

The Light Brigade trains you for tomorrow's technology today.



THE
LIGHT
BRIGADE

7639 S. 180TH STREET
KENT, WASHINGTON 98032
(206) 251-1240
FAX (206) 251-1245

Fiber Optics Training

Public Seminars & Custom Courses

What you'll learn ...

Hands on Cable & fiber preparation, connectorization, fusion & mechanical splicing, optical loss testing, OTDR

Installation Advanced technologies, networks and topologies, transmission & interface equipment

System Design Designing issues such as cost & growth, applications overview

Public Seminars

Fiber Optics 1-2-3

"Installation - Design - Maintenance"

September 7, 8 & 9
Kent, Washington

September 12, 13 & 14
Beaverton, Oregon

October 24, 25 & 26
Anchorage, Alaska

November 9, 10 & 11
Irvine, California

November 14, 15 & 16
Sunnyvale, California

November 28, 29, 30
Sacramento, California

December 6, 7, 8
Kent, Washington

Technicians' Courses

"Fiber Optics for LANs"
October 5, 6, 7, 1994

"Working with Singlemode"
November 2, 3, 4, 1994

"Working with Singlemode"
January 11, 12, 13, 1995



The Light Brigade trains you for tomorrow's technology today.

World Class Clients

Representative Companies Who Have Attended Our Seminars:

IBM, MICROSOFT, BRITISH COLUMBIA HYDRO, BOMBAY STOCK EXCHANGE, LAWRENCE LIVERMORE LABS, LOCKHEED, SUN MICROSYSTEMS, STATE OF WASHINGTON, FEDERAL BUREAU OF INVESTIGATION, McDONNELL DOUGLAS, PUGET POWER, PTI COMMUNICATIONS, WESTINGHOUSE HANFORD, TEKTRONIX, BOEING, BONNEVILLE POWER ADMINISTRATION, BOISE STATE UNIVERSITY, U.S. WEST, GTE, TCI, UNGERMANN BASS, U.S. NAVY, U.S. ARMY, U.S. ARMY CORPS OF ENGINEERS, FEDERAL HIGHWAY ADMINISTRATION, PACIFIC BELL, HEWLETT PACKARD, UNIVERSITY OF WASHINGTON, SANDIA NATIONAL LABS, STATE OF CALIFORNIA, U.S. AIR FORCE, CALIFORNIA STATE UNIVERSITY, CALTRANS, ARGONNE NATIONAL LABS, MARTIN MARIETTA, ASARCO, NORTHERN TELECOM, CITIZENS UTILITIES, MONTANA TELEPHONE ASSOCIATION, CALIFORNIA TELEPHONE ASSOCIATION.

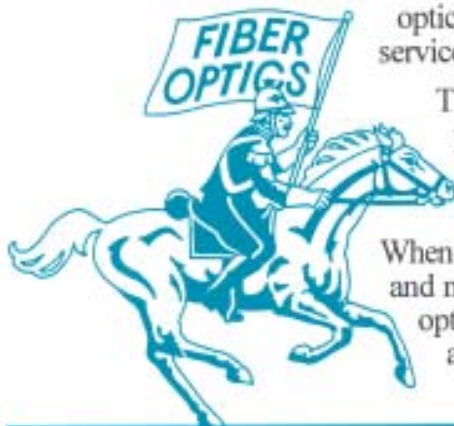
Certificate of Completion

With your Certificate of Completion you gain professional recognition, a sense of fulfilled potential, and aid in the development of your career.

Your Certificate is your proof of achievement in a technical specialty and certifies that you have acquired the skills and knowledge necessary to strive toward your professional goals. Your increased skills, understanding of fiber optic components through systems and industry trends, will allow you to successfully address your job requirements.



The Company



Since its inception in 1986, The Light Brigade has consistently proven itself to be the most innovative and responsive training organization in the fiber optics industry. In addition to training, the company provides installation services and fiber optic supplies and tools.

The Service Division, from which our training technicians are drawn, provides fiber optic system design, installation and testing services using a full range of fiber optic equipment available in the industry. The Products Division specializes in outside plant products.

When you take a course with The Light Brigade you learn from field technicians and managers experienced in design, installation and maintenance of fiber optic systems. You learn state-of-the-art, real-world solutions for the applications you use daily.

The Light Brigade trains you for tomorrow's technology today.

Our Courses are the Best in the Industry

With eight years of teaching fiber optic courses, we have found that people learn best when they're enjoying themselves.

Our interactive courses combine lecture, video tapes, instructional manuals and hands-on practice to create a stimulating environment that dramatically improves your retention of the material. You work through the comprehensive instruction manual, which remains yours, and you spend a full day dedicated to hands-on practice, "learning by doing" using the tools of your new trade.

Training is non-product and non-vendor specific. This means you learn the fundamentals required to use a wide variety of products. Plus, our internationally recognized video tape series adds a dimension of instruction rarely found in technical courses.

Our graduates repeatedly confirm the effectiveness of this approach and we encourage you to attend and test our methods.

We Have the Most Complete Training Equipment Available for Your "Hands-On" Sessions

- ◆ OTDRs
- ◆ Optical Loss Test Sets
- ◆ Network Simulators
- ◆ Fusion Splicers
- ◆ Mechanical Splicers
- ◆ ST Termination Equipment
- ◆ Variable Attenuators
- ◆ Fiber Identifiers
- ◆ Fiber Scopes
- ◆ Stripping & Cleaving Tools



**WHO
SHOULD
ATTEND?**

**Engineers,
Designers,
Contractors,
Installers,
End-users,
Supervisors.**

**Anyone involved
in designing,
evaluating,
configuring,
installing or
maintaining fiber
optic systems.**

Public Seminar: Fiber Optics 1-2-3

Meet the Voice, Video & Data Challenge

The communications industry is in revolution. The world of copper wire and microwave is gradually converting to one of lasers and optical waveguides. Training engineers, maintenance and supervisory personnel to meet the challenge is now a priority.

The Light Brigade is meeting that challenge head-on by training the work force of tomorrow. Courses are structured in a building-block format. Overheads, videotapes and worksheets are used and information presented in the course is given to the attendee in a hard-bound manual.

Eight hours of "hands-on" instruction on connectorization, splicing and testing are presented. At the conclusion of the seminar, participants will have a working knowledge of fiber optics that will enable them to design, install, and maintain various types of fiber optic systems using technologies currently available.

Your Instructors

Larry Johnson



Larry is President and Founder of The Light Brigade and has been involved in all aspects of the fiber optics industry since 1977. He is a member of OSA, SPIE, SCTE and BICSI, and has been a member of ANSI and EIA. His dynamic presentation style is one reason why he has been selected as a guest speaker in many international forums on optical communications.

Another reason is his familiarity with and direct involvement in all aspects of the fiber optics industry. His forecast of future trends in the communications industry have consistently proven valid. From hands-on to conceptual systems, he relates well with technicians, engineers, and managers.



Larry Hennebeck

Larry Hennebeck has over 20 years in the electronics and optics industries. His education includes a Masters in Systems Management, Defense Systems Management and post-graduate work in Fiber Optics and Safety. He has taught courses in safety and all aspects of fiber optics.

He has addressed such forums as the Society of Manufacturing Engineers, and International Robotic conferences in Europe, Canada and the United States and has published numerous feature articles for an international trade journal. As technician, instructor and manager, Larry has participated in design, installation and testing of a multitude of topologies and configurations and has helped evaluate test equipment.

FIBER OPTIC 1-2-3 SEMINAR TUITION

Two day Attendance -- \$675.00 per attendee

Three day Attendance -- \$825.00 per attendee

Call (206) 251-1240 and ask about our discounts for multiple attendees from the same organization.

Fiber Optics 1-2-3

“Design – Installation – Maintenance”



Day 1

Topics presented ...

- ◆ Introduction
- ◆ Theory
- ◆ Advantages / Disadvantages
- ◆ Comparisons
- ◆ Fiber
- ◆ Cable
- ◆ Connectors
- ◆ Splices / Splicing
- ◆ Patch Panels
- ◆ Safety
- ◆ Installation
- ◆ Maintenance
- ◆ Testing
- ◆ Restoration



Day 2

Hands-on includes ...

- ◆ Connectorization
- ◆ Fiber Optic Inspection Station
- ◆ Fusion Splicing
- ◆ Mechanical Splicing
- ◆ Optical Loss Test Set Station
- ◆ OTDR (Optical Time Domain Reflectometer)
- ◆ Closure & Patch Panel Preparation
- ◆ Indoor / Outdoor Cable & Fiber Preparation



Day 3

Putting it together ...

- ◆ Interfaces - FDDI, ATM, Sonet, HDTV & Fiber in the Loop (FITL)
- ◆ Standards
- ◆ LED's & Lasers
- ◆ Detectors
- ◆ Repeaters
- ◆ Bandwidth / Dispersion
- ◆ System Design
- ◆ Multiplexers
- ◆ Analog / Digital
- ◆ Costs
- ◆ Applications

Technicians' Course – Fiber Optic 4 “Fiber Optics for Local Area Networks”



Targeted at end-users and installers working on Local Area Networks, this course defines the roles of the various optical components consisting of fibers, cables, connectors, cross-connect and distribution hubs. Proper integration and installation of these components to operate systems such as Ethernet, Token Ring, FDDI, ATM and CCTV effectively is critical in today's networks.

The combination of classroom study and hands-on provides a thorough understanding of fiber optics in the LAN environment.

(20 hours / 8 class / 12 lab)

“Hands-On” is Specific to Local Area Network Systems

- ◆ Termination of ST & SC connectors
- ◆ Optical cable handling
- ◆ Patch panel routing
- ◆ Optical Loss Testing
- ◆ Use of High Resolution OTDR for continuity & length measurements
- ◆ Documentation of test results for future and/or job completion approval

You Will Receive ...

1. More “hands-on” for increased retention
2. Small classes for individual attention
3. Focus on Fiber Optic LANs
4. Class materials for future use

**WHO
SHOULD
ATTEND?**

**Estimators,
Designers,
Technicians
(Contractors
& End-users),
Maintenance
& Supervisory
Personnel.**

FIBER OPTICS 4 — FIBER OPTICS FOR LOCAL AREA NETWORKS
Three day course is \$1,200.00. includes 4 Light Brigade training videos!
Discounts available for multiple attendees from same organization!

REGISTER TODAY! CALL (206) 251-1240

Custom Course - Fiber Optic 5

"You Build It" Courses are Designed for Effective Team Training

We pride ourselves on our customized "You Build It" courses — ideal for organizations already committed to fiber optics and either installing systems, upgrading or expanding. These courses are recommended for six or more attendees. Join the ranks of our satisfied clients such as U. S. West, Bonneville Power Administration, FAA, Boeing, Microsoft, the State of Washington, The Bombay Stock Exchange, and many others.

Our Customized Courses allow you to determine the focus of your training. We work with you to determine your course content and schedule, and upon approval, arrange for instructors, technicians, equipment and course materials. Whether at your facility or ours, you receive the very best combination of on-the-job training, expert methodology and techniques.



Benefits To You ...

- ◆ You keep your team available to you, by bringing our instructors to your site
- ◆ You save the cost of travel and lodging expenses
- ◆ Customized for your application, equipment and staff

***Let Us Customize a Class
that will Exceed Your
Expectations!***

***Call for our pre-seminar
questionnaire and we'll
provide you with a course
proposal and a quote.***

FIBER OPTICS 5 — "YOU BUILD IT" CUSTOM COURSES

Custom on-site training courses are cost effective with six attendees or more. Typical cost of a custom course is \$1,000 per person with price breaks for increased attendance.

Costs are dependent on location, length and advance notice.

Contact our training staff at (206) 251-1240 for information and a questionnaire.

Technicians' Course – Fiber Optic 6 “Working with Singlemode Fiber”

Emphasis is on the specific techniques required for singlemode installations. Directed at telephone companies, utilities, cable TV companies and other organizations who use single mode fiber (long distance, high bandwidth, low loss), who require the knowledge to install fiber optic systems. This course can be customized to your application, techniques and products. We provide a wide range of manufacturers equipment for hands-on. If you prefer to use your own equipment, contact us to make arrangements.

(20 hours / 8 class / 12 lab)



“Hands-On” for the Singlemode User Emphasizes ...

- ◆ Roles of acceptance testing
- ◆ Installation & restoration practices
- ◆ OTDR testing for span
- ◆ Splice loss testing
- ◆ Fusion & mechanical splicing
- ◆ Splice enclosure procedures & techniques
- ◆ Optical Loss Testing
- ◆ Cable & fiber preparation

You will learn to ...

- ☞ Prepare a splice enclosure, make fusion splices & close enclosure
- ☞ Monitor a splice & perform splice loss testing using an OTDR
- ☞ Work with armored, OPGW & loose tube cables

You Will Receive ...

1. More “hands-on” for increased retention
2. Small classes for individual attention
3. Targeted training for Singlemode Fiber

WHO SHOULD ATTEND?

Splicers, Technicians, Maintenance & Supervisory Personnel.

FIBER OPTICS 6 — WORKING WITH SINGLEMODE FIBER

Three day course is \$1,200.00. includes 4 Light Brigade training videos!

Discounts available for multiple attendees from same organization!

REGISTER TODAY! CALL (206) 251-1240

Tuition & Policy

Fiber Optics 1-2-3 : Public Seminars Fee:

The fee for the two day intensive is \$675.00 and \$825.00 for the three day intensive (US funds). This includes tuition, course materials, course book, and two refreshment breaks each day.

Technicians' Seminars Fee:

The fee for the three day technician course held at our site \$1,200.00 (US funds). This includes tuition, course materials, course book, and refreshment breaks and four video tapes.

Payment:

Payment of registration fee or authorized purchase order must be received prior to start of first day of class. If you haven't received your confirmation one week prior to class please call.

Discounts:

First attendee of a group is at full tuition; each additional attendee receives 10% discount. Many employees of non-private educational institutes are eligible for 20% discounts on the three day courses. Call for specifics.

Course Schedule:

8:00 AM to 5:00 PM with one hour lunch break, morning and afternoon breaks.

Registration:

Call (206) 251-1240; FAX complete registration form to (206) 251-1245; or mail registration and payment to The Light Brigade, 7639 S. 180th Street, Kent, WA 98032. It is recommended that you register no later than 3 weeks prior to the course start date to ensure a seat in class.

Cancellations:

Full 100% refund with 10 business days prior notice; 80% refund with 5 business days prior notice. No refund will be given with less than 5 business days notice. Reschedules will be at the discretion of Light Brigade, Inc. Substitution attendees will be allowed. If, for any reason, the course is cancelled, liability is limited to return of the course fee.

Tax Deduction:

Expenses (including fee, travel, lodging, and meals) for continuing education undertaken to maintain and improve professional skills are often deductible in whole or in part.

Training Videotapes:

We offer our course attendees a special discount of \$100.00 per fiber optic videotape (list price is \$195.00), OR order the complete eight video set, P/N W-4CL for only \$640.00.

<p>Public Seminars Fiber Optics 1-2-3</p> <p><input type="checkbox"/> Sept. 7, 8 & 9 Kent, Washington</p> <p><input type="checkbox"/> Sept. 12, 13 & 14 Beaverton, Oregon</p> <p><input type="checkbox"/> Oct. 24, 25 & 26 Anchorage, Alaska</p> <p><input type="checkbox"/> Nov. 9, 10 & 11 Irvine, California</p> <p><input type="checkbox"/> Nov. 14, 15 & 16 Sunnyvale, California</p> <p><input type="checkbox"/> Nov. 28, 29 & 30 Sacramento, California</p> <p><input type="checkbox"/> Dec. 6, 7, 8 Kent, Washington</p> <p>Technicians' Courses Fiber for LANs</p> <p><input type="checkbox"/> October 5, 6, 7, 1994 Singlemode</p> <p><input type="checkbox"/> November 2, 3, 4, 1994</p> <p><input type="checkbox"/> January 11, 12, 13, 1995</p>	<p>Please indicate course and days attending</p> <p>Attendee(s)</p> <p>Name _____ Title _____</p> <p>Name _____ Title _____</p> <p>Name _____ Title _____</p> <p>Organization _____ Phone _____</p> <p>Street _____ FAX _____</p> <p>City _____ State _____ Zip _____</p> <p>I am attending: <input type="checkbox"/> Day One <input type="checkbox"/> Day Two <input type="checkbox"/> Day Three</p> <p><input type="checkbox"/> Check or purchase order enclosed, made out to: The Light Brigade (US funds)</p> <p><input type="checkbox"/> Bill me; Ref PO# _____</p> <p><input type="checkbox"/> Charge my <input type="checkbox"/> VISA <input type="checkbox"/> Mastercard <input type="checkbox"/> American Express</p> <p>Expiration date _____ Card# _____</p> <p>Signature Line _____</p> <p><input type="checkbox"/> This confirms a telephone registration</p> <p><input type="checkbox"/> Please add the eight videotape set to my order, P/N W-4CL (special price \$640.00)</p>	<h2>Registration Form</h2>
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Training Sites & Hotel Accommodations

Below are training sites and local hotels. Contact the hotel directly to reserve your room. Room blocks are held at each hotel up to two weeks prior to the seminar with special rates for seminar attendees.

PUBLIC SEMINARS: FIBER OPTIC 1-2-3

Kent -- September 7, 8 & 9

Green River Training Center
841 North Central Avenue
Kent, Washington
Hotel: Cypress Inn (206) 395-0219

Beaverton -- September 12, 13 & 14

Valley Conference Center
9368 SW Beaverton - Hillsdale Hwy
Beaverton, Oregon
Hotel: Greenwood Inn (503) 643-7444

Anchorage -- October 24, 25 & 26

Anchorage Telephone Utilities
740 Communications Avenue
Anchorage, Alaska
Hotel: Best Western (907) 561-1522

Irvine -- November 9, 10 & 11

Doubletree Inn
7 Hutton Centre Drive
Santa Ana, California
Hotel: Doubletree Inn (714) 751-2400

Sunnyvale -- November 14, 15 & 16

Sundowner Inn
Hwy 101, Hwy 237 & Mathilda
Sunnyvale, California
Hotel: Sundowner Inn 800-223-9901

Sacramento -- November 28, 29 & 30

Radisson Hotel
500 Leisure Lane
Sacramento, California
Hotel: Radisson Hotel (916) 922-2020

Kent -- December 6, 7, 8

Green River Training Center
841 North Central Avenue
Kent, Washington
Hotel: Cypress Inn (206) 395-0219

TECHNICIANS' COURSES

October 5, 6, 7, 1994

November 2, 3, 4, 1994

January 11, 12, 13, 1995

Training Site:

The Light Brigade
7639 S. 180th
Kent, Washington
Hotel: Nendels (206) 226-1812

3 Easy Ways to Reserve Your Space

- 1) By phone: Call us at (206) 251-1240 to reserve your space.
- 2) By FAX: FAX your signed registration and credit card information to (206) 251-1245, open 24 hours.
- 3) By Mail: Mail your registration form and payment to:
The Light Brigade, 7639 S. 180th Street,
Kent, WA 98032



7639 S. 180TH STREET
KENT, WASHINGTON 98032

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