cto.int

27 - 31 July 2009
Suva, Fiji Islands

Overview

This course is divided into two parts - the first will introduce participants to fibre optics as a technology of choice in an era of increasing convergence and demand for faster, more efficient services. The second part will teach participants about how multiplexing technology on a fibre optic network leads to multiplication in capacity. Participants will be introduced to components of a basic radio link and radio communication services.

Concepts and issues covered will include:

- Optic fibre cable manufacturing and characteristics
- The difference between a copper wire and an optic fibre
- The advantages of fibre optics as compared to a copper wire
- The relationship between copper and fibre optic cables
- Optic system components and a basic radio link
- Broadcasting and two-way communication

For more programmes and courses run by the PDT contact us at:
Tel: +44 (0) 208 600 3800 **Fax:** +44 (0) 870 0345 626 **Email:** programmes@cto.int

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Learning outcomes

On completion of the course, participants will be able to:

- Identify the basic construction of a fibre optic cable
- Identify the different types of fibre optic cables
- Identify the different sizes of fibre optic cables
- Understand the principles of optical multiplexing
- Understand the principles of radio transmission

Key objectives

This course will equip participants with the necessary knowledge and skills required to:

- Prepare a fibre optic cable for splicing
- Splice the fibre optic cable into the splice closures
- Understand the difference when working with a copper conductor and a fibre optic
- Use the Optical Time Domain Reflector Meter(OTDR) for optical fibre cable testing
- Understand basic optic system components
- Understand radio communication services
- Understand fundamentals of free space propagation
- Understand factors effecting free space propagation

Who should attend

- Telecom technicians working on the field of network
- Network planning officials
- Telecom cable jointers

Learning environment

- A classroom with a white board or a flip chart board
- A data projector for slides
- Optic fibre cable, 40S or 50S type Fujikura Splicing Machine and the EXFO FTB 300 or 400 OTDR (Only if practical is also required)

Pre-requisites

Participants with general knowledge of copper cable network

Course content

Fibre Optics Access Network

Overview

- Understand what optic fibre is
- Safety precautions when working with fibre optics
- Historical perspective of fibre optic

Manufacturing of optical fibre

- Raw material
- Deposition
- Collapse
- Sleeving
- Drawing

Fibre optic as a communication medium

- Transmitter
- Fibre optic cable
- Connectors
- Receiver

Advantages of fibre optic

- Bandwidth
- Speed
- Security
- Size
- Weight

Light

- Refraction
- Reflection
- Total internal reflection

Basic construction of fibre optics

- Core
- Cladding
- Coating
- Sizes of optic fibres

Types of fibre

- Step index multi-mode
- Graded index multi-mode
- Step index mono/single-mode

Fibre optic characteristics

- Dispersion
- Attenuation
- Scattering
- Absorption
- Micro and macro bends
- Numerical aperture

Types of fibre optic cables

- Loose buffer tubes
- Tight buffer tubes
- Optic Fibre Cable Identification

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Course content

Principles of Optical Multiplexing and Radio Transmission

Optic system components

- Transmitter
- Connectors and Splices
- Regenerator
- Amplifier
- Receiver

Passive optical components

- Multiplexers
- De-multiplexers
- Isolators

Basic radio link

- Transmitter
- Feeders and antennae
- Propagation path
- Receiver

Radio communication services

- Broadcasting
- Two-way communication

Fundamentals of free space propagation

- Absorption
- Reflection
- Refraction
- Diffraction

Factors effecting free space propagation

- Atmospheric absorption
- Ducting/super refraction
- Fading
- Multi-ray fading
- Phase relationship between direct and reflected waves
- Obstruction.

End of Course

- *Splicing of Optic fibre cable by means of the splicing machine
- *Testing of the splices using the EXFO FTB 300/400 OTDR
- *Field trip to the optic fibre exchange

N.B. *Only if practical is required.

Course leader

Jabulani Mdaka

Jabulani Mdaka is a qualified training and development specialist at Telkom South Africa's Centre for Learning. His specialist area is on the construction and maintenance of copper and optical fibre cable networks, He is also a specialist on the installation and maintenance of WiMAX CPE BreezeMax, ISDN as well as ADSL technologies.

Additionally, he has extensive knowledge on the under-sea optical fibre cable linking Africa and extending to Portugal through to Malaysia. Jabu has been on the training and development environment with Telkom South Africa since 1996. He is a registered member as an Education, Training and Development Practitioner with the South African Qualification Authority (SAQA), and also registered as an Assessor with the Information Systems Electronics Telecommunication Technology Sector Education Training Authority (ISETT SETA). Jabu has also facilitated copper and optical fibre access network courses in Siera Leone, Swaziland, Namibia and Zambia.

Hosted by:
FINTEL
In partnership with:
Telkom South Africa

About the CTO

The Commonwealth Telecommunications Organisation (CTO) is an international development partnership between Commonwealth and non-Commonwealth governments, business and civil society organisations.

It provides the international community with effective means to help bridge the digital divide and achieve social and economic development through the use of Information and Communication Technologies (ICT) in the specific areas of Telecommunications, IT, Broadcasting and the Internet.

About the programme for development and training (PDT)

Managed by the CTO, the PDT is a unique low-cost membership programme providing needs-based professional training and capacity building courses on telecommunications policy, regulation, technologies and telecoms business management.

The PDT has delivered over 3600 bilateral training and consultancy projects, covering every aspect of the telecommunications industry, training over 35,000 professionals in 33 countries of the Commonwealth.

For more programmes and courses run by the PDT contact us at:
Tel: +44 (0) 208 600 3800
Fax: +44 (0) 870 034 5626
Email: programmes@cto.int

See more information on our website www.cto.int

Registration form

Fibre optic access network & principles of optical multiplexing and radio transmission
27 - 31 July 2009. Suva, Fiji Islands

ID: 6580

Please fill in this application form and fax it back to +44 208 600 3819 or return it to the CTO at the address below. Please use CAPITAL LETTERS.

Personal details

Mr/Mrs/Ms/Other ..... First name ..... Last name .....

Job title .....

Organisation .....

Address .....

City ..... Postcode ..... Country .....

Tel ..... Mobile ..... Fax .....

Email .....

Authorising line manager's name .....

Authorising line manager's email .....

Payment options

1) Select delegate rate

	Standard rate	Early registration/Group discounts*
CTO members	☐ £701	☐ 10%
PDT partners	☐ £701	☐ 10%
Others	☐ £1,132	☐ 10%

* two or more delegates from same organisation

2) Payment mode (choose one option only)

☐ **Invoice**
Invoice me at the above address (Discounts do not apply, payment must be received by us prior to event).

☐ **Cheque**
Cheque enclosed payable to 'CTO HQ'

☐ **Bank transfer**
Make payments to: Coutts Co.
440 Strand, London, WC2R OQS, UK
A/C Name: CTO; A/C Number 083675071
Reference: GB72COUT18000208367507
Sort Code: 18-00-02; Swift Code: COUT GB22

☐ Credit Card: Visa / Mastercard (delete as appropriate)

Card holder's name .....

Card holder's billing address (if different from above) .....

.....

Card number |_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|_|

Valid from ..... Expiry date ..... 3 digit security code |_|_|_|

Signature

Date ..... Name ..... Signature .....

Additional information

To help us improve our services to you and your organisation, please tell us more about yourself and your organisation.

Your role in the organisation
- ☐ Strategic / executive
- ☐ Planning
- ☐ Control
- ☐ Operational

Your area of work in the organisation
- ☐ Business development
- ☐ Corporate affairs
- ☐ Customer service and care
- ☐ Engineering and technical management
- ☐ Financial, purchasing & investor relations
- ☐ IT / IP management
- ☐ Marketing and sales
- ☐ Public relations and corporate communications
- ☐ Regulatory and legal affairs
- ☐ Telecoms network management
- ☐ Human resources
- ☐ Other

Your organisation type
- ☐ Government
- ☐ Regulator
- ☐ Operator
- ☐ Manufacturer
- ☐ Other

Your organisation's service areas
- ☐ Fixed network / services
- ☐ Mobile / wireless network / services
- ☐ Satellite network / services
- ☐ Internet
- ☐ Broadcasting
- ☐ Value-added services
- ☐ Support
- ☐ Other services

3 SIMPLE WAYS TO REGISTER

Fill in and fax this form back to **+44 208 600 3819**

Call the programme team at **+44 208 600 3800**

Email this completed form back to **register@cto.int**

EARLY REGISTRATION DISCOUNT

45 days prior to start of event

NEED HELP?

Call us now on +44 208 600 3800 or e-mail the programme team at programmes@cto.int

Summary Terms and Conditions

The CTO will endeavour, as can be reasonably expected, to ensure that the course is delivered to meet delegates' expectations. Registration is subject to availability and payment received by the deadline, where specified for each course. Dates may be subject to changes. Travel, accommodation, daily transportation to venue, subsistence and other costs are the sole responsibility of the delegate and are not included in the above fees.

Applicants are responsible for their visa arrangements and other formalities wherever required. Course bookings may be cancelled at the discretion of the CTO or its partners. Applicants paying by bank transfer are responsible for bank charges and any other such costs and should ensure the exact amount in GBP Sterling is credited in the CTO bank account. Applicants requiring additional information prior to their booking should ensure they provide sufficient time before the booking deadline.

Cancellation rules apply, as summarised above. For a full version of our Terms and Conditions, please visit our website at www.cto.int.

Withdrawals / Cancellations / Refunds

For delegate cancellations/withdrawals, the following refund rules apply:

- 31 days or more prior to event: the full amount less a handling charge of £55
- 30 days or less prior to event: no refund

For CTO cancellations/withdrawals, delegates are entitled to a 100% refund within 60 days of the cancellation/withdrawal. Refunds will be made by bank transfer only.

Data Protection / Privacy

The CTO does not sell, rent or lease its customer information to third parties. We may, from time to time, contact you on behalf of a third party/partner about a particular offering that may be of interest to you. In those cases, your unique personally identifiable information (email, name, address, telephone number) is not transferred to the third party/partner.

In addition, we may share your information with trusted partners to help us perform statistical analyses, send you by e-mail or postal mail, provide customer support, or arrange for deliveries or other such services.

All such third parties are prohibited from using your personal information except to provide these services to the CTO and they are required to maintain the confidentiality of your information. For more information about our Privacy Policy, visit our website at **www.cto.int**