

### Class Logistics

All classes run from 8:30 am to 4:30 pm. The tuition fee includes all course manuals. Students are responsible for all travel and living expenses and arrangements. Suggested lodgings and transportation are listed on the map below. A list of suggested restaurants in the area will be provided during the course.

### Registration

Course registrar:  
Tel: (905) 201-2152  
Fax: (905) 201-2417

### On-site Courses

All 4 day courses listed in the training schedule are available as an on-site package. The price of \$5,200.00US per course includes the instructor's labor, books and materials for a maximum of 6 students, and the rental of the equipment. In addition to the course fee, the instructor's travel/living expenses and equipment shipping will be billed at cost. An additional labor charge of \$75US/hour for instructor's travel time in excess of 2 hours will apply.

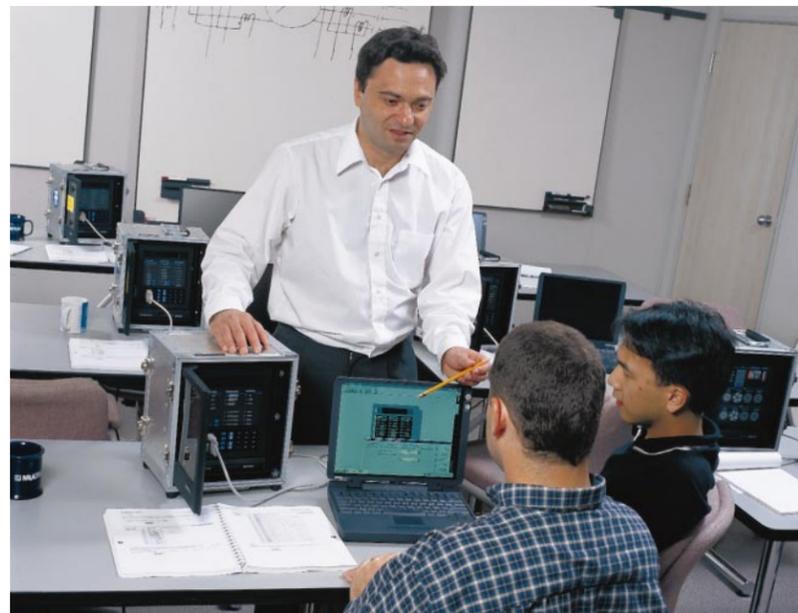
The customers will provide a suitable classroom, overhead projector, screen,

white board, sufficient power outlets, and assistance with equipment logistics.

### Course Cancellation

GE Power Management reserves the right to cancel a course due to under enrollment. In the event of a course cancellation, GE Power Management will notify the students as soon as possible. Students must notify the training centre of cancellation two weeks prior to the course date, for full refund. Students are advised to purchase refundable airline tickets. For further information or to register for a course please call (905) 201-2152

*Gain proficiency in the integration of GEPM products through a combination of classroom and hands on exercises.*



# VAR Courses

## Description and Schedule

### Features

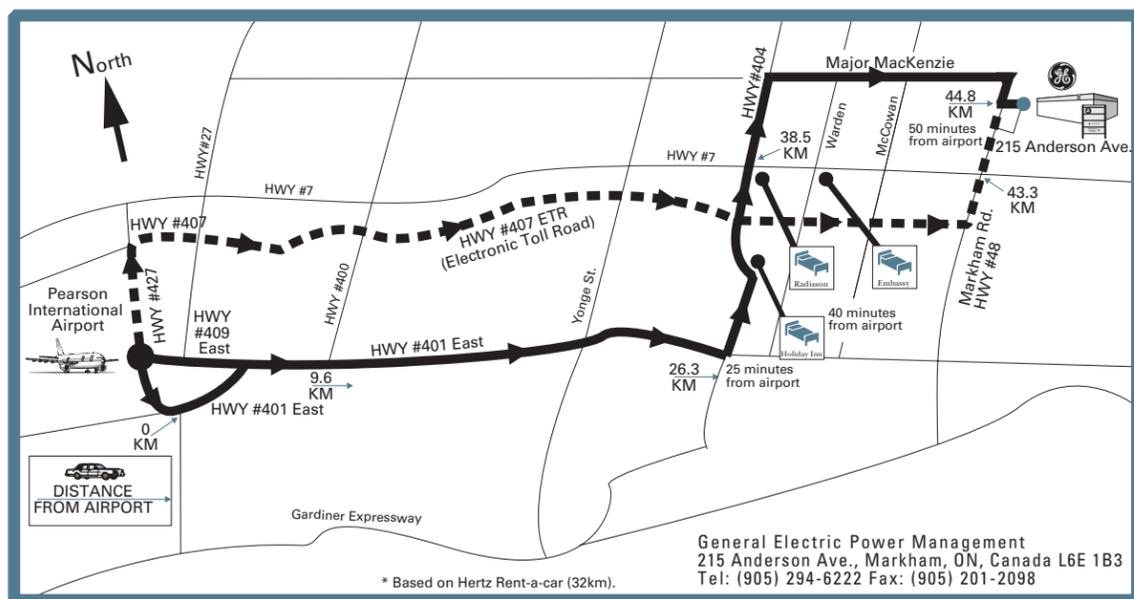
- Factory trained instructors
- Fully equipped labs
- Product and course manuals
- Dedicated classroom facilities
- Hands on exercises
- Limited class size
- Length from 2 to 5 days
- Can be customized to application
- On site courses available
- Certificate on completion

**Course fee waived for recognized GE Power Management VARs.**

## COURSE SCHEDULE - WINTER/SPRING 2001

| Course Name & Code                         | January                         | February                     | March   | April            |
|--|---------------------------------|------------------------------|---------|------------------|
| Distribution Management Relays (TRNG-DIST) |                                 | 6 - 9                        |         | 24 - 27          |
| Motor Management Relay (TRNG-MOTR)         |                                 |                              | 20 - 23 |                  |
| Universal Relay Applications 1 (TRNG-URA1) | 23 - 26                         | 27 - 2(Mar.)                 |         | 3 - 6            |
| Universal Relay Applications 2 (TRNG-URA2) |                                 |                              |         |                  |
| On-site Courses                            | 8 - 12, 16 - 19, 9 - 12, 29 - 2 | 5 - 9, 19 - 23, 27 - 2(Mar.) | 6 - 9   | 16 - 19, 23 - 26 |

## MARKHAM LOCATION MAP



### 401 ROUTE: (90 min / 8-10am, 4-7pm)

- Exit airport - Follow green signs for HWY #401 east.
- Exit HWY #401 at HWY #404, take northbound 404.
- Continue north to Major Mackenzie Rd.
- Turn right on Major Mackenzie (eastbound).
- When you reach HWY #48 (Markham Rd.) turn right.
- Proceed 500 meters to Anderson Ave. and turn left.
- Follow road to GE Power Management and visitor parking.

### 407 (Electronic Toll Road) ROUTE: (25 min)

- Exit airport - Follow blue signs for access to HWY #407 east.
  - Exit HWY #407 at HWY #48 (Markham Rd.).
  - Travel north to Anderson Ave., turn right.
  - Proceed to 215 Anderson Ave located on the northeast bend.
- \* The #407 highway is an electronic toll highway.

### SUGGESTED ACCOMMODATIONS

- HOLIDAY INN**  
7095 Woodbine Ave. (South of Hwy #407)  
Tel: (800) 387-3303 Fax: (905) 474-1877
  - RADISSON HOTEL**  
50 East Valhalla Dr. @ Hwy #7  
Tel: (905) 477-2010 Fax: (905) 477-2026
  - EMBASSY SUITES HOTEL**  
8500 Warden Ave. @ Hwy #7  
Tel: (905) 470-8500 Fax: (905) 477-8611
- GROUND TRANSPORTATION**  
**MARKVILLE LIMOUSINE**  
Tel: (416) 299-7577 Fax: (416) 299-1228  
**LA LIMOUSINE**  
Tel: (905) 640-9030 Fax: (905) 948-1011

## OVERVIEW

This program course schedule has been specifically designed for Value Added Resellers (VARs). The purpose is to provide in depth coverage of products, as well as to identify and illustrate through hands on exercises the "design hooks" built into the product

platform. In gaining a full understanding of these design features, system integrators can add substantial value to the standard product platform and deliver a richer application solution to the end-user.

| Objective  | Recommended Courses  |
|--|--|
| System Engineering, Consulting using UR products | Universal Relay Applications 1<br>Universal Relay Applications 2 |
| UR commissioning and maintenance                 | Universal Relay Maintenance 1<br>Universal Relay Commissioning 1 |
| SR Commissioning, maintenance                    | Distribution Management Relays<br>Motor Management Relays        |



GE Power Management

215 Anderson Ave., Markham, ON, Canada L6E 1B3  
Toll Free: (800)547-8629 Tel: (905) 294-6222 Fax: (905) 201-2098  
[www.GEindustrial.com/pm](http://www.GEindustrial.com/pm)



GE Power Management

**Universal Relay Overview Seminar: TRNG-URS1**



**Target Audience**

- This seminar is designed for senior design and consulting protection engineers with limited time who are interested in a detailed overview of the Universal Relays capabilities.

**Prerequisites**

- None

**Seminar Description**

The format for the UR Seminar is that of short lectures followed by class lab exercises to clearly demonstrate the protection, control, and data communication capabilities of the Universal Relay.

**Tuition**

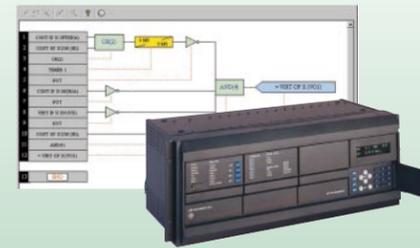
Free

**Seminar Duration**

1 Day

This seminar is held periodically around the world. Call the course Registrar for details.

**Universal Relay Commissioning 1: TRNG-URC1**



**Target Audience**

- Plant/substation electrical maintenance personnel who require understanding of the basic protection algorithms and integration with FlexLogic to create protection and control solutions

**Prerequisites**

- Universal Relay Maintenance 1

**Course Description**

This course is designed to teach maintenance personnel how protection functions and FlexLogic are combined to create a protection scheme within the UR relay. The single line diagram and UCA 2.0 GOOSE messaging (UR to UR communication service) will also be covered through lecture and lab exercises.

Topics covered for each relay include:

- review of universal relay maintenance 1
- integration of basic protection functions and FlexLogic gates to create protection and control programs
- oscillography and event log
- overview of RS485, and 10BaseT/10BaseF Ethernet LANs
- UR GOOSE messaging service
- single line diagram

**Tuition**

~~\$795.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

4 Days

**Universal Relay Applications 1: TRNG-URA1**



**Target Audience**

- This course is primarily designed for the protection engineer who wants to gain the basic skills necessary to apply the Universal Relay to a variety of protection applications

**Prerequisites**

- An understanding of protective relaying and associated electrical control circuits
- Knowledge of Windows 95/NT an asset

**Course Description**

This course introduces the protection engineer to the hardware and software of the Universal Relay for systems integration.

Topics covered include:

- system overview
- hardware installation and configuration
- PC software installation

- relay configuration and monitoring
- basic FlexLogic gates
- timers
- counters
- integration of basic protection functions and FlexLogic gates to create protection and control programs
- oscillography and event log
- single line diagram
- RS232, 485, 10BaseT/10BaseF LAN architecture and installation
- UCA 2.0 overview
- universal relay data communication

**Tuition**

~~\$900.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

4 Days

**Distribution Management Relays Course: TRNG-DIST**



**Target Audience**

- Plant electrical maintenance personnel who are responsible for the installation, maintenance, and repair of GE PM protective relay equipment.

**Prerequisites**

- An understanding of protective relaying and electrical control circuits
- Knowledge of Windows 95/NT an asset

**Course Description**

The GE PM Protection Relay Course is intended to provide students with a basic understanding of GE PM feeder, transformer, and generator protective relay installation, operation, and troubleshooting procedures. The class will cover basic protection theory associated with each relay in addition to the installation and configuration of basic protective elements. The student will then participate in practical lab exercises to reinforce material covered in the lecture.

Relays covered in this course include:

- 750/760 Feeder Management Relay
- 745 Transformer Management Relay
- 489 Generator Management Relay

Topics covered for each relay include:

- theory of operation
- hardware overview and installation
- software and hardware configuration lab exercises
- start-up and troubleshooting procedures

**Tuition**

~~\$900.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

4 Days

**Universal Relay Applications 2: TRNG-URA2**



**Target Audience**

- This course is designed for protection engineers who want to understand how to enable and integrate UR protection elements into an overall protection and control solution.

**Prerequisites**

- UR Applications1

**Course Description**

This course focuses on the primary UR protective elements for B30, T60, F60, L90 and D60.

Topics covered include:

- review of Applications1
- breaker failure
- directional components

- bus protection
- transformer
- line current differential
- distance protection

**Tuition**

~~\$900.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

4 Days

**Motor Management Relay Course: TRNG-MOTR**



**Target Audience**

- Plant electrical maintenance personnel who are responsible for the installation, maintenance, and repair of GE PM motor management relays

**Prerequisites**

- An understanding of protective relaying, electromechanical devices, and electrical control circuits
- Knowledge of Windows 95/NT an asset

**Course Description**

The student will participate in practical lab exercises dealing with real world application issues associated with the correct implementation of GE PM motor management relays. Students will learn how to configure, monitor, and troubleshoot the relays using either the keypad or PC-based software.

Relays covered in this course include:

- 239, 269, 369, 469 motor protection relays

Topics covered for each relay include:

- induction motor theory
- motor thermal model
- installation
- configuration lab exercises
- maintenance and troubleshooting
- PQM: Power Quality Meter

**Tuition**

~~\$795.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

4 Days

**Universal Relay Maintenance 1: TRNG-URM1**



**Target Audience**

- Plant/substation electrical maintenance personnel who are responsible for the installation and maintenance of the UR (Universal Relay) who need to gain a basic understanding of the programming and troubleshooting of the UR platform

**Prerequisites**

- An understanding of protective relaying and the associated electrical control circuits
- Knowledge of Windows 95/NT an asset

**Course Description**

This course is designed to provide maintenance personnel with the basic skills necessary to maintain and troubleshoot the Universal Relay.

Topics covered for each relay include:

- system overview
- hardware installation and configuration
- PC software installation
- relay configuration and monitoring
- basic FlexLogic gates
- timers
- counters

**Tuition**

~~\$595.00 US~~ Course fee waived for recognized GE PM VARs.

**Course Duration**

3 Days

**Custom Course Matrix**



To tailor a course to your specific needs, choose the topics from the course matrix on the right. The cost for custom courses is \$1295.00 per day (Monday through Friday, 8:30 AM to 4:30 PM). Travel, living, and shipping expenses will be billed at cost. This price covers the cost of the instructor, course material, and rental on lab equipment for six students. Customers are responsible for providing a suitable classroom, screen, whiteboard, and sufficient power outlets and assistance with equipment logistics.

| COURSE      | DAYS | COURSE     | DAYS |
|-------------|------|------------|------|
| 239         | 1    | UR Seminar | 1    |
| 269         | 2    | URAPP1     | 4    |
| 369         | 2    | URAPP2     | 4    |
| 469         | 2    | URM1       | 3    |
| 489         | 2    | URM2       | 4    |
| 745         | 2    |            |      |
| 750/760     | 2    |            |      |
| ☆ ALPS      | 5    |            |      |
| MMII        | 1    |            |      |
| PQM         | 1    |            |      |
| SPM Seminar | 1    |            |      |

☆ Coming Soon