HEWLETT-PACKARD

EDUCATION PLANNING GUIDE

HP Computer Museum
www.hpmuseum.net

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Preface

Education is an important part of Hewlett-Packard's total support solution. We offer over 250 education courses to help you be more successful with the application, operation and servicing of your HP products.

This HP Education Planning Guide presents information on our entire range of courses, including curriculum flow diagrams, course objectives, outlines and content. It is your tool for planning the best possible education program for yourself or other members of your organization.

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Take Advantage of HP Expertise to Get the Most out of Your System

At Hewlett-Packard, our job isn't finished until you can do your job better. Education is key to ensuring your success. In fact, education is so important to your ultimate success with new products and technologies that we view education as an integral part of our total solution to your business needs.

You will find that the courses described in this guide are oriented by function and application. We offer you classroom based courses taught at Hewlett-Packard, or we bring classes to your site to meet your large volume training needs. You will also find self-paced and computer-based training courses that give you the flexibility of taking them when and where it's convenient for you. In the Office area, we offer you Classroom Learning Packs and FastTraks to address your internal support needs. These delivery methods allow you to use Hewlett-Packard's high quality training materials to conduct your own training sessions. Your education needs are unique, and Hewlett-Packard's education programs are designed to meet those needs.

High quality, practical education, delivered in the way that best suits your needs, is what our education business is all about.

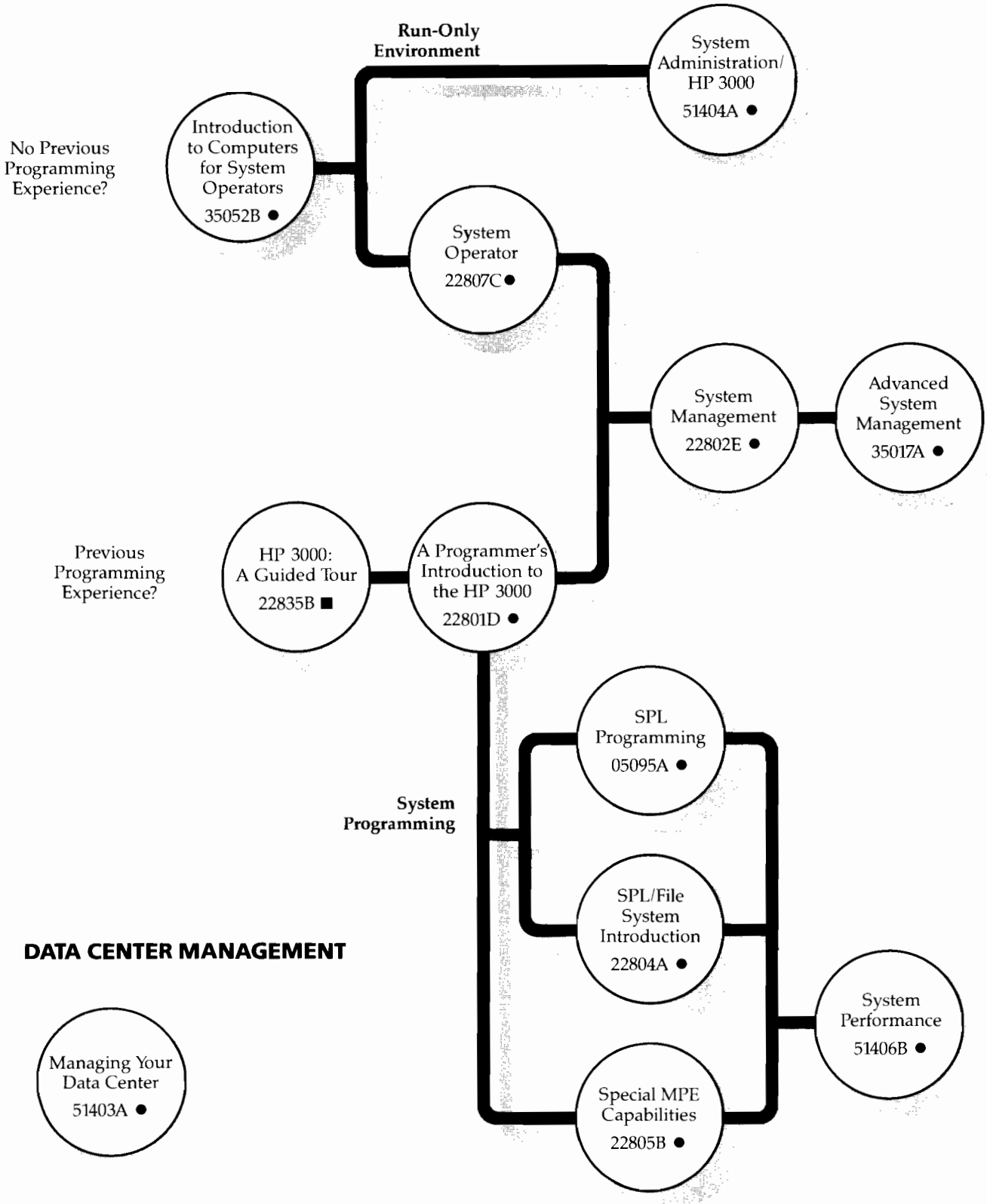
This planning guide has been designed to aid you in planning for your training needs. The flow diagrams will help you identify the courses that are appropriate for you and other members of your organization based on job functions. The course descriptions which complement the flow diagrams describe the course objectives and provide an overview of the content you can expect to be covered.

Whether you are looking to increase your own skills or planning for the development of an entire staff, the Hewlett-Packard Education Planning Guide will help you in building the proper curriculum plan.

BUSINESS SYSTEMS

- COMMERCIAL SYSTEMS
- OFFICE SYSTEMS AND PERSONAL COMPUTERS

HP 3000 SYSTEM OPERATIONS AND SYSTEMS MANAGEMENT

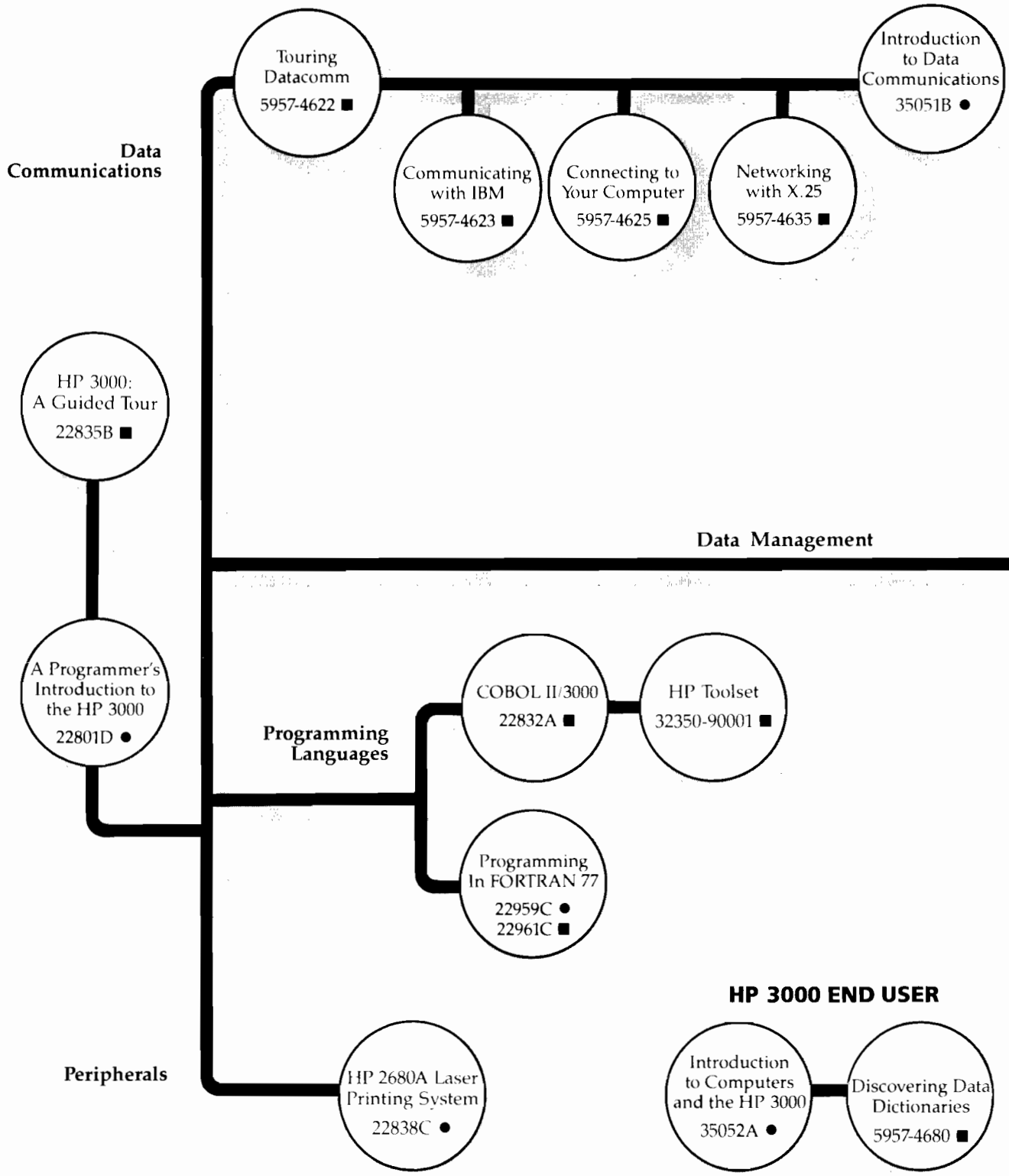


DATA CENTER MANAGEMENT

● **HP Instructor**
■ **Self-Paced, CBT**

Commercial Systems

HP 3000 PROGRAMMING AND SYSTEM SPECIALISTS



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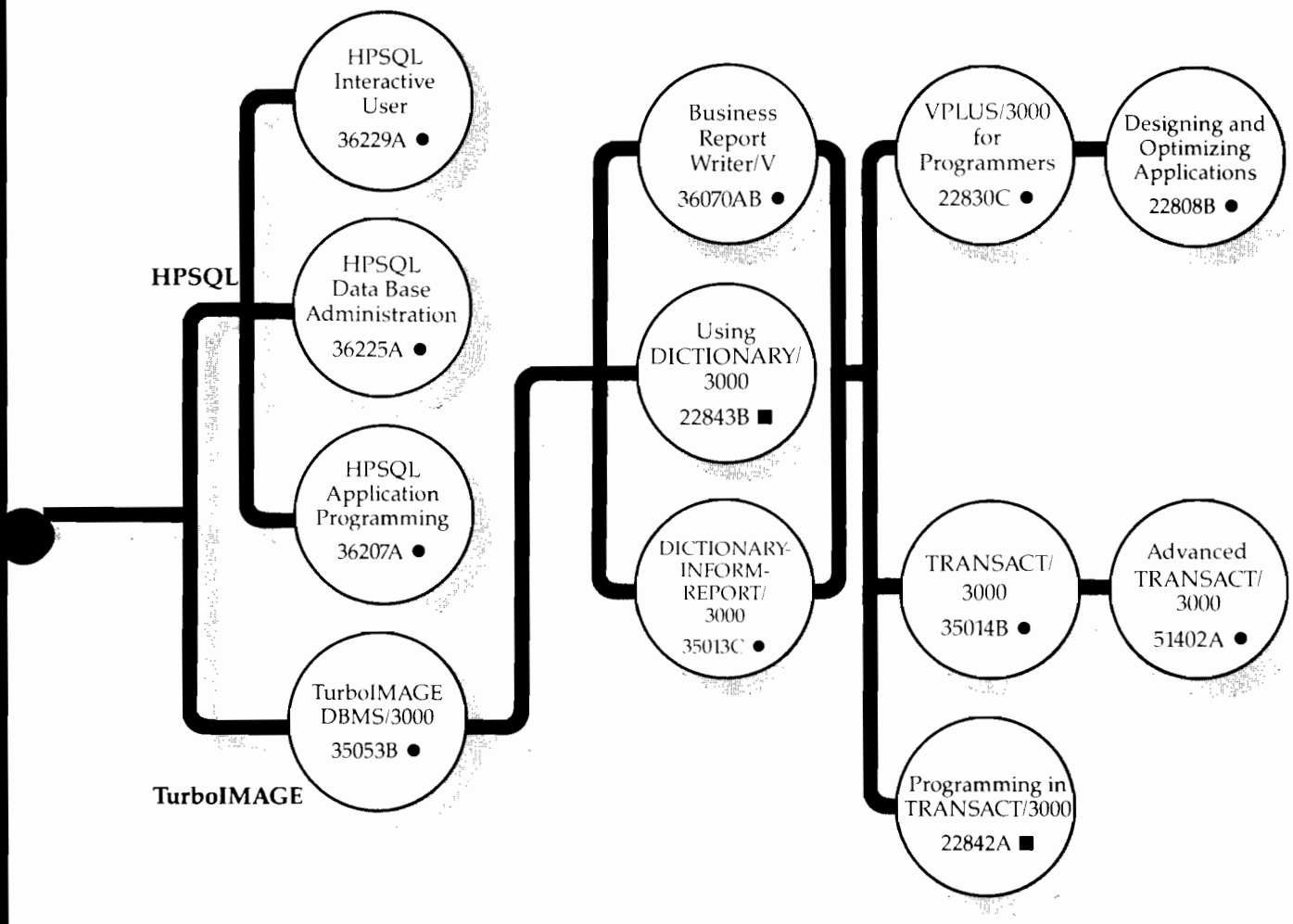

HPSQL
HPSQL Interactive User 36229A ●
HPSQL Data Base Administration 36225A ●
HPSQL Application Programming 36207A ●
TurboIMAGE DBMS/3000 35053B ●
TurboIMAGE
Business Report Writer/V 36070AB ●
Using DICTIONARY/3000 22843B ■
DICTIONARY-INFORM-REPORT/3000 35013C ●
VPLUS/3000 for Programmers 22830C ●
Designing and Optimizing Applications 22808B ●
TRANSACT/3000 35014B ●
Advanced TRANSACT/3000 51402A ●
Programming in TRANSACT/3000 22842A ■

HP 3000 System Operations and Systems Management

HP 35052B—Introduction to Computers for System Operators

Objectives:
- Gain familiarity with common computer terms
- Understand the fundamentals of how a computer works

Audience:
New HP 3000 system operators with little or no computer background

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Communicating with a computer
- Computer hardware
- Computer software
- Operating systems

HP 51404A—System Administration/3000

Objectives:
- Learn to start up, shut down and back up your system
- Perform daily operations

Audience:
This course is for system administrators who are responsible for managing an HP 3000 in an application only environment. (This will be primarily Series 37 Administrators but can also be Series 39, 40, & 42 Adminstrators)

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to Computers for System Operators (HP 35052B). HP 3000: A Guided Tour (HP 22835B), or Using the HP 3000 (HP 03000-90121), or A Guide for the New User (HP 32033-90009) recommended

Content:
- Getting started
- Devices and files
- Jobs and sessions
- Printing
- Transferring information to and from tape
- Operating the system
- Troubleshooting

HP 22807C—System Operator

Objective:
- Learn how to perform daily operating procedures on the HP 3000

Audience:
Entry-level operators

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP 3000: A Guided Tour (HP 22835B) or Introduction to Computers for System Operators (HP 35052B)

Content:
- System activity control
- MPE command structure
- System monitoring
- Start-up and recovery
- Job/session execution
- Accounting structure
- System backup
- Device file management
- System console
- Spooling
- File and group access
- User-defined commands

HP 22835B—HP 3000: A Guided Tour

Objectives:
- Initiate and terminate a session on the HP 3000
- Become comfortable interacting with the HP 3000
- Become aware of the applications for available software tools

Audience:
New HP 3000 users

Length:
Approximately 7 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- General concepts
- Issuing commands
- File system
- Account structure
- Entering text
- Entering data
- Accessing data
- Producing reports

Commercial Systems

HP 22801D—A Programmer's Introduction to the HP 3000

Objectives:
- Use the standard capabilities of the HP 3000 to create programs for a terminal intensive environment
- Communicate with the HP 3000 in interactive and batch modes
- Further study advanced features, data management and data communications

Audience:
Application programmers

Length:
5 days

Delivery Method:
Clasroom, on-site

Prerequisites:
Computer programming experience and an understanding of data processing concepts

Content:
- MPE command syntax
- Fundamental commands
- File system
- Editor
- Program development
- Segmenter
- Error detection
- Tombstones
- Job control
- User defined commands
- FCOPY
- SORT-MERGE
- KSAM/3000
- TurboIMAGE/QUERY
- VPLUS/3000
- Data communication overview
- User support

HP 22802E—System Management

Objectives:
- Prepare for the responsibilities of allocating and controlling system resources
- Qualify as system manager for HP support services

Audience:
System managers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D) or System Operator (HP 22807C)

Content:
- System operations
- Security structure
- System start-up/ shut-down
- MPE commands
- Support services
- Parameter configuration
- Performance and load management
- Console operation management
- System failure and recovery
- Configuration of I/O

HP 35017A—Advanced System Management

Objectives:
- Enhance a system's operation through analysis and control of situations affecting it
- Recover the greatest possible amount of data and ensure its integrity
- Increase a system's security

Audience:
Experienced system managers

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
System Management (HP 22802E); minimum of six months experience as a system manager; a working knowledge of octal and binary number systems

Content:
- Load management
- Disc management
- Device management
- System tables configuration
- MPE directory
- Disc domain, layout, and recovery
- Magnetic tape layout and recovery
- Ensuring data integrity
- Hardware diagnostic utilities
- System security

HP 05095A—SPL Programming

Objectives:
- An understanding of SPL code and data segments
- Knowledge of how the HP 3000 system relates to SPL
- Exposure to MPE hardware executable machine instructions
- Instructions on how to write SPL procedures and subroutines
- Practice writing SPL code

Audience:
System programmers/analysts who want to use SPL and MPE instructions

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) and six months experience using system programming skills

Content:
- Machine dependent features
- Stack operations
- MPE machine instructions
- General syntax
- SPL procedures and routines
- Code generation
- Debug and the stack
- Stack dynamics
- SPL statements that utilize TOS
- Overview of calling SPL procedures

HP 22804A—SPL/File System Introduction

Objectives:
- Review and/or strengthen knowledge of SPL and its relationship to the HP 3000
- Become familiar with the basic principles of the HP 3000 file system as it relates to the characteristics and operation of the disc files

Audience:
Systems-level programmer/analyst

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction (HP 22801D) and at least six months programming experience

Content:
- Machine dependent features
- Stack operations
- MPE file management
- High level review of SPL
- Disc files
- Record selection
- Access modes
- Buffer management

HP 22805B—Special MPE Capabilities

Objectives:
- Utilize DEBUG to alter program execution and to locate storage items on stack while troubleshooting a program
- Write programs that implement process handling, RINS, extra data segments, message files, no wait I/O, multi and gmulti files and traps

Audience:
Experienced HP 3000 application programmers or programmer/analysts with at least one year programming experience

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) and one year programming experience on the HP 3000 using COBOL, FORTRAN, Pascal or SPL

Content:
- Interactive DEBUGging facility (DEBUG)
- Process handling
- Interprocess communication
- Managing sharable resources and data segments
- Customized trap handling

Commercial Systems

HP 51406B—System Performance

Objectives:
- To use OPT/3000 context, display control, and control operation commands to interpret system performance problems
- To identify variables that impact system performance
- To evaluate system configuration
- To evaluate scheduling practices
- To use APS/3000 to evaluate CPU bottlenecks in user and system applications

Audience:
Technical support specialists, system programmers, system analysts, and system managers who perform or oversee: system performance, system tuning, system configuration, scheduling and operations management, upgrades, application design, and/or evaluation of software

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); one year programming experience on the HP 3000; Designing and Optimizing Applications (HP 22808B) and Special MPE Capabilities (HP 22805B) are recommended

Content:
- System performance considerations and potential bottlenecks
- An introduction to OPT/3000 contexts and screens
- Main memory contents; basic segment structures, and usages
- Processes, process tables, and process allocation
- Memory manager attributes and responsibilities
- MPE dispatcher and scheduler responsibilities
- System architectures, disc drives, disc caching
- OPT/3000 logging, summary reports, OPT/3000 log files
- Function and application of additional HP performance tools, (HPTREND, HPCAPLAN, APS/3000, etc.)

Data Center Management

HP 51403A—Managing Your Data Center

Objectives:
- Fine-tune your skills in data center planning, organizing, education & implementation
- Gain perspective on the scope, potential and direction of data center services in the corporate environment

Audience:
Data Center managers, DP/MIS directors

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
System management or data center management experience

Content:
- Facilities management
- Hardware
- Software
- User groups and upper management
- Security
- Budgeting
- Production control and user services
- Personnel

HP 3000 Programming and Systems Specialists

HP 5957-4622—Touring Datacomm: A Data Communications Primer

Objectives:
- Understand the basic concepts of data communications
- Become familiar with technical data communications terms

Audience:
Individuals with little or no previous data communications knowledge

Length:
Approximately 2 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Computer concepts
- Computer architecture
- Local area networks
- Data communications concepts
- Protocols

HP 5957-4623—Communicating with IBM: An HP-to-IBM Communications Primer

Objectives:
- Define the basic components of an IBM mainframe environment
- Understand the basic structure of IBM networks, especially SNA networks
- Compare a variety of IBM and HP-to-IBM products

Audience:
Individuals with a basic understanding of computers and data communications

Length:
Approximately 4 hours

Delivery Method:
Self-paced

Prerequisite:
Touring Datacomm: A Data Communications Primer (HP 5957-4622)

Content:
- IBM host systems, operating systems, and communications hardware and software
- Pre-SNA and SNA—HP-to-IBM networks
- Batch and interactive IBM products
- Batch and interactive products

HP 5957-4625—Connecting to Your Computer: A Workstation-to-Computer Communications Primer

Objectives:
- Define the basic components of the workstation-to-computer communication link
- Compare point-to-point, multipoint and packet switching network communication links
- Introduce HP products for workstation to computer communication in the business environment

Audience:
Individuals with a basic understanding of computers and data communications

Length:
Approximately 4 hours

Delivery Method:
Self-paced

Prerequisite:
Touring Datacomm: A Data Communications Primer (HP 5957-4622)

Content:
- Workstation communication features
- Communication link protocols
- Types of data communication equipment available
- Communication capabilities of the host computer

HP 5957-4635—Networking With X.25

Objectives:
- Become familiar with the technologies used in wide area networks
- Understand the benefits of using X.25

Length:
Approximately 2 hours

Delivery Method:
Self-paced

Prerequisites:
Familiarity with basic principles of data communications. Touring Datacomm: A Data Communication Primer (HP 5957-4622) and Connecting to Your Computer: A Workstation Communications Primer (HP 5957-4624) are recommended.

Content:
- Choosing a wide area connection
- Why is X.25 better
- X.25 and the OSI model
- Using X.25 in a Private Network

HP 35051B—Introduction to Data Communications

Objectives:
- Acquire fundamental knowledge and training in data communication and network concepts and definition
- Understand data communication hardware and software, available communication services and data communication testing tools and methods

Audience:
Anyone interested in learning the fundamentals of data communications

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Touring Datacomm (HP 5957-4622); some knowledge of data processing

Content:
- Overview of data communication
- Telecommunications and network components
- Modems
- Interfaces
- Multiplexers
- Synchronous line protocol
- Telecommunications and network services
- Computer networks
- Testing and troubleshooting

HP 36229A—HPSQL Interactive User

Objectives:
- Introduce HPSQL concepts and terminology
- Experience performing basic functions using ISQL (the interactive interface)
- Experience using some fundamental SQL commands

Audience:
New HPSQL users who will need to interface to HPSQL via ISQL

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
A working knowledge of the HP 3000 system and MPE V/E operating system. No prior knowledge of data base management is required, but it would be helpful.

Content:
- Data Management concepts and terminology
- Introduction to HPSQL and ISQL
- Selecting and screening data
- Modifying data in a table
- Creating and restructuring tables
- Loading and unloading tables
- Creating and using Views

HP 36225A—HPSQL Data Base Administration

Objective:
- Provide data base administrators with in-depth knowledge required to design, create and maintain an HPSQL data base

Audience:
HPSQL data base administrators who have prior experience on the HP 3000

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) or equivalent experience. In addition, HP 3000 experience in both interactive and batch modes, knowledge of the HP 3000 accounting structures, and experience with system security issues. Students should also have general knowledge of data base technology and terminology and be familiar with the basic concepts of relational data bases.

Content:
- Logical design
- Physical design
- DBEnvironment configuration and security
- Data base creation and security
- Logging and recovery
- Maintenance
- System catalog
- TurboIMAGE to HPSQL conversion

HP 36207A—HPSQL Application Programming

Objective:
- Provide in-depth technical knowledge for application programmers to be able to access an HPSQL data base and manipulate data

Audience:
COBOL or Pascal application programmers who have written at least six production programs that perform file retrieval and update

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) or equivalent experience. Students should have written at least six production application programs in COBOL or Pascal that perform file retrieval and update functions.

Content:
- Overview of HPSQL, ISQL and SQL
- Introduction to COBOL preprocessor
- Data manipulation–Query only
- Data manipulation and data manipulation via cursors
- Transaction management
- Program structure
- Data definition
- Dynamic preprocessing

HP 35053B—TurboIMAGE DBMS/3000

Objectives:
- To gain a working knowledge of TurboIMAGE concepts
- Practice designing, creating, and maintaining a TurboIMAGE data base
- Experience designing, writing, and running data base application programs
- Become familiar with the procedures for implementing, logging, and recovery with a TurboIMAGE data base
- Gain an overview of the impact of design features on data base performance

Audience:
Data base programmers and data base administrators

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) and knowledge of one of the following languages: COBOL, FORTRAN, BASIC, SPL, Pascal, RPG

Content:
- TurboIMAGE data structures
- TurboIMAGE data definition language
- TurboIMAGE security
- TurboIMAGE utilities
- Performance and design guidelines

HP 36070AB—Business Report Writer/V

Objectives:
- An understanding of the capabilities and advantages of using HP BRW/V
- Experience in using HP BRW/V to add, modify and run complex reports that utilize the extensive formatting and calculation features
- Experience in optimizing the performance of HP BRW/V reports
- An understanding of HP BRW/V's extensive security features

Audience:
The training course is designed for data base administrators, application specialists, system analysts or programmers who will be responsible for report development and maintenance at your site.

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D) and TurboIMAGE DBMS/3000 (HP 35053B)

Content:
- Introduction to HP BRW/V features
- Report formatting
- Advanced formatting
- Data access and relational conditions
- Product installation
- Installation of Dictionary Interface
- Error messages and trouble shooting
- Performance tuning and considerations
- Performance reports

HP 22843B—Using DICTIONARY/3000

Objectives:
- Understand the structure and terminology of a DICTIONARY/3000 data dictionary
- Learn definitions of files, elements and their relationship in DICTIONARY/3000
- Use the DICTIONARY/3000 utility programs to create, add and audit data bases

Audience:
Data base administrators

Length:
Approximately 12 hours

Delivery Method:
Self-paced

Prerequisite:
HP 3000: A Guided Tour (HP 22835B)

Content:
- DICTIONARY/3000 IMAGE data structures
- Interactive data basics
- Interactive file creation
- Commanding your files
- Security
- DICTIONARY/3000 utilities
- Your data dictionary and HP INFORM/3000
- Documentation structures
- Pascal Definition
- Extraction Utility: DICTPDE
- COBOL Definition
- Extraction Utility: DICTCDE

HP 35013C—DICTIONARY-INFORM-REPORT/3000

Objectives:
- Understand how DICTIONARY/3000 works, with emphasis on installation and use of various HP files and data base structures
- Use of INFORM and REPORT/3000

Audience:
Application programmers and data base administrators

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); TurboIMAGE DBMS/3000 (HP 35053B); VPLUS for Programmers (HP 22830C)

Content:
- Dictionary creation and maintenance
- Dictionary utilities
- Data base changes
- Code extraction
- Inform capabilities
- Maintaining reports and linking files
- Using Report to select, sort and format data
- Test mode facility

HP 22830C—VPLUS/3000 for Programmers

Objectives:
- Use the stand-alone data entry capability of VPLUS/3000 to design and create forms, including data editing checks
- Incorporate VPLUS/3000 capabilities into an application program to retrieve and display forms and collect and edit data

Audience:
Application programmers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D)

Content:
- Forms design
- Editing
- Forms families
- FORMSPEC in batch mode
- Reformatting
- Communication area (COMAREA) setup
- Using VPLUS procedures

HP 22808B—Designing and Optimizing Applications

Objectives:
- Develop an awareness of considerations and trade-offs involved with application design on the HP 3000
- Learn to write more efficient applications based on design considerations for TurboIMAGE DBMS/3000, KSAM/3000, VPLUS/3000 and MPE files

Audience:
Designers and programmer/analysts with at least six months experience on the HP 3000

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); TurboIMAGE DBMS/3000 (HP 35053B); VPLUS/3000 for Programmers (HP 22830C); six months HP 3000 experience following the above curriculum

Content:
- MPE operating environment
- MPE file system
- IMAGE DBMS/3000
- KSAM/3000
- VPLUS/3000
- Program development
- Case study

HP 35014B—TRANSACT/3000

Objectives:
- Analyze and use TRANSACT/3000 Programming Language (TPL)
- Learn to implement an application using the TRANSACT software package

Audience:
Applications programmers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); TurboIMAGE DBMS/3000 (HP 35053B); VPLUS/3000 for Programmers (HP 22830C); DICTIONARY-INFORM-REPORT/3000 (HP 35013C)

Content:
- TRANSACT and DICTIONARY/3000
- Verbs
- Compiling programs
- Accessing a data base
- Automatic error handling
- Data registers
- Selecting and formatting output
- List manipulation
- Conditional processing
- Using VPLUS with TRANSACT
- Forms control

HP 22842A—Programming in TRANSACT/3000

Objectives:
- Write, compile and run simple programs in TRANSACT Programming Language (TPL)
- Define, manage data and transfer control in TPL
- Display, retrieve and modify data in an IMAGE data base through VPLUS forms

Audience:
Programmers skilled on the HP 3000

Length:
Approximately 32 hours

Delivery Method:
Self-paced

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); TurboIMAGE DBMS/3000 (HP 35053B); VPLUS/3000 for Programmers (HP 22830C)

Content:
- Managing data
- Use of IMAGE/3000
- Use of VPLUS/3000
- Compiling and running programs
- Intro to compiler, processor and language
- Programming language syntax

HP 51402A—Advanced TRANSACT/3000

Objectives:
- Design, develop and maintain increasingly complex applications in TRANSACT
- Make knowledgeable decisions on segmenting and modularizing large applications
- Effectively manage programmer and system resources in TRANSACT

Audience:
Experienced TRANSACT programmers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); TurboIMAGE DBMS/3000 (HP 35053B); VPLUS/3000 for Programmers (HP 22830C); DICTIONARY-INFORM-REPORT/3000 (HP 35013C); Introduction to TRANSACT/3000 (HP 35014B) and six months of TRANSACT/3000 programming experience

Content:
- Built-in commands
- STATUS option
- PATH verb
- Loop control
- List management
- Match register
- REPLACE verb
- Automatic error handling
- IMAGE locking and logging
- Complex forms processing
- Local forms storage
- Indirect referencing
- Menu structure
- TRANSACT and the MPE stack
- Array handling
- PROC verb
- Performance tips

Commercial Systems

HP 22832A—COBOL II/3000

Objective:
- Write, compile and run simple COBOL programs

Audience:
Beginning programmers or programmers skilled in other languages

Length:
Approximately 25 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Program variations
- Structure and syntax
- Simple arithmetic statements
- Additional data concepts
- Concepts for using MPE files
- Interactive COBOL programs

HP 32350-90001—HP Toolset

Objectives:
- Manage all files necessary for program development
- Create and edit COBOL II or Pascal source files
- Create and edit COBOL copy libraries
- Compile prep and run COBOL II or Pascal programs
- Generate source code from the data dictionary
- DEBUG programs referencing symbolic names instead of memory locations

Audience:
Programmers, systems analysts, or others who need to write or debug COBOL or Pascal programs

Length:
Approximately 8 hours

Delivery Method:
Self-paced

Prerequisites:
A Programmer's Introduction to the HP 3000 (HP 22801D); either COBOL II (HP 22832A) or a working knowledge of Pascal

Content:
- HP Toolset basics
- HP Toolset editor
- Program translation
- File and version management
- Symbolic DEBUG

HP 22959C—Programming in FORTRAN 77

Objectives:
- Understand and apply FORTRAN 77 syntax
- Use a structured approach to programming
- Plan and execute programs in FORTRAN 77

Audience:
This course provides intensive classroom instruction on HP FORTRAN 77 for novice or experienced programmers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22950B) or HP-UX Fundamentals for Programmers (HP 51434A) or A Programmer's Introduction to the HP 3000 (HP 22801D); students should also have an elementary understanding of algebra

Content:
- Program preparation
- Data
  - -constants and variables
  - -types
- Computations
- More data types
  - -arrays
  - -character data
- Decisions and loops
- Subprograms
- Input and output
- Files
  - -file handling
  - -sequential vs. direct access
  - -formatted vs. unformatted

HP 22961C—Programming in FORTRAN 77

Objectives:
- Understand and use FORTRAN 77 syntax
- Practice a structured approach to programming
- Plan and execute programs in FORTRAN 77

Audience:
Novice or experienced programmers

Length:
5 days

Delivery Method:
Self-paced

Prerequisites:
Introduction to RTE (HP 22050B) or HP-UX Fundamentals for Programmers (HP 51434A) or A Programmer's Introduction to the HP 3000 (HP 22801D); students should also have an elementary understanding of algebra

Content:
- Introduction
- Program preparation
- Data
  - -constants
  - -types
- Computations
- More data types
  - -arrays
  - -character data
- Decisions and loops
- Subprograms
- Input and output
- Files
  - -file handling
  - -sequential vs. direct access
  - -formatted vs. unformatted

HP 22838C—HP 2680A Laser Printing System

Objectives:
- Become familiar with the capabilities of the laser printing system
- Learn how to create forms, logos and format documents

Audience:
Programmers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D)

Content:
- Defining specific terms
- System intrinsics and their application
- Basic orientation; identifying hardware and software compounds
- IDSCHAR labs—creating a logo; retrieving and saving a cell and outline
- IDSFORM labs—creating a form, graphics and grid options
- IFS2680 labs—formatting documents; creating and modifying an environment file; formatting the logical page on a physical page

HP 3000 End User

HP 35052A—Introduction to Computers and the HP 3000

Objectives:
- Gain familiarity with common computer terms
- Understand the fundamentals of how a computer works
- Feel comfortable using some of the HP 3000's special features

Audience:
HP 3000 users with little or no computer background

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Communicating with a computer
- Computer hardware
- Computer software
- Operating systems
- MPE accounting structure
- BASIC programming language
- Data processing and data bases

HP 5957-4680—Discovering Data Dictionaries: A Data Dictionary Primer

Objectives:
- Understand the basic concepts of a data dictionary system (DDS)
- Become familiar with technical data dictionary system terms

Audience:
Individuals with little or no knowledge of data dictionaries, but a general knowledge of computer concepts

Length:
Approximately 3 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Data dictionary terminology
- Who can use a DDS
- DDS capabilities
- Planning for a DDS

HP 45103A—HP 250 Comprehensive Introduction

Objective:
- Master the capabilities of the HP 250

Audience:
BASIC application programmers

Length:
5 days

Delivery Method:
Classroom, on-site

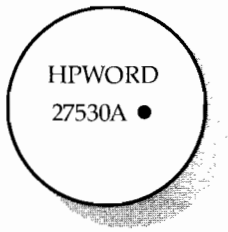
Prerequisite:
Ability to program in BASIC

Content:
- System and BASIC overview
- FORMS
- QUERY
- Report writer
- IMAGE data bases
- System concepts
- Hardware and software features

Office Systems and Personal Computers

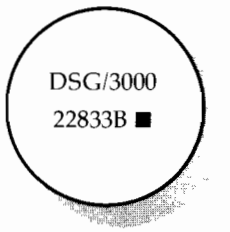
HP 3000 OFFICE USER

WORD PROCESSING



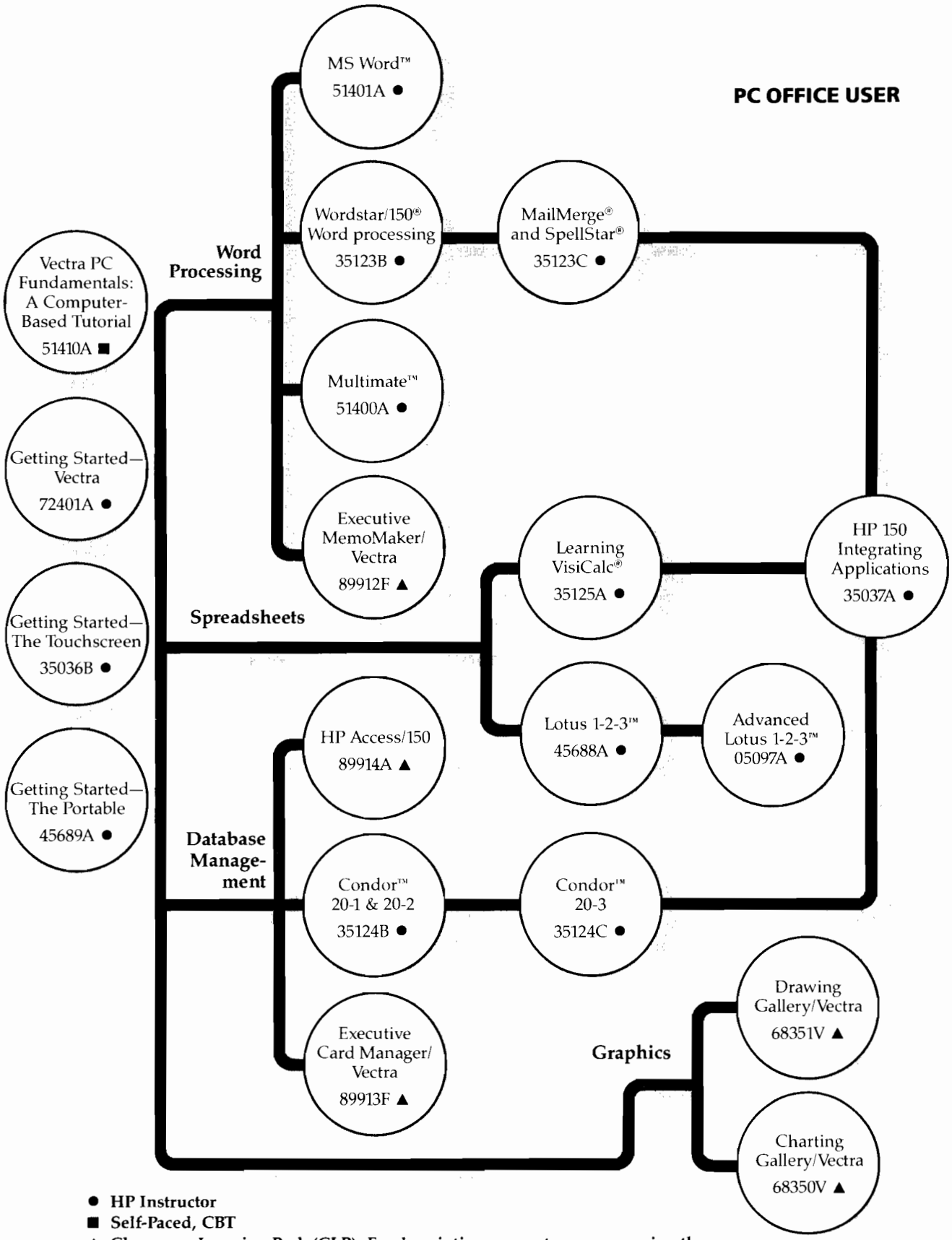
ELECTRONIC MAIL

GRAPHICS



● HP Instructor
■ Self-Paced, CBT

Office Systems and Personal Computers



● **HP Instructor**
■ **Self-Paced, CBT**
▲ **Classroom Learning Pack (CLP). For description, see note accompanying the Office Administrator Support/Trainer Tools chart in this section**

Office Systems and Personal Computers

OFFICE ADMINISTRATOR

NOTE: Commercial Systems: HP 3000 System Operations and System Management courses are applicable for Office Administrators. Refer to page 7.

DESKMANAGER

Using HPDeskManager 27532A ●

HPDeskManager Administration 27533A ●

HPWORD

HPWORD 27530A ●

HPWORD Administration 27531A ●

LOCAL NET

Touring DataComm: A Data Communications Primer 5957-4622 ■

Making the LAN Connection: The LAN Primer 5957-4624 ■

Introduction to Data-Communications and Networking 35051A ●

Managing the OfficeShare Network 50900F+24D ●

OFFICE ADMINISTRATOR SUPPORT/TRAINER TOOLS

HP FastTrak♦	
Gallery Collection (includes both Drawing & Charting Gallery)	68352X
Drawing Gallery	68351X
Charting Gallery	68350X
Executive MemoMaker	89915F
Executive Card Manager	89916F
HP Access	89917A
AdvanceLink	89918F

Classroom Learning Pack ▲	
Gallery Collection/Vectra (includes both Drawing & Charting Gallery)	68352V
Drawing Gallery/Vectra	68351V
Charting Gallery/Vectra	68350V
Executive MemoMaker/Vectra	89912F
Executive Card Manager/Vectra	89913F
HP Access/150	89914A

● **HP Instructor**

■ **Self-Paced, CBT**

▲ **Classroom Learning Packs (CLP)** are available for training end-users in a group environment using HP developed materials that are delivered by your own in-house instructor.

Each pack contains instructor's materials, ready-to-use, so it's easy to prepare a classroom course quickly. Materials include an instructor's guide, overhead transparencies, and student activity sheets. And, in some cases, computer based training (CBT) has also been developed and integrated with the learning program. Each Classroom Learning Pack also includes a copy of the corresponding HP FastTrak Guide.

NOTE: (CLPs) are deliverable only through your own in-house trainer. Students cannot register for a CLP.

♦ **HP FastTrak** were originally developed for Hewlett-Packard support personnel. FastTrak guides are now available for any user that desires information beyond the scope of the software documentation.

If you provide support services for personal computer users in your organization, HP FastTrak will make your job easier by helping you learn the ins and outs of the software quickly. You'll appreciate the handy technical tips on configurations, installation, and integration with other software. And FastTrak is completely modular so you can learn what you want, when you want.

NOTE: Completion of the appropriate FastTrak is an instructor prerequisite for delivering Classroom Learning Packs.

HP 3000 Office User

HP 27530A—HPWORD

Objective:
- Become familiar with the capabilities of HPWORD for accomplishing a variety of word processing tasks

Audience:
HPWORD users in the office environment

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
Office Computing with the HP 3000 (HP 36564-90030); Getting Started with HPWORD Tutorial (HP 32120-90032)

Content:
- Creating, editing and printing
- Enhancing the appearance of documents
- Producing reports and memos
- Customizing letters and envelopes

HP 27532A—Using HPDeskManager

Objectives:
- Learn how to organize your work environment using HPDeskManager
- Practice ways of using HPDeskManager as a communication tool

Audience:
HPDeskManager users in the office environment

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Office Computing with the HP 3000 (HP 36564-90030); Learn Desk Computer-Based Tutorial (HP 36570T)

Content:
- Communication
- Handling messages
- Organization
- Complex tasks
- Security
- Delegation
- Time management

HP 22840B—Using HPDRAW

Objectives:
- Create, edit and plot drawings for paper or transparencies on a variety of peripherals
- Prepare figure files for use in TDP/3000 documents and printing on the HP 2680 Laser Printing System
- Draw, save, and edit figures using the graphics terminal
- Include DSG/3000 or HPEASYCHART charts on drawings

Audience:
Secretarial, clerical, administrative personnel, or others who design presentation aids

Length:
5 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Getting Started
- Editing a drawing
- Adding lines and arcs
- Using utilities
- Using the figure library
- Using DSG/3000 or HPEASYCHART

HP 22833B—DSG/3000

Objectives:
- Learn chart design procedure
- Use the menus to create charts
- Build data files using DSG/3000 menus

Audience:
Interactive DSG/3000 users

Length:
10 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Interactive use of DSG/3000
- Chart enhancement
- Chart development

PC Office User

HP 51410A—Vectra PC Fundamentals: A Computer-Based Tutorial

Objective:
- Obtain the solid microcomputer foundation that is essential to be a successful applications user on the Vectra PC

Audience:
New Vectra PC users, especially those who are unfamiliar with microcomputers

Length:
4-6 hours

Delivery Method:
Computer-Based Training (CBT)

Prerequisite:
None

Content:
- Microcomputer overview
- Getting Started on the Vectra PC
- Lessons on keyboard use, discs, running applications, files, directories, P.A.M., and MS-DOS commands

HP 72401A—Getting Started–Vectra

Objectives:
- Define and apply general computer terms and entry-level concepts
- Use the basic functions of the HP Vectra PC
- Employ the information resources which are included with the Vectra PC system
- Properly utilize flexible discs for information storage and retrieval

Audience:
New or potential Vectra PC users with little or no previous computer experience

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Basic computer concepts
- Introduction to system assembly
- P.A.M. basics
- File concepts
- Directory usage
- Flexible disc formatting
- Flexible discs' file backup/copying

HP 35036B—Getting Started–The Touchscreen

Objective:
- Learn how to start-up and use the HP 150

Audience:
New computer users

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Definition of basic computer terms
- Starting up the system
- Handling the discs properly
- Preparing new discs and installing application software
- Using your computer for everyday tasks

HP 45689A—Getting Started–The Portable

Objectives:
- Operate The Portable using P.A.M.
- Develop skills to write and save a memo and dial an electronic information service
- Understand compatibility issues between desktop computers and The Portable.

Audience:
New computer users

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Writing and saving memos (MemoMaker)
- Using the built-in electronic discs
- Dialing an information service
- Connecting The Portable to a desktop

HP 51401A—MS Word™

Objective:
- Be able to use the features and capabilities of MS Word™ to create and edit documents

Audience:
Business professionals, word processing specialists, and clerical personnel

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Getting Started-The Touchscreen (HP 35036B) or Getting Started-Vectra (HP 72401A) or Vectra PC Fundamentals: A Computer-Based Tutorial (HP 51410A) or equivalent experience.

Content:
- Create, edit and format documents
- Save and print documents
- Create new files by editing and mixing existing files
- Save files in a glossary

HP 35123A—WordStar®/150

Objective:
- Get started with three key software tools for office productivity

Length:
1½ days

Delivery Method:
Classroom, on-site

Content:
- Covers the material in WordStar®/150 Word Processing (HP 35123B) and MailMerge® and SpellStar® (HP 35123C)

HP 35123B—WordStar®/150 Word Processing

Objectives:
- Understand word processing and its capabilities
- Learn how to create, edit, and print documents

Audience:
WordStar® users

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
Getting Started-The Touchscreen (HP 35036B) or equivalent experience

Content:
- Start WordStar®
- Create a new document
- Make changes to a document such as inserting, deleting or replacing text
- Obtain printed copies of a document from the printer
- Save a document on a disc

HP 35123C—MailMerge® and SpellStar®

Objectives:
- Learn to merge reports and have the HP 150 automatically proof your text
- Create customized letters by combining mailing lists with text

Audience:
MailMerge® and SpellStar® users

Length:
1/2 day

Delivery Method:
Classroom, on-site

Prerequisite:
WordStar®/150 (HP 35123B) or equivalent experience

Content:
- Start MailMerge® and SpellStar®
- Use commands to tell your HP 150 how to combine files
- Produce multiple file documents
- Use SpellStar® and special dictionaries you create to proof your text

HP 51400A—MultiMate™

Objective:
▼ Create, edit, format, and print documents

Audience:
Secretaries and clerks with little or no prior word processing experience

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Getting Started-The Touchscreen (HP 35036B) or Getting Started-Vectra (HP 72401A) or Vectra PC Fundamentals: A Computer-Based Tutorial (HP 51410A) or equivalent experience.

Content:
- ▼ Creating and printing documents
- ▼ Editing and formatting
- ▼ Document summary screens
- ▼ SpellCheck™
- ▼ Library
- ▼ Key procedures
- ▼ Merging

HP 89912F—Executive MemoMaker/Vectra

Objectives:
▼ Understand how to use the basic Executive MemoMaker features

Audience:
Managers, professionals, secretaries

Length:
4 hours

Delivery Method:
Classroom Learning Pack

Prerequisites:
Instructor: PC familiarity plus FastTrak for Executive MemoMaker (HP 89915F)
End User: PC familiarity

Content:
- ▼ Using Executive MemoMaker discs and manuals
- ▼ Creating memos
- ▼ Printing memos
- ▼ Using format files
- ▼ Checking spelling
- ▼ Adding picture files

HP 35125A—Learning VisiCalc®

Objectives:
- ▼ Use an electronic worksheet
- ▼ Become familiar with VisiCalc® commands

Audience:
Business professionals and managers

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Getting Started-The Touchscreen (HP 35036B) or Getting Started-Vectra (HP 72401A) or Vectra PC Fundamentals: A Computer-Based Tutorial (HP 51410A) or equivalent experience.

Content:
- ▼ Creating, editing, and printing worksheets
- ▼ Identification and use of 16 commands
- ▼ Activation of function keys
- ▼ Moving the cursor
- ▼ Storing and loading worksheets

HP 45688A—Lotus 1-2-3™

Objectives:
- ▼ Be introduced to Lotus 1-2-3™ integrated software
- ▼ Gain overview of Lotus 1-2-3™ as a business tool
- ▼ Gain hands-on experience in using Lotus 1-2-3™ to create spreadsheets, graphs, and data bases

Audience:
Business professionals

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Getting Started-The Touchscreen (HP 35036B) or Getting Started-The Portable (HP 45689A) or Getting Started-Vectra (HP 72401A) or Vectra PC Fundamentals: A Computer-Based Tutorial (HP 51410A) or equivalent experience.

Content:
- ▼ Introducing Lotus 1-2-3™
- ▼ Understanding the Lotus 1-2-3™ worksheet
- ▼ Creating a spreadsheet
- ▼ Saving a worksheet and printing a report
- ▼ Formatting a spreadsheet
- ▼ Creating and using a data base
- ▼ Graphing data

HP 05097A—Advanced Lotus 1-2-3™

Objectives:
- Use data Sort and data Query commands
- Use data Table command and data base statistical functions
- Use keyboard macros
- Program using the /X command

Audience:
New or existing users of Lotus 1-2-3™ who need to use "advanced" features beyond basic spreadsheets

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
Lotus 1-2-3™ (HP 45688A) or equivalent experience with Lotus 1-2-3™ applications

Content:
- Structure of Lotus 1-2-3™ data bases
- Data Sort and Data Query commands
- Data Table commands
- Data Statistical functions
- Simple keyboard macros
- Programming with /X commands
- Advanced file commands

HP 89914A—HP Access/150

Objectives:
- Learn the features of HP Access/150
- Learn basic data base concepts
- Learn how to retrieve and manipulate data from an Image 3000 or PC-based data base

Audience:
Managers, professionals, and secretaries

Length:
4 hours

Delivery Method:
Classroom Learning Pack

Prerequisites:
Instructor: PC familiarity plus FastTrak for HP Access (HP 89917A)
End User: PC familiarity

Content:
- Features of HP Access
- Running the software
- Retrieving data from a data base
- Querying the data base
- Sorting, summarizing, and saving data

HP 35124A—Learning Condor™

Length:
2 days

Delivery Method:
Classroom, on-site

Content:
- Covers the material in Condor™ 20-1 & 20-2 (HP 35124B) and Condor™ 20-3 (HP 35124C)

HP 35124B—Condor™ 20-1 & 20-2

Objectives:
- Understand how to use the Condor™ data base management system
- Learn to create, sort, manipulate and report on data base information through practice sessions

Audience:
Business professionals with data base management applications

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
Getting Started-The Touchscreen (HP 35036B) or equivalent experience

Content:
- Start Condor™ 20-1
- Design a form for entering data
- Create a simple dataset
- Add to and change the information in a dataset
- Sort and create simple reports
- Reorganize a dataset by adding or deleting a data item

HP 35124C—Condor™ 20-3

Objective:
▼ Gain in-depth experience using Condor's™ advanced data base management and report writing capabilities

Audience:
Business professionals with sophisticated data base management applications

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
Condor™ 20-1 and 20-2 (HP 35124B)

Content:
▼ Indexing a new or existing dataset
▼ Joining unlike datasets
▼ Creating, printing and revising a report
▼ Creating and running a help screen and command procedure

HP 89913F—Executive Card Manager/Vectra

Objective:
▼ Perform basic functions with ECM

Audience:
Managers, professionals, and secretaries

Length:
1/2 day

Delivery Method:
Classroom Learning Pack

Prerequisites:
Instructor: PC familiarity plus FastTrak for Executive Card Manager (HP 89916F)
End User: PC familiarity

Content:
▼ Exploring a cardfile
▼ Creating a cardfile
▼ Adding, updating, and deleting cards
▼ Finding sets of cards
▼ Printing reports
▼ Continuing with Executive Card Manager

HP 68351V—Drawing Gallery/Vectra

Objectives:
▼ Gain familiarity with Drawing Gallery functions
▼ Perform most Drawing Gallery tasks

Audience:
Managers, professionals, and secretaries

Length:
1/2 day

Delivery Method:
Classroom Learning Pack

Prerequisites:
Instructor: PC familiarity plus FastTrak for Drawing Gallery (HP 68351X)
End User: PC Familiarity

Content:
▼ Using the mouse and the drawing tools
▼ Creating text, lines, and shapes and adding pictures
▼ Using menus
▼ Saving, getting, printing and plotting pictures
▼ Connect objects
▼ Using the drawing board

HP 68350V—Charting Gallery/Vectra

Objective:
▼ Become familiar with creating pie, bar, and line charts

Audience:
Managers, professionals, and secretaries

Length:
1/2 day

Delivery Method:
Classroom Learning Pack

Prerequisites:
Instructor: Basic PC familiarity plus FastTrak for Charting Gallery (HP 68350X)
End User: PC familiarity

Content:
▼ Creating a pie chart
▼ Creating a bar chart
▼ Creating a line chart
▼ Charting concepts
▼ Using the manuals

Office Systems and Personal Computers

HP 35037A—HP 150 Integrating Applications

Objective:
▼ Pass information from one software application to another

Audience:
Business professionals using multiple software applications

Length:
1/2 day

Delivery Method:
Classroom, on-site

Prerequisites:
WordStar® (HP 35123B); MailMerge® and SpellStar® (HP 35123C); Learning VisiCalc® (HP 35125A); Condor™ 20-1 & 20-2 (HP 35124B) and Condor™ 20-3 (HP 35124C)

Content:
▼ Sharing or passing information between software packages

Office Administration

HP 27532A—Using HPDeskManager

Please see Office Systems and Personal Computers—HP 3000 Office User Section

HP 27533A—HPDeskManager Administration

Objective:
▼ Develop the skills and tools necessary to manage the day-to-day operation of HPDeskManager

Audience:
Those responsible for coordinating the use of office products

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
Using HPDeskManager (HP 27532A)

Content:
▼ Nodes and networks
▼ Configuration
▼ MAILUTIL
▼ Essential daily activities
▼ Planning for HPDeskManager

HP 27530A—HPWORD

Please see Office Systems and Personal Computers—HP 3000 Office User Section

HP 27531A—HPWORD Administration

Objective:
▼ Develop the skills and tools necessary to manage the day-to-day operation of HPWORD

Audience:
Those responsible for coordinating the use of office products

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
HPWORD (HP 27530A)

Content:
▼ Role of office products coordinator
▼ Running and maintaining HPWORD
▼ Installation and configuration
▼ Problem solving

HP 5957-4622—Touring Datacomm: A Data Communications Primer

Please see Business Systems–Commercial Systems Section

HP 5957-4624—Making the LAN Connection: The LAN Primer

Objectives:
▼ Obtain an overview of local area networks (LANs)
▼ Obtain specific information on HP's LAN implementation

Audience:
Individuals with little or no previous data communications knowledge

Delivery Method:
Self-paced

Prerequisite:
Familiarity with concepts in Touring Datacomm: A Data Communications Primer (HP 5957-4622)

Content:
▼ Characteristics and advantages of LANs
▼ Criteria for evaluating a LAN
▼ Industry standards
▼ Glossary of terms

HP 35051B—Introduction to Data Communications and Networking

Please see Business Systems–Commercial Systems Section

HP 50900F + 24D—Managing the OfficeShare Network

Objectives:
- Learn to plan and install the cabling for an OfficeShare Network
- Learn to install and configure the network interface cards and software
- Learn to perform routine maintenance and simple diagnostic troubleshooting

Audience:
Network managers, and Vectra PC and IBM PC/AT/XT users who will be responsible for the installation and routine maintenance of the OfficeShare Network

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Students who are not familiar with the HP personal computers should attend Getting Started–Vectra (HP 72401A) or Getting Started–The Touchscreen (HP 35036B) or complete Vectra PC Fundamentals: A Computer-Based Tutorial (HP 51410A).

Previous experience with MS™-DOS or PC-DOS version 2.00 is highly recommended. Familiarity with the elementary concepts of a Local Area Network (LAN) is also helpful.

Content:
- Product overview
- Responsibilities of the network manager
- Network planning and cable installation
- Network interface, software installation and configuration
- Daily operation and maintenance
- Diagnostic troubleshooting
- OfficeShare support services

Office Administrator Support/ Trainer Tools

HP 68352X—Gallery Collection

Length:
9-11 hours

Delivery Method:
Self-paced (FastTrak)

Content:
- Covers the material in Drawing Gallery (HP 68351X) and Charting Gallery (HP 68350X)

HP 68351X—Drawing Gallery/Vectra

Objective:
- Understand the major features and benefits of Drawing Gallery

Audience:
Experienced personal computer users or technical support personnel

Length:
5-7 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisite:
PC familiarity

Content:
- Supported configuration
- Installation
- Features and uses
- Integration

HP 68350X—Charting Gallery/Vectra

Objective:
- Use major features and understand benefits of Charting Gallery

Audience:
Experienced personal computer users or technical support personnel

Length:
5-8 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisite:
PC familiarity

Content:
- Supported configurations
- Installation
- Features and uses
- Command files
- Integration
- Printing and plotting

HP 89915F—Executive MemoMaker/Vectra

Objectives:
- Understand major features and advantages of EMM
- Provide information on installation and supported configurations

Audience:
Experienced personal computer users or technical support personnel

Length:
6 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisite:
PC familiarity

Content:
- Supported configurations
- Installation
- Features and uses
- Integration

HP 89916F—Executive Card Manager/Vectra

Objectives:
- Understand Executive Card Manager configurations
- Be familiar with features and uses
- Provide information on installation
- Identify data integration issues

Audience:
Experienced personal computer users or technical support personnel

Length:
10 to 11 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisite:
PC familiarity

Content:
- Getting started with ECM
- Supported configurations
- Features & uses
- Integration
- Installation

HP 89917A—HP Access

Objectives:
- Understand the major features and benefits of HP Access
- Identify data integration issues

Audience:
Experienced personal computer users or technical support personnel

Length:
5-7 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisite:
PC familiarity

Content:
- Supported configurations
- Installation
- Features and uses
- Integration

HP 89918F—AdvanceLink

Objectives:
- Understand AdvanceLink configurations and data integration issues.
- Provide assistance to end users of AdvanceLink

Audience:
Experienced personal computer users or technical support personnel

Length:
10 to 17 hours

Delivery Method:
Self-paced (FastTrak)

Prerequisites:
PC familiarity
Simple user knowledge of HP 3000

Content:
- Supported configurations
- Installation
- Features and uses
- Integration

HP 68352V—Gallery Collection/Vectra

Length:
1 day

Delivery Method:
Classroom Learning Pack

Content:
- Covers the material in Drawing Gallery/Vectra (HP 68351V) and Charting Gallery (HP 68350V)

HP 68351V—Drawing Gallery/Vectra

Please see Office Systems and Personal Computers—PC Office User Section

HP 68350V—Charting Gallery/Vectra

Please see Office Systems and Personal Computers—PC Office User Section

HP 89912F—Executive MemoMaker/Vectra

Please see Office Systems and Personal Computers—PC Office User Section

HP 89913F—Executive Card Manager/Vectra

Please see Office Systems and Personal Computers—PC Office User Section

HP 89914A—HPAccess/150

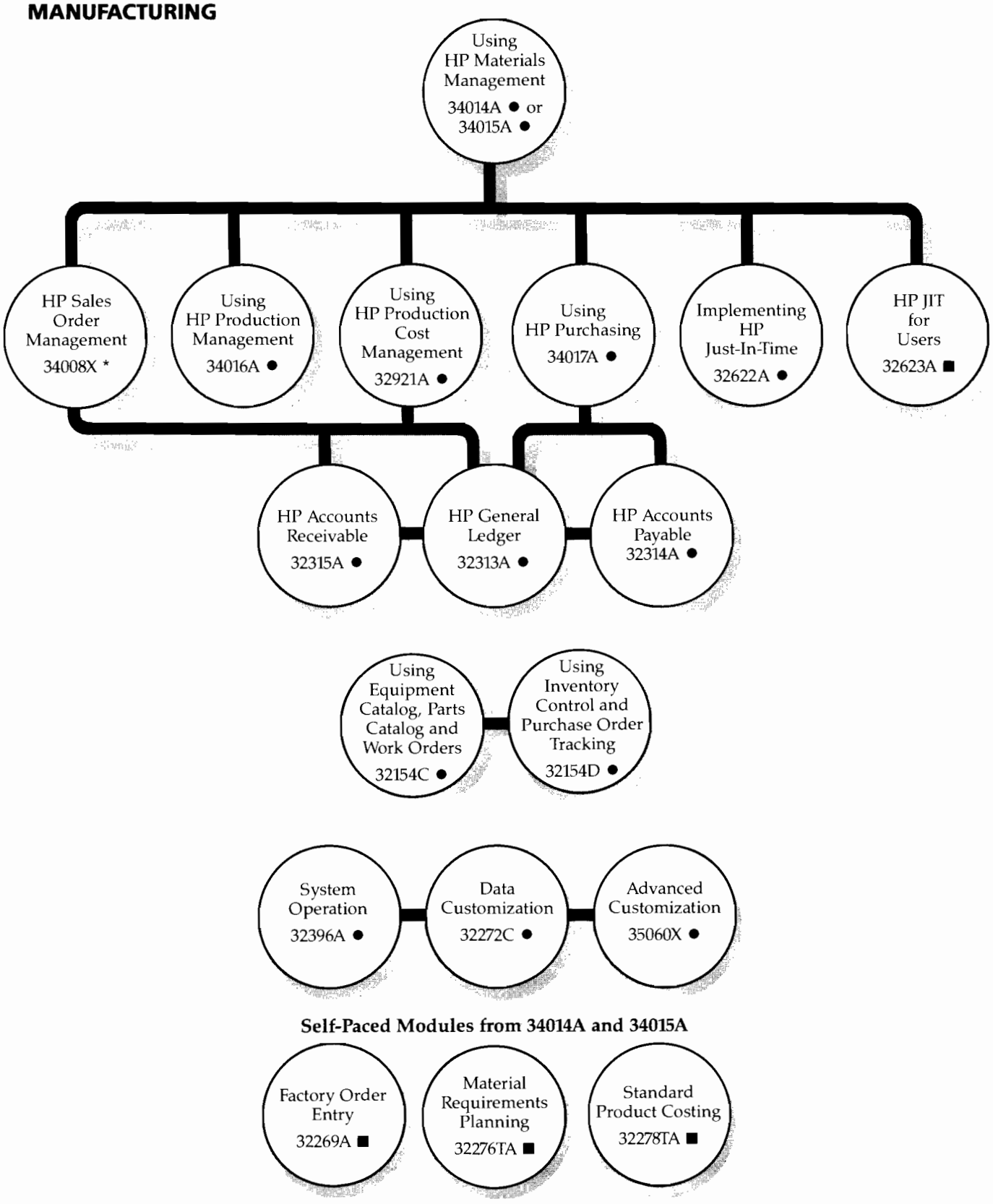
Please see Office Systems and Personal Computers—PC Office User Section

MANUFACTURING SYSTEMS

- MANUFACTURING/PROCESS CONTROL
- FINANCIAL AND ACCOUNTING APPLICATIONS
- HP 1000 SYSTEMS—A SERIES
- HP 1000 SYSTEMS—M/E/F SERIES
- BOARD TEST SYSTEMS

Manufacturing/Process Control

MANUFACTURING

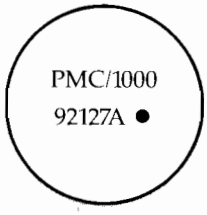


● **HP Instructor**
■ **Self-Paced, CBT**

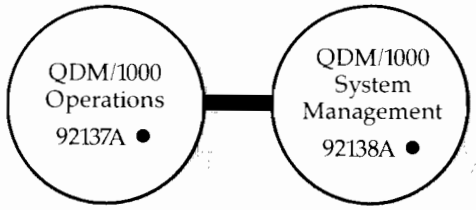
* This course is delivered by Smith Dennis & Gaylord, Inc.

Manufacturing/Process Control

PROCESS MONITORING AND CONTROL



STATISTICAL QUALITY CONTROL



● HP Instructor
■ Self-Paced, CBT

Manufacturing/Process Control

Manufacturing

HP 34014A—Using HP Materials Management

Objective:
- Learn to implement the various modules of HP Materials Management

Audience:
HP 3000 system administrators and system users who will be implementing HP Materials Management. Note that a separate course, HP 34015A, is available for those implementing HP Materials Management with Lot Control and Traceability.

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with an HP terminal and an understanding of the activities involved in materials management

Content:
- Introduction and system overview
- Parts and bills of material
- Routings and workcenters
- Purchase order tracking
- Work orders and allocations
- Issues and receipts
- Inventory balance management
- Overview of three self-paced courses
  - Factory Order Entry
  - Material Requirements Planning
  - Standard Product Costing
- Master production scheduling including rough cut resource planning
- Numerous case studies

HP 34015A—Using HP Materials Management with Lot Control and Traceability

Objective:
- Learn to implement the various modules of HP Materials Management with Lot Control and Traceability

Audience:
HP 3000 system administrators and system users who will be implementing HP Materials Management with Lot Control and Traceability. Note that a separate course, HP 34014A, is available for those implementing HP Materials Management without the Lot Control and Traceability module.

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with an HP terminal and an understanding of the activities involved in materials management

Content:
- Introduction and system overview
- Parts and bills of material
- Routings and workcenters
- Purchase order tracking
- Work orders and allocations
- Issues and receipts
- Inventory balance management
- Overview of three self-paced courses
  - Factory Order Entry
  - Material Requirements Planning
  - Standard Product Costing
- Master production scheduling including rough cut resource planning
- Lot control and traceability
- Numerous case studies

Manufacturing/Process Control

HP 34016A—Using HP Production Management

Objective:
- Learn to implement the various modules of HP Production Management

Audience:
HP 3000 system administrators and system users who will be implementing HP Production Management

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with an HP terminal and an understanding of the activities involved in production management

Content:
- Introduction and system overview
- Standard and special routings
- Workcenters and workstations
- Operations and employees
- Shop calendar
- Order management
- Data collection
- Special order types
- Changing order routings
- Scheduling orders
- Releasing and changing orders
- Shop reports
- Archiving data
- Interfaces
- Input/Output analysis
- Capacity requirements planning
- Numerous practical activities

HP 32921A—Using HP Production Cost Management

Objectives:
- Learn how to implement production cost management and set up parameters
- Request and run interfaces and standard reports

Audience:
System administrators, application coordinators, cost accounting department personnel

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
The Product Evaluation Guide for HP Production Cost Management (32920-90301); chapters 1 and 2 of the HP Production Cost Management Implementation & Maintenance Manual (32920-90002); knowledge of how HP Materials Management/3000 works in your environment

Content:
- Application and module parameters
- Interfaces (input and output)
- Variancing
- On-line reviews
- Standard printed reports

Manufacturing/Process Control

HP 34017A—Using HP Purchasing

Objectives:
- Develop an understanding of the features of HP Purchasing
- Gain experience in handling the tasks necessary to successfully manage purchase order requisitions, subcontract work orders, negotiate with vendors, create purchase orders, receive materials, complete returns, and allocate invoices
- Practice using and interpreting the HP Purchasing reports
- Learn procedures to implement and maintain the HP Purchasing system

Audience:
MIS system administrators, purchasing managers, and key system users who are responsible for the implementation and management of the HP Purchasing system

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
Students need to be familiar with use of an HP terminal. In addition, students should be familiar with HP Materials Management, understand manufacturing concepts, be comfortable with the generation of reports, and be aware of HP's Terminal Interface Process (TIP).

Content:
- System overview
- Getting started
- Purchase order requirements
- Buyer's work space
- Creating the purchase order
- Receiving materials
- Handling returns
- Invoice allocation
- Implementation
- Lab exercises

HP 32622A—Implementing HP JIT

Objectives:
- Understand Just-In-Time (JIT) manufacturing philosophy
- Prepare the manufacturing environment for HP JIT
- Implement and use HP JIT
- Prepare to train end users

Audience:
System administrators and implementation team members responsible for production, materials, layout, accounting, and engineering activities

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
None

Content:
- JIT concepts
- Implementing JIT
- Introduction to HP JIT
- Manufacturing specifications
- Post deducting
- Inventory control
- Rate-based planning
- Materials requirements planning
- Using HP JIT with MM/3000
- Interfaces and system administration

HP 32623A—HP JIT for Users

Objective:
- Learn to use all functions of the HP JIT program

Audience:
Supervisors and production workers who will be using HP JIT

Length:
20 hours

Delivery Method:
Self-paced

Prerequisites:
None

Content:
- Using your terminal with HP JIT transactions
- Maintaining controller and calendar information
- Maintaining parts and bills of material
- Maintaining stock areas
- Maintaining deduct points and deduct lists
- Using HP JIT for manufacturing control
- Using HP JIT for stock control
- Scheduling and planning
- Using HP JIT material requirements planning
- Maintaining accounting information

Manufacturing/Process Control

HP 32315A—HP Accounts Receivable

Please see Manufacturing Systems–Financial & Accounting Applications Section

HP 32313A—HP General Ledger

Please see Manufacturing Systems–Financial & Accounting Applications Section

HP 32314A—HP Accounts Payable

Please see Manufacturing Systems–Financial & Accounting Applications Section

HP 32154C—Using Equipment Catalog, Parts Catalog, and Work Orders

Objective:
- Learn to implement the Equipment Catalog, Parts Catalog, and Work Order modules of HP Maintenance Management to manage your maintenance department

Audience:
Maintenance managers and supervisors, users of the HP Maintenance Management software, and HP 3000 system administrators

Length:
3½ days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with functions and activities of a maintenance department or experience as an HP 3000 system administrator

Content:
- Introduction and system overview
- Using the terminal to perform transactions
- Use of the Equipment Catalog module
- Use of the Parts Catalog module
- Use of the Work Order Control module
- Case study

HP 32154D—Using Inventory Control and Purchase Order Tracking

Objectives:
- Learn to implement the Inventory Control and Purchase Order Tracking modules of HP Maintenance Management to manage your maintenance department

Audience:
Maintenance managers and supervisors, users of the HP Maintenance Management software, and HP 3000 system administrators

Length:
1½ days

Delivery Method:
Classroom, on-site

Prerequisites:
Using Equipment Catalog, Parts Catalog, and Work Orders course (HP 32154C)

Content:
- Introduction
- Use of the Inventory Control module
- Use of the Purchase Order Tracking module
- Case study

Manufacturing/Process Control

HP 32396A—System Operation

Objective:
- Learn to manage the HP Materials Management, HP Production Management, HP Just-In-Time, HP Purchasing, and HP Maintenance Management applications
- Understand the fundamentals of customizing these applications to your particular implementation

Audience:
HP 3000 system administrators for HP Materials Management, HP Production Management, HP Just-In-Time, HP Purchasing, and HP Maintenance Management. Persons responsible for implementation of these products will also benefit from this course.

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
System Operator Course (HP 22807C); System Management Course (HP 22802E) and an understanding of the manufacturing application to be supported

Content:
- Introduction and system overview
- System administrator interface
- Monitoring activity
- Daily job schedule
- Backup and recovery
- Stopping your application
- Customization reports
- Configuring terminals
- User interface
- Application transfer
- Using the Terminal Interface Process (TIP)
- Managing TIP
- Security
- Job scheduling
- Defaults
- Message customization
- Data base generation
- Numerous practical activities

HP 32272C—Data Customization

Objective:
- Study and use the customization features of HP Manufacturing Systems

Audience:
System administrators for HP Manufacturing Systems

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
System Operation (HP 32396A); VPLUS/3000 for Screen Designers (HP 22830D); TurboIMAGE DBMS/3000 (HP 35053B) strongly recommended

Content:
- Data item customization
- Screen customization
- Processing specs

HP 35060X—Advanced Customization

Objective:
- Learn to interface your custom programs to HP Manufacturing Management applications through the HP Advanced Customization software

Audience:
HP 3000 programmers who will be creating custom programs to be used with HP Manufacturing Management applications

Length:
1/2 day

Delivery Method:
On-site

Prerequisite:
Experience as an HP 3000 programmer/analyst in a COBOL environment

Content:
- Screen editing
- Transaction logic processing
- Data base updating
- Screen exits
- Update exits
- Completion exits
- Security exits
- Global user exits
- Universal transactions
- Exit buffers
- Programming aids
- Customization reports
- TRACE facility

Manufacturing/Process Control

HP 32269A—Factory Order Entry

Objectives:
- Guide you through the different processes necessary to use Factory Order Entry successfully
- Gain hands-on experience with Factory Order Entry

Audience:
Managers, supervisors, systems administrators, implementation team members, and users of Factory Order Entry

Length:
4 hours

Delivery Method:
Self-paced

Prerequisite:
None

Content:
- Maintaining customer information and factory orders
- Available-to-promise quantities
- Booking orders
- Releasing, shipping, and returning orders

HP 32276TA—Material Requirements Planning

Objective:
- Learn the concepts, functions, and reports of Material Requirements Planning

Audience:
Managers, supervisors, systems administrators, implementation team members, and users of Materials Requirements Planning

Length:
Self-paced

Delivery Method:
Self-paced

Prerequisites:
None

Content:
- Definition of MRP
- Information required by MRP
- How MRP works
- Interpretation of reports
- Recommendations for management on MRP performance

HP 32278TA—Standard Product Costing

Objective:
- Learn the concepts, functions, and reports of Standard Product Costing

Audience:
Managers, supervisors, systems administrators, implementation team members and users of Standard Product Costing

Length:
Self-paced

Delivery Method:
Self-paced

Prerequisites:
None

Content:
- Examination of cost data
- Calculation of total product costs
- Setting new standard costs
- Cost edit
- Cost roll-up
- Cost rollover

Process Monitoring and Control

HP 92127A—HP Process Monitoring & Control/1000 Configurations, Operations, System Management & Advanced Topics

Objective:
- An operations level knowledge of PMC/1000

Audience:
System implementers/system operators using PMC/1000 software

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22950B); knowledge of process control and program development skills with FORTRAN 77

Content:
- Introduction to PMC/1000
- Device and block configuration
- Historian configuration
- Installation and troubleshooting
- Getting started with PMC/1000
- Bumpless transfer
- Display configuration
- Block scheduling
- User subroutines and devices

Statistical Quality Control

HP 92137A—QDM/1000 Quality Decision Management Configurations and Operations

Objective:
- Design a QDM/1000 system to collect data and generate reports

Audience:
System implementers/system operators of QDM/1000

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22950B); understanding of manufacturing (particularly quality control), basic statistics, and data bases

Content:
- Introduction to QDM/1000
- Application overview and demonstration
- Data collection
- Configurations
- Report definition and generation
- Overview of archiving
- Overview of automatic data collection
- Solving a sample production problem using QDM/1000

HP 92138A—QDM/1000 Quality Decision Management System Management and Advanced Topics

Objective:
- Familiarity with the extended features of QDM/1000 through programmatic data manipulation and with procedures to install and maintain a QDM/1000 system

Audience:
System implementers/system managers using QDM/1000

Length:
3 days

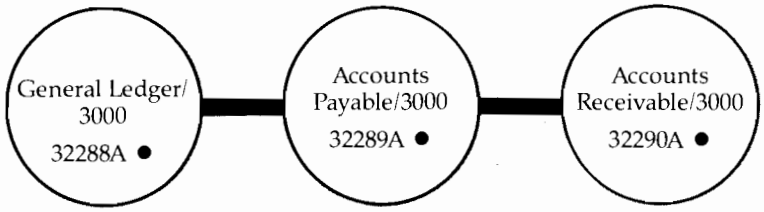
Delivery Method:
Classroom, on-site

Prerequisites:
QDM/1000 Configuration and Operation (HP 92137A); RTE-A Programming (HP 22954D) or RTE-A System Management (HP 22955C); IMAGE/1000-II (HP 35076B); Programming In FORTRAN 77 (HP 22959C) or Pascal Programming (HP 22960C); BASIC as applicable for the application

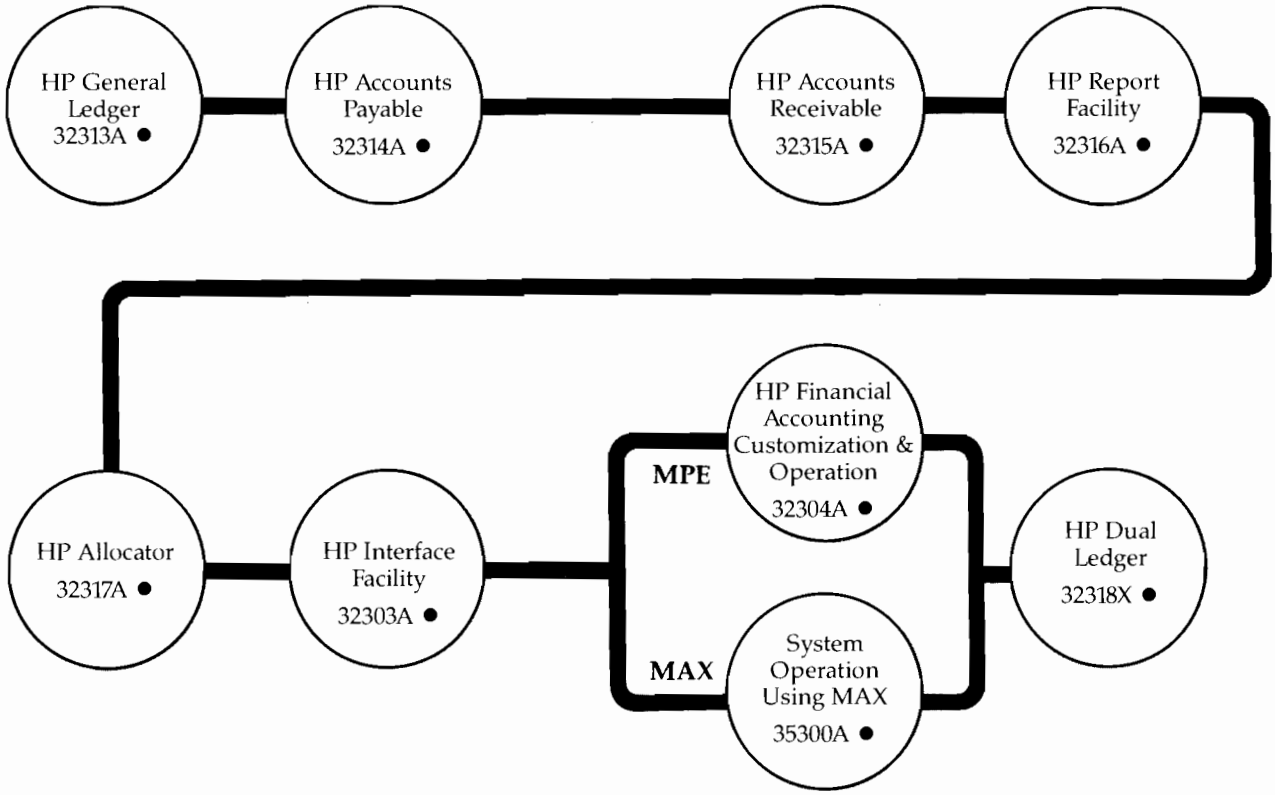
Content:
- Archiving
- System management
- Automatic data collection
- Customizing a QDM/1000 demonstration
- Programming QDM/1000 user hooks

Financial and Accounting Applications

GENERAL ACCOUNTING/3000



FINANCIAL ACCOUNTING/3000



BUDGETING

● **HP Instructor**
■ **Self-Paced, CBT**

Financial and Accounting Applications

General Accounting

HP 32288A—General Ledger/3000

Objective:
- Learn the features and capabilities of General Ledger/3000

Audience:
System trainer/coordinator

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D)

Content:
- Features and capabilities of General Ledger/3000
- End-user training

HP 32289A—Accounts Payable/3000

Objective:
- Discover the capabilities and features of Accounts Payable/3000

Audience:
System trainers/coordinators

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D)

Content:
- Features and capabilities of Accounts Payable/3000
- End-user training

HP 32290A—Accounts Receivable/3000

Objective:
- Receive information on the features and capabilities of Accounts Receivable/3000
- Learn to promote proper use of Accounts Receivable/3000 through training others

Audience:
System trainers/coordinators

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
A Programmer's Introduction to the HP 3000 (HP 22801D)

Content:
- Features and capabilities of Accounts Receivable/3000
- End-user training

Financial Accounting

HP 32313A—HP General Ledger

Objective:
- Perform daily operations with HP General Ledger

Audience:
System administrators and general accounting department personnel

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Knowledge of data flow needs of your general accounting environment

Content:
- Setting up tasks
- Daily operations
- Period/Month/Year-end processing
- On-line reviews
- Running Reports

Financial and Accounting Applications

HP 32314A—HP Accounts Payable

Objective:
▼ Use HP Accounts Payable to perform daily operations

Audience:
System administrators and accounts payable department personnel

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Knowledge of data flow and data needs of your accounts payable environment

Content:
- ▼ Setting up tasks
- ▼ Vendor maintenance
- ▼ Processing of invoices and credit memos
- ▼ Payment management
- ▼ On-line reviews
- ▼ Reports
- ▼ Period/Year-end close

HP 32315A—HP Accounts Receivable

Objective:
▼ Use HP Accounts Receivable to perform daily operations

Audience:
System administrators and accounts receivable department personnel

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Knowledge of data flow and data needs in your accounts receivable environment

Content:
- ▼ Setting up tasks
- ▼ Customer maintenance
- ▼ Processing of invoices and credit memos
- ▼ Cash receipts management
- ▼ On-line reviews
- ▼ Reports
- ▼ Period/Year-end close

HP 32316A—HP Report Facility

Objective:
▼ Specify and customize reports for accounting departments

Audience:
System administrators and accounting department personnel

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Knowledge of the reporting requirements in your accounting departments

Content:
- ▼ Concept and terminology
- ▼ General purpose reports
- ▼ Ledger statement reports
- ▼ Requesting reports
- ▼ Maintaining item lists

HP 32317A—HP Allocator

Objective:
▼ Manage cost allocations with HP Allocator

Audience:
System administrators and general accounting department personnel

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
HP General Ledger (HP 32313A)

Content:
- ▼ Concepts and terminology
- ▼ Setting up tasks
- ▼ Processing
- ▼ Reports
- ▼ Data base relations

Financial and Accounting Applications

HP 32303A—HP Interface Facility

Objective:
- Define interfaces and perform data exchange with external systems

Audience:
System administrators

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Knowledge of file systems and data exchange needs in an accounting environment

Content:
- Concepts and terminology
- Output interfaces
- Requesting interfaces
- Input interfaces
- Maintaining item lists
- Standard interfaces

HP 32304A—HP Financial Accounting Customization and Operation

Objective:
- Learn how to customize HP Financial Accounting products

Audience:
System administrators

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP General Ledger (HP 32313A) or HP Accounts Payable (HP 32314A) or HP Accounts Receivable (HP 32315A); Familiarity with VPLUS/3000; TurboIMAGE DBMS/3000 recommended

Content:
- Daily operation
- Defining terminals
- Defining security
- HPFA data bases
- Customizing screens and data items
- Recustomization

HP 35300A—System Operation Using MAX

Objective:
- To provide a basic understanding of the features and functionality of MAX, and to provide hands-on experience in using the system
- To familiarize participants thoroughly with the documentation (System Operation Manual) and encourage the use of the manual as the first response to a problem
- To give the end-user training that is functionally oriented, reflecting how they will use the system in their own environment

Audience:
System administrators

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
Know how to use a computer terminal, be familiar with MPE commands, especially those introduced with the MPE V (T-MIT), and be familiar with JCL

Content:
- Introduction to MAX
- Customization
- Scheduling jobs and terminals
- Day-to-day operation
- Troubleshooting, backup and recovery

HP 32318X—HP Dual Ledger

Objective:
- Use HP Dual Ledger to perform daily operations

Audience:
System administrators and general accounting department personnel

Length:
1/2 day

Delivery Method:
On-site

Prerequisite:
HP General Ledger (HP 32313A)

Content:
- Concepts and terminology
- Setting up tasks
- Daily processing
- Foreign currency handling
- Revaluation

Financial and Accounting Applications

Budgeting

HP 35351A—HP Financial Budgeting

Objectives:
- An understanding of the capabilities and advantages of HP Financial Budgeting (HPFB)
- Experience in using HPFB to create a budget model and to do advanced budgeting
- Experience in performing the required system administrator tasks

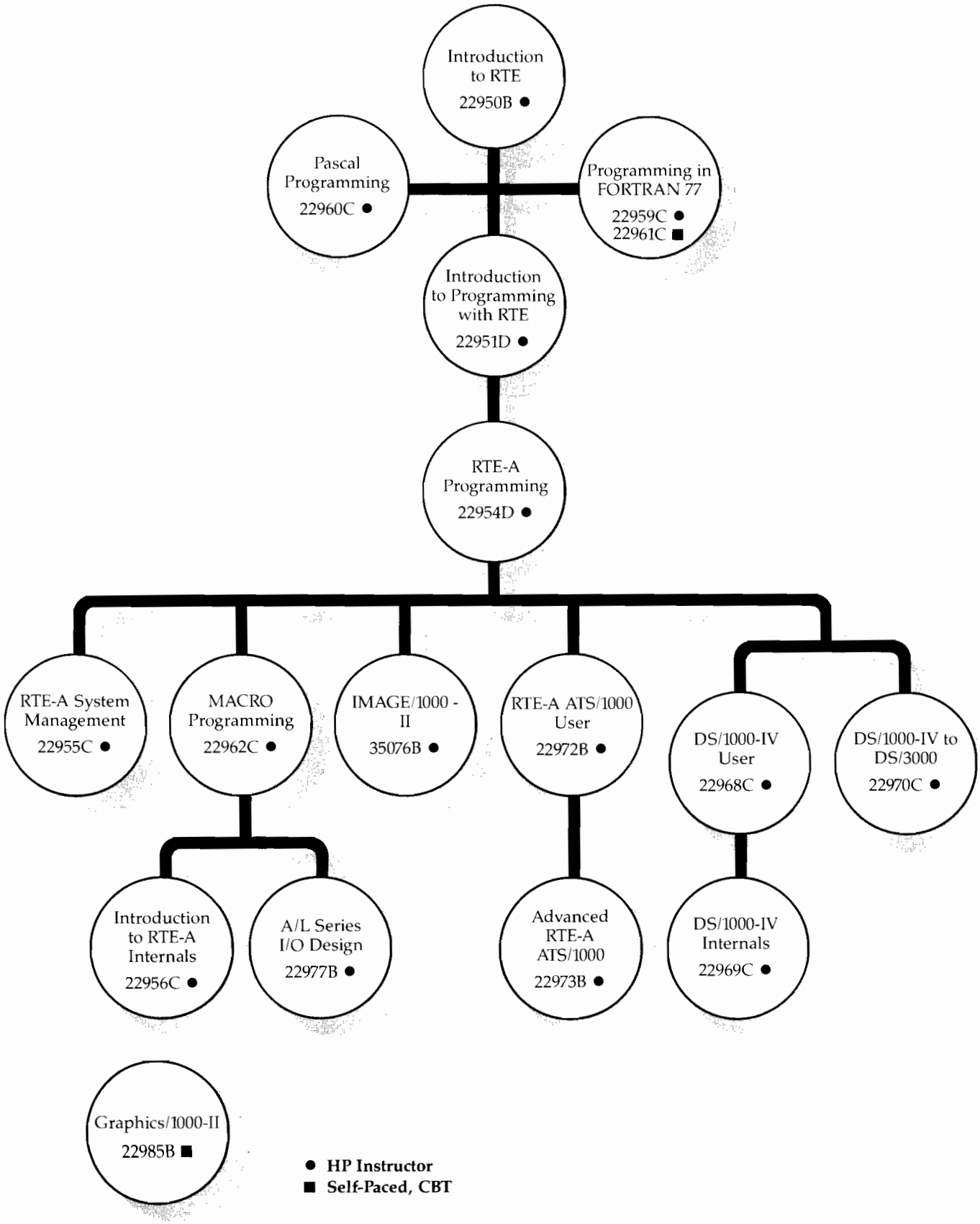
Audience:
Controllers with responsibility for the budgeting process

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
None

Content:
- Overview of HP Financial Budgeting
- Screens and menus
- Fields and data transfers
- Roll-up and reporting
- Setting up a budget center structure
- Setting up security
- Defining worksheets
- General Ledger interface
- System administrator tasks


Introduction to RTE 22950B ●
Pascal Programming 22960C ●
Programming in FORTRAN 77 22959C ● 22961C ■
Introduction to Programming with RTE 22951D ●
RTE-A Programming 22954D ●
RTE-A System Management 22955C ●
MACRO Programming 22962C ●
IMAGE/1000 - II 35076B ●
RTE-A ATS/1000 User 22972B ●
DS/1000-IV User 22968C ●
DS/1000-IV to DS/3000 22970C ●
Introduction to RTE-A Internals 22956C ●
A/L Series I/O Design 22977B ●
Advanced RTE-A ATS/1000 22973B ●
DS/1000-IV Internals 22969C ●
Graphics/1000-II 22985B ■
● HP Instructor
■ Self-Paced, CBT

HP 22950B—Introduction to RTE

Objective:
- Learn the basic concepts to understand and effectively utilize an RTE system

Audience:
RTE-A programmers and system managers who need an understanding of the RTE interactive operating environment.

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
None

Content:
- Introduction to RTE
- The File System
- Fundamental CI commands
- Device I/O
- Compilers and LINK/1000

HP 22960C—Pascal Programming

Objective:
- Prepare for structured programming in Pascal for the RTE or HP-UX system environment

Audience:
Programmers skilled in RTE or HP-UX

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22950B) or HP-UX Fundamentals for Programmers (HP 51434A)

Content:
- Basic concepts
  - -structured programming
  - -how to compile, load and run a Pascal program
- Data types
- Routines
  - -recursion
  - -directives
- Creating pointers and dynamic variables
- Dynamic data structures
- Subprograms and segments
  - -efficient segmentation
- Files
  - -physical files vs. logical files
  - -file types

HP 22959C/HP 22961C—Programming in FORTRAN 77

Please see Business Systems–Commercial Systems Section

HP 22951D—Introduction to Programming with RTE

Objectives:
- Learn to use the FORTRAN 77 and Pascal compilers, LINK and Symbolic Debugger to develop programs
- Describe how RTE manages the execution of a program
- Pass parameters and strings between the interactive environment (CI) and the application program

Audience:
Programmers who will be writing FORTRAN 77 or Pascal application programs who need an understanding of the RTE programming environment

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22950B) Pascal Programming (HP 22960C) or Programming in FORTRAN 77 (HP 22959C)

Content:
- Program development in RTE
- Program execution environment
- Programming command files
- Program communication

HP 22954D—RTE-A Programming

Objectives:
- Learn to write programs using EXEC and FMP calls
- Describe the range of capability available through EXEC and FMP calls
- Understand how to use CDS to handle large programs
- Be able to use EMA/VMA/Sharable EMA to manipulate large amounts of data

Audience:
FORTRAN or Pascal knowledgeable programmers who will be writing RTE-A applications and who need an understanding of the intrinsic programmatic services available through RTE-A operating system (EXEC) and file system (FMP) calls

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Introduction to Programming with RTE (HP 22951D)

Content:
- Using RTE-A programmatically
- Program scheduling
- Program communication
- Class I/0
- Using files programmatically
- Large Program Management
- Large Data Management
- Peripheral Device Control

HP 22955C—RTE-A System Management

Objectives:
- Learn the functions of a system manager
- Plan an RTE-A configuration including I/O device and disc configuration
- Generate, install, and initialize an RTE-A System
- Describe considerations and strategies for system maintenance and backup/recovery

Audience:
System managers, designers, analysts or programmers who need to configure RTE-A systems to meet particular application needs or who are responsible for providing system management functions.

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
RTE-A Programming (HP 22954D)

Content:
- Overview of system manager's job
- System design and planning
- System generation
- System installation
- Memory based systems
- System maintenance
- System backup and recovery

HP 22962C—MACRO Programming

Objectives:
- Become familiar with the RTE Assembler and HP 1000 computer basic instruction set
- Practice developing Assembly language programs

Audience:
Programmers with an interest in the HP 1000 basic instruction set

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-6/VM Session Monitor (HP 22988A) or RTE-A Programming (HP 22954D)

Content:
- Introduction and review
  - -internal data representation
  - -RTE program development
- Assembly language basics
  - -coding format
- MACRO
  - -user macros
  - -MACRO libraries
- Techniques
  - -looping
  - -calling and exiting subroutines
  - -passing parameters to subroutines
  - -array processing
- Input output
  - -direct I/O
  - -direct memory access

HP 22956C—Introduction to RTE-A Internals

Objective:
- Become familiar with the RTE-A theory of operation and organization
- RTE-A tables, lists and data structures

Audience:
System managers, designers, analysts or programmers who need an understanding of RTE-A internal structures and operation to better design application programs and configurations.

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-A System Management (HP 22955C); MACRO Programming (HP 22962C)

Content:
- RTE-A organization
- System start-up
- Interrupt processing
- Program management
- I/O processing
- Hierarchical file system
- Code and data separation

HP 22977B—A/L Series I/O Design

Objective:
- Become familiar with the internal architecture of the A/L series I/O system from a software and hardware perspective

Audience:
System designers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
MACRO Programming (HP 22962C) and skilled in driver writing

Content:
- ASIC hardware
- ID.00 driver internals
- HP-IB
- MUX hardware
- IDM00 driver internals
- PIC hardware
- ID.50 driver internals
- ID.37 driver internals
- I/O master interface
- IOP chip

HP 35076B—IMAGE/1000-II

Objective:
- Learn to design, load, access, install and maintain an IMAGE data base

Audience:
Application programmers and data base administrators

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-6/VM Session Monitor (HP 22988A) or RTE-A Programming (HP 22954D); Programming in FORTRAN 77 (HP 22959C) or Pascal Programming (HP 22960C)

Content:
- Introduction to IMAGE data base concepts
- Data base design and schema
- IMAGE start-up
- Data base loading and access
- QUERY
- Formatted reports
- Intrinsic calls
- Logging and recovery
- Installation and maintenance

HP 22972B—RTE-A ATS/1000 User Test Programming

Objectives:
- Learn about the hardware and software components of ATS/1000 systems
- Become familiar with the features of ATS/1000 and how these features can be implemented in test programs and test environments
- Understand basic test programming techniques

Audience:
Beginning to intermediate level test programmers who will be writing test programs for ATS/1000 automatic test systems

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-A Programming (HP 22954D); Programming in FORTRAN 77 (HP 22959C) or experienced in BASIC

Content:
- ATS/1000 overview
- TSIS software in ATS/1000
- Switching and interfacing UUTS
- ATS/1000 architecture
- Device subroutines
- BASIC features
- Booting up and system functional tests (SFTS)
- Support services

HP 22973B—Advanced RTE-A ATS/1000

Objectives:
- Generate and reconfigure ATS/1000 systems
- Learn to write system functional test programs and device subroutines for user added devices

Audience:
Test engineers with ATS/1000 system manager responsibilities for system level ATS/1000 generation or software maintenance responsibilities

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-A ATS/1000 User Test Programming (HP 22972B) and RTE-A System Manager (HP 22955C)

Content:
- ATS/1000 generation planning and system customization
- ATS/1000 on-line installation workshop
- SFT programs
- ATS/1000 generation workshop
- MTIS software internals
- DTU in ATS/1000
- Device subroutines

HP 22968C—DS/1000-IV User

Objectives:
- Understand the capabilities and features of DS/1000
- Become familiar with available communication methods

Audience:
Programmer/analysts

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-A Programming (HP 22954D) or RTE-6/VM Session Monitor (HP 22988A)

Content:
- Introduction
  - -network terminology
  - -network topology
  - -nodal addressing
- Remote operator commands
  - -remote session
  - -remote disc storage info
  - -remote file manipulation
  - -program-to-program communication
  - -remote I/O mapping
  - -troubleshooting tools
  - -generation considerations
  - -remote program scheduling

HP 22969C—DS/1000–IV Internals

Objectives:
- Obtain a conceptual understanding of the DS/1000 network information flow
- Initialize, modify and troubleshoot a DS/1000 network

Audience:
Network managers and programmer/analysts

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
DS/1000-IV User (HP 22968C)

Content:
- General overview
  - -definitions
  - -general nodal architecture
  - -master programs
  - -network service intrinsics
  - -communications management
  - -network utility programs
- Datagram buffering
  - -class I/O re-threading
- Network information flow
  - -message flow and data paths
- Datagram formats
- Error processing
- Network initialization and modification
- Communications management
  - -independent tasks
  - -remote session monitor
  - -message accounting

HP 22970C—DS/1000–IV to DS/3000

Objectives:
- Understand the capabilities and features of DS/1000 to DS/3000
- Get hands-on experience in initialization, modification and troubleshooting a DS/1000 network

Audience:
Programmer/analysts and network managers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-A Programming (HP 22954D) or RTE-6/VM Session Monitor (HP 22988A); Familiarity with MPE is helpful

Content:
- HP 1000 to HP 3000 capabilities
  - -operator commands
  - -programmatic calls
- Program-to-program communications
  - -HP 1000 master and slave calls
  - -HP 3000 master and slave calls
- DS/1000 internals
  - -software modules
  - -message flow
  - -converters
  - -troubleshooting
- Generation considerations
  - -libraries
  - -table entries
  - -initialization

HP 22985B—Graphics/1000-II

Objectives:
- Introduce fundamental graphics concepts
- Provide syntactic and semantic information for DGL calls
- Enable the student to write DGL programs to fulfill simple graphics applications

Audience:
New users of computer graphics on the HP 1000

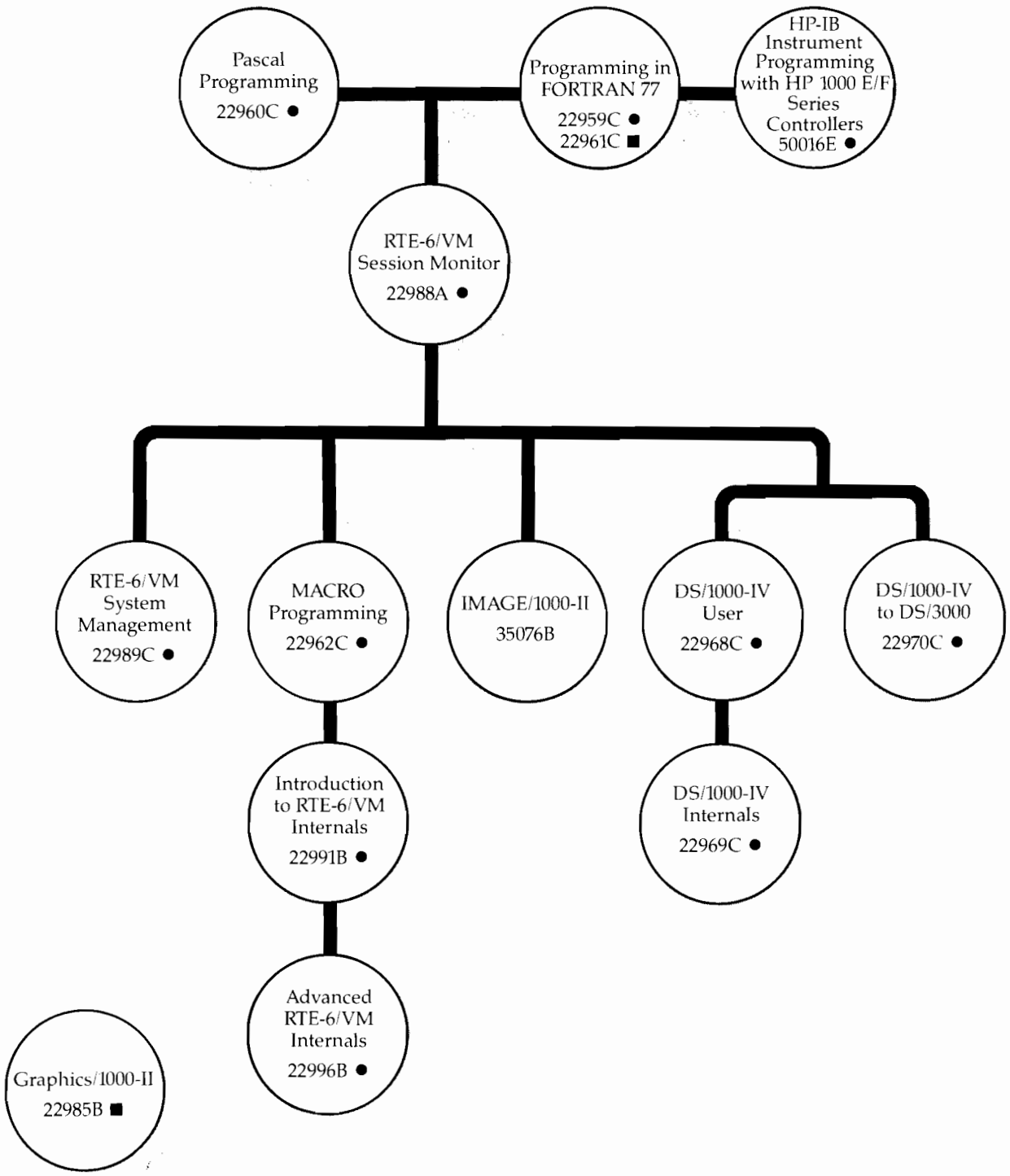
Length:
3-4 days

Delivery Method:
Self-study

Prerequisites:
Beginning familiarity with operating system and graphics terminal operations, such as using the graphics cursor

Content:
- Output primatives
- Viewing transformations
- Input functions
- Control

HP 1000 Systems—M/E/F Series



● **HP Instructor**
■ **Self-Paced, CBT**

HP 22960C—Pascal Programming

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22959C/HP22961C—Programming in FORTRAN 77

Please see Business Systems-Commercial Systems Section

HP 50016E—HP-IB Instrument Programming with HP 1000 E/F Series Controllers

Objectives:
- Perform system start-up and use the multi-user/multi-programming capabilities of the HP 1000
- Set up an HP-IB system and write test programs in FORTRAN 77 to control HP-IB instruments
- Use an HP-IB Bus Analyzer to monitor bus traffic

Audience:
Test programmers, application engineers or system engineers who want to use the HP 1000 E/F Series computer as an HP-IB instrument controller

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
FORTRAN 77 Programming (HP 22959C)

Content:
- System overview and start-up
- HP-IB fundamentals and structure
- HP-IB operation with HP 1000 E/F Series controller
- Interface functions of HP-IB instruments
- Use of HP-IB bus extenders for remote instrument control
- HP-IB instrument programming techniques
- Test data on disc files

HP 22988A—RTE-6/VM Session Monitor

Objectives:
- Become familiar with the concepts of RTE organization and the program development process and available utilities
- Understand the capabilities and features of the RTE operating system and session monitor user interface

Audience:
Programmers

Length:
10 days

Delivery Method:
Classroom, on-site

Prerequisites:
Programming in FORTRAN 77 (HP 22959C) or Pascal Programming (HP 22960C)

Content:
- Introduction
  - -RTE operating system
  - -booting up RTE
  - -FMGR
- Procedure files
- Interaction with programs
- FMP calls
  - -data control blocks
  - -file access methods
- System console in session
- Libraries
- RTE organization
  - -break mode
  - -memory and program management
  - -I/O structure
  - -troubleshooting
- File management system
- RTE programmatic requests
- File type 6
- Disc cartridges
- Resource numbers and LV locks
- Spool and batch processing
- Programmatic scheduling
- Class I/O
- VMA/EMA
  - -using VMA/EMA from FORTRAN
  - -sharable EMA

HP 1000 Systems—M/E/F Series

HP 22989C—RTE-6/VM System Management

Objectives:
- Learn the function of a system manager
- Plan an RTE-6/VM configuration including I/O device and disc configuration
- Generate, install and initialize an RTE-6/VM system
- Describe considerations and strategies for system maintenance and backup/recovery

Audience:
System managers, designers, analysts or programmers who need to configure RTE-6/VM systems to meet particular application needs or who are responsible for providing system management functions

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
RTE-6/VM Session Monitor (HP 22988A)

Content:
- Overview of system manager's job
- System design and planning
- System generation
- System installation
- System maintenance
- System backup and recovery

HP 22962C—MACRO Programming

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22991B—Introduction to RTE-6/VM Internals

Objectives:
- Understand the RTE theory of operation and organization: RTE tables, lists and data structures

Audience:
RTE-6/VM application programmers with experience in the use of RTE and system generation

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
RTE-6/VM System Management (HP 22989C); also highly recommended MACRO Programming (HP 22962C)

Content:
- M/E/F–Series hardware overview
- RTE organization
- Interrupt processing
- Program dispatching
- I/O processing
- Program states
- EMA/VMA
- Class I/O

HP 22996B—Advanced RTE-6/VM Internals

Objectives:
- Understand the organization of RTE tables, lists and data structures
- Learn about the organization and functions of RTE modules

Audience:
Application programmers and systems analysts

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Introduction to RTE-6/VM Internals (HP 22991B)

Content:
- Introduction to internals
- System start-up
- System initialization
- Program state
- Dispatcher
- I/O requests
- TBG and time schedule
- Privilege and reentrant
- SAM management
- VMA
- O.S. microcode
- Drivers (STD) Drivers (Priv.) DCPC
- MLS/MILLDR
- FMGR/D.RTR

HP 1000 Systems—M/E/F Series

HP 35076B—IMAGE/1000-II

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22968C—DS/1000–IV User

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22969C—DS/1000–IV Internals

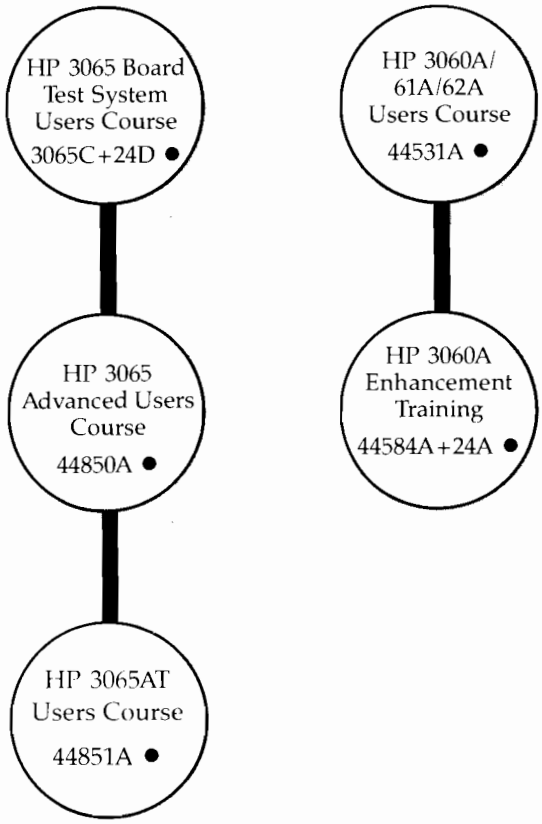
Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22970C—DS/1000–IV to DS/3000

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22985B—Graphics/1000-II

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section



● **HP Instructor**
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Board Test Systems

HP 3065C + 24D—HP 3065 Board Test System Users Course

Objectives:
- Develop an understanding of board test philosophy
- Learn to generate, verify, and run board test programs
- Be able to modify test procedures to meet the needs of your application

Audience:
Programmers responsible for developing test programs for HP 3065 board test systems

Length:
10 days

Delivery Method:
Classroom

Prerequisites:
Students should be well versed in analog and digital electronic theory and one computer language

Content:
- Operating the system
- Test development
- Understanding the test program/structure
- Shorts test
- Analog in-circuit testing
- Digital in-circuit testing
- Analog functional tests
- Data logging and reporting
- Fixturing
- System topics
- Advanced system topics

HP 44850A—HP 3065 Advanced Users Course

Objectives:
- Increase the level of detail of the student's understanding of the HP 3065 Board Test System
- Practice testing commonly encountered devices in a laboratory environment
- Transfer practical knowledge gained by HP engineers in the Board Test Application Center to students

Audience:
Advanced board test programmers

Length:
5 days

Delivery Method:
Classroom

Prerequisite:
HP 3065 Board Test System Users Training (HP 3065C+24D)

Content:
- Digital test development: designing, pseudocoding, implementing, debugging, and optimizing the test
- Testing of bus-structured boards
- Analog functional testing
- Testing of hybrid devices (e.g. A/D and D/A converters)
- BT-BASIC programming techniques

Board Test Systems

HP 44851A—HP 3065AT Users Course

Objectives:
- Gain an understanding of functional test techniques
- Gain an understanding of functional test take-offs and considerations
- Learn the test development process
- Learn the HP 3065AT feature set through hands-on use
- Become familiar with system documentation

Audience:
Programmers responsible for developing test programs for the HP 3065AT board test system

Length:
10 days

Delivery Method:
Classroom

Prerequisites:
Standard HP 3065 Users Class (HP 3065C+24D); 6 months programming experience; HP 3065 Advanced Users Class (HP 44850A) recommended

Content:
- HP 3065AT feature set and uses
- Developing test strategies using HP 3065AT
- HP 3065AT test development process
- General functional testing techniques
- General functional test considerations

HP 44531A—HP 3060A/61A/62A Users Course

Objectives:
- Provide the student with the knowledge necessary to effectively use an HP 3060A, 3061A, or 3062A to speed printed circuit board testing
- Learn the differences between the instruments
- Cover in-circuit and functional testing methodologies including analysis of semiconductor test, guarding, phase synchronous detection, digital testing and signature analysis

Audience:
Operators and programmers of HP 3060A/61A/62A Board Test Systems

Length:
10 days

Delivery Method:
Classroom

Prerequisites:
Students should have experience in writing computer programs in any language (although HPL is preferred). They should understand looping, branching, number representation, and subroutines. Basic analog and digital circuit knowledge including Kirchoff's and Ohm's Laws, operational amplifier theory, and basic TTL logic gates would also be helpful.

Content:
- Controller
- Disc drive
- Testing philosophy
- System scanner
- Shorts/continuity testing
- Analog components test
- IPG
- Digital static pattern testing
- Digital signature analysis testing
- Analog functional testing
- Data logging
- Program optimization
- Fixturing
- Service

HP 44584A + 24A—HP 3060A Enhancement Training

Objective:
- Learn to make effective use of software used on the HP Series 200 controllers

Audience:
HP 3060A programmers who wish to learn about the software enhancements available with the HP Series 200 controllers

Length:
1/2 day

Delivery Method:
On-site

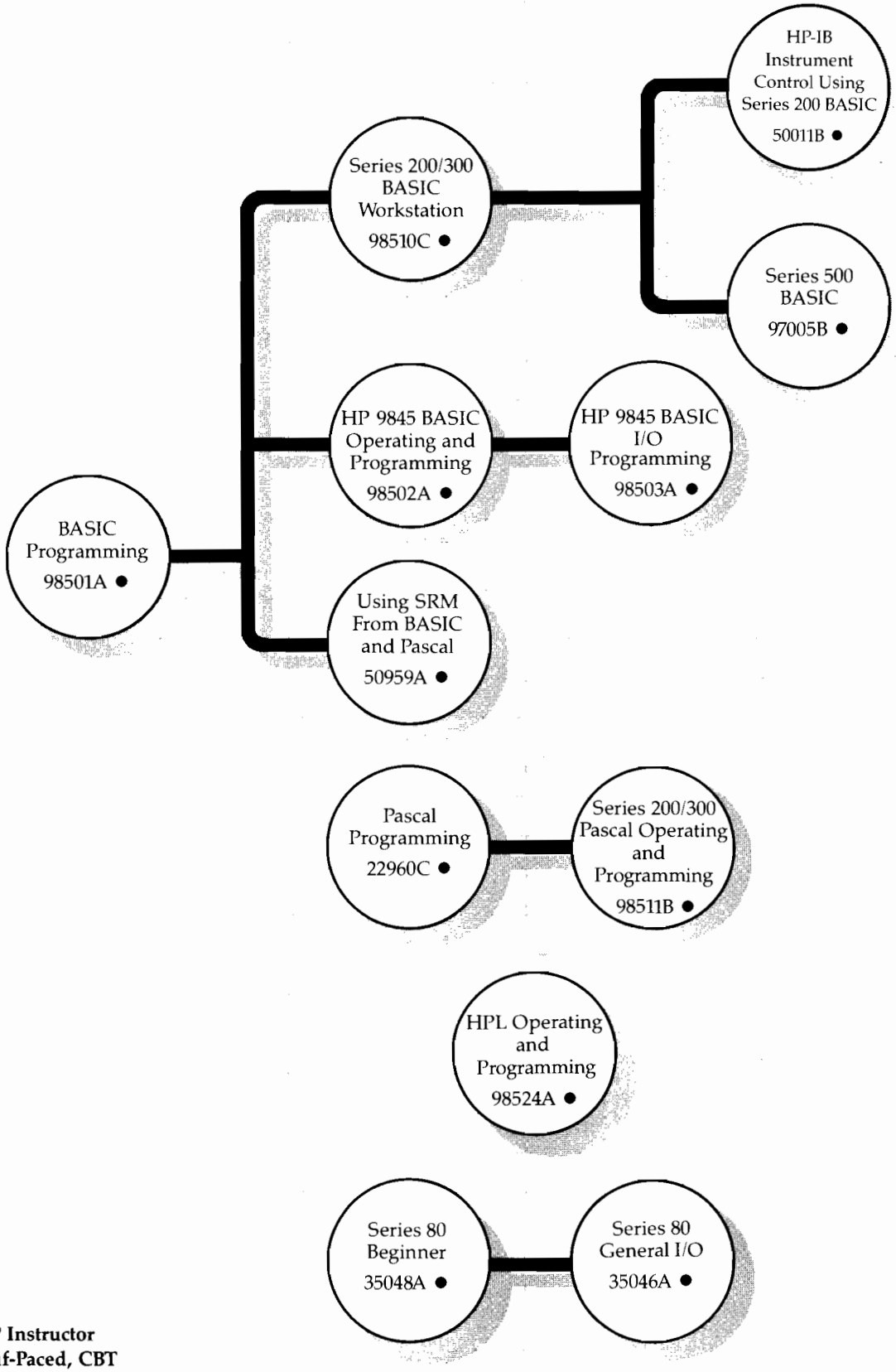
Prerequisites:
HP 3060A Users Course (HP 44531A) or have experience in writing computer programs and knowledge of basic analog and digital circuits

Content:
- Series 200 controllers
- Disc interleaving
- Commands: MSUS, MSI, INIT, SAVE, RESAVE, GET, CHAIN, ASSIGN, and COPY
- Program and data transfer
- BTL200 operating system and commands
- Message control: test generated error messages and BTL200 system error messages
- In-circuit testing: PCOMP/Derivative and SCOMP/Derivative execute strings, EXECUTE command
- Analog functional testing, TRANS command (basic and alternate forms)
- IPG200: features, parameters, and operation

DESIGN SYSTEMS

- WORKSTATIONS
- HP-UX
- MECHANICAL ENGINEERING AND DYNAMIC SIGNAL ANALYSIS
- ELECTRONIC ENGINEERING
- MICROPROCESSOR DEVELOPMENT AND SOFTWARE ENGINEERING

Workstations



● **HP Instructor**
■ **Self-Paced, CBT**

HP 98501A—BASIC Programming

Objective:
- Understand the fundamentals of HP BASIC programming

Audience:
Those who have no computer programming experience

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
None

Content:
- Data representations
- System functions
- Program organization
- Strings
- Formatted output
- Subroutines
- Branching
- Arrays
- Documentation
- Subprograms
- Error recovery
- Mass memory

HP 98510C—Series 200/300 BASIC Workstation

Objective:
- Learn operating procedures and programming techniques for the Series 200/300 BASIC Workstation Computer

Audience:
Scientific and engineering workstation users who want to increase their knowledge of HP BASIC used on Series 200/300 computers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
BASIC Programming (HP 98501A)

Content:
- Data types and representation
- Program flow, control and structure
- I/O concepts

HP 50011B—HP-IB Instrument Control Using Series 200 BASIC

Please see Test & Measurement-Instrument Control/HP-IB Section

HP 97005B—Series 500 BASIC

Objective:
- Learn the features of BASIC unique to the HP 9000 Series 500 computer system

Audience:
Programmers who wish to use BASIC on the HP 9000 Series 500

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
BASIC Programming (HP 98501A) and Series 200/300 BASIC Workstation (HP 98510C)

Content:
- Keyboard layout
- Display layout
- Additional editing functions
- Mass storage
- Partitions, screens and events
- Graphics

HP 98502A—HP 9845 BASIC Operating and Programming

Objective:
- Learn about the commands, statements, and functions of the HP 9845

Audience:
Programmers with BASIC or FORTRAN experience

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
BASIC Programming (HP 98501A) or skill in BASIC or FORTRAN

Content:
- Introduction
- Mass storage media and devices
- HP 9845 use and features
- I/O techniques
- Graphics
- Advanced programming

HP 98503A—HP 9845 BASIC I/O Programming

Objective:
- Learn the various advanced topics involving the use of desktop computers, HP BASIC language and I/O programming

Audience:
People with a programming background and moderate to extensive experience using the HP 9835 or HP 9845 computer

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
BASIC Programming (HP 98501A) and HP 9845 BASIC Operating and Programming (HP 98502A)

Content:
- I/O operations
- Internal I/O registers
- Interface cards
  98032A (16-bit general purpose)
  98034B (HP-IB)
  98036A (RS-232C)

HP 50959A—Using SRM from BASIC and Pascal

Objectives:
- Gain familiarity in traversing the Shared Resource Manager (SRM) system using BASIC and Pascal
- Learn how to access SRM file system from BASIC and Pascal programs
- Use SRM spooler directories for printing and plotting

Audience:
People who have programming experience in either BASIC or Pascal who use an SRM

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
BASIC Programming (HP 98501A) or Pascal Programming (HP 22960C)

Content:
- Understanding networking concepts
- SRM: A workstation LAN
- The SRM file system
- Accessing SRM from BASIC
- Accessing SRM from Pascal
- Spooling

HP 22960C—Pascal Programming

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 98511B—Series 200/300 Pascal Operating and Programming

Objective:
- Learn the proper use of the Series 200/300 facilities to develop and maintain Pascal application programs

Audience:
Scientific and engineering workstation users who want to increase their knowledge of HP Pascal on Series 200/300 workstations

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Pascal Programming (HP 22960C)

Content:
- Communication with system via the command interpreter
- Accessing system utilities
- Features of the system editor
- Internal data format
- Programming with files
- Manipulating files from the operating system
- Features of the Pascal compiler including directives
- HP extensions to the Pascal language
- Manipulation and usage of system and user libraries
- Linking of code modules
- Operating system architecture overview
- Accessing human interface features
- Custom configurations with CTABLE and INITLIB
- Using the system debugger

HP 98524A—HPL Operating and Programming

Objective:
- Understand the operating, programming and language capabilities of the HPL operating system

Audience:
New HPL users

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
None

Content:
- Introduction to the HP 9825/26
- Array variable
- String ROM
- General I/O ROM
- Introduction to programming HPL
- Tape concepts
- Advanced programming ROM
- Plotter ROM
- Mass storage ROM
- Matrix ROM

HP 35048A—Series 80 Beginner

Objective:
- Become familiar with the HP Series 80 personal computer

Audience:
Beginners with no programming experience

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisite:
Completion of sections one and two of the HP 83/85/86 or 87 owner's manual before attending

Content:
- Fundamental operations
- Display editing
- Flowcharts
- Subroutines
- Function keys
- Tape drive
- BASIC programming tools
- Branching
- Looping
- Graphics

HP 35046A—Series 80 General I/O

Objective:
- Learn device-to-computer communication methods, I/O programming techniques, and techniques for configuring and operating HP-IB, Serial, GPIO, and BCD interfaces

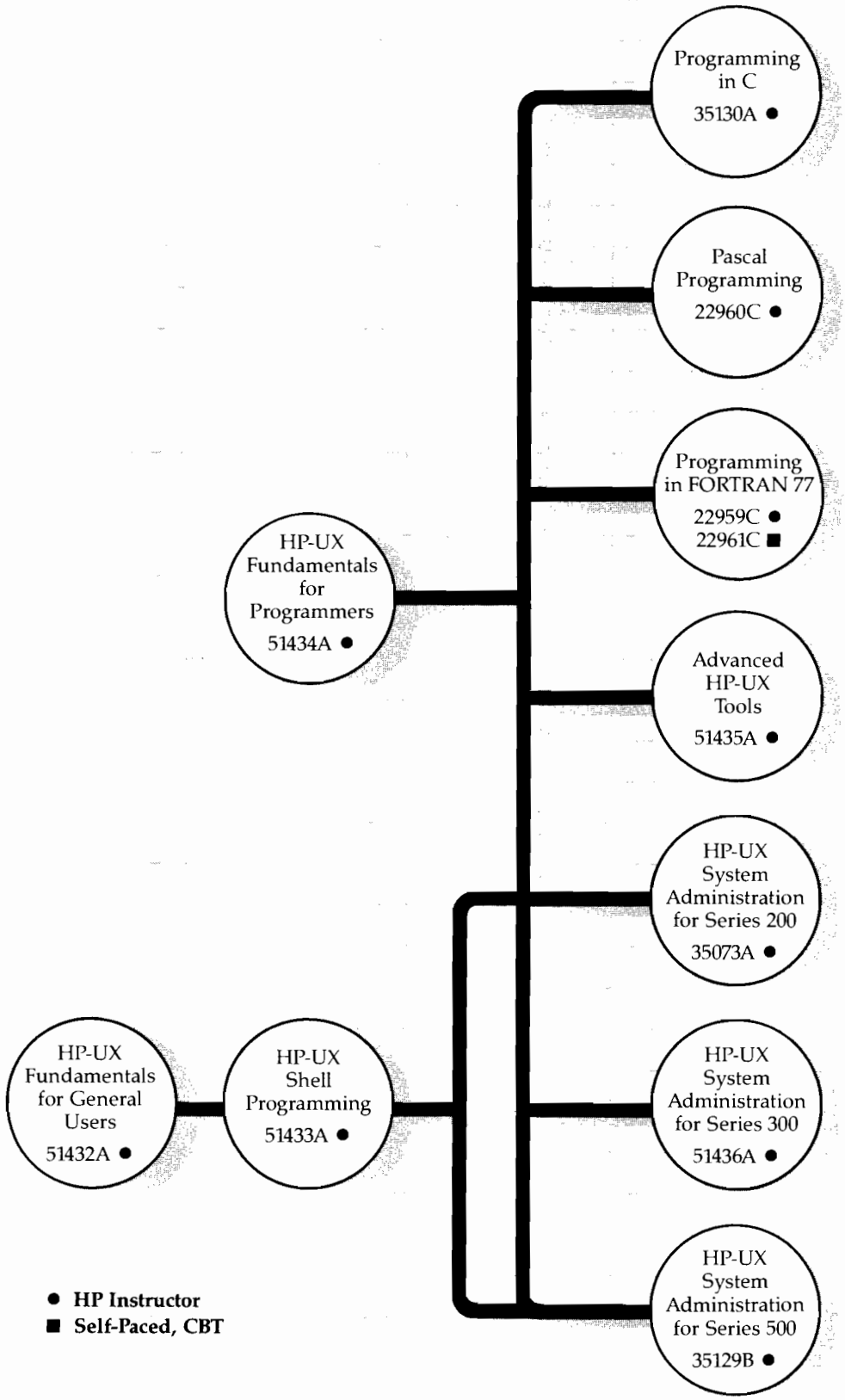
Audience:
Experienced programmers

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
Skill in operating and programming a Series 80 computer; exposure to basic computer-to-device communication methods is a definite plus

Content:
- BASIC commands and statements
- I/O programming
- Interfaces: Serial, HP-IB, BCD, and GPIO
- Device-to-computer communication


Programming in C
35130A ●
Pascal Programming
22960C ●
Programming in FORTRAN 77
22959C ●
22961C ■
HP-UX Fundamentals for Programmers
51434A ●
Advanced HP-UX Tools
51435A ●
HP-UX System Administration for Series 200
35073A ●
HP-UX Fundamentals for General Users
51432A ●
HP-UX Shell Programming
51433A ●
HP-UX System Administration for Series 300
51436A ●
HP-UX System Administration for Series 500
35129B ●
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HP-UX

HP 51434A—HP-UX Fundamentals for Programmers

Objective:
- Introduce programmers to the interactive computing environment of HP-UX (licensed System V UNIX®)

Audience:
Programmers who have minimal or no previous UNIX® or HP-UX experience

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- HP-UX hierachical file structure
- The vi editor
- File manipulation
- I/O redirection
- Pipelines
- Background processing
- Simple shell programming
- File backups

HP 35130A—Programming in C

Objective:
- Design and write C programs

Audience:
HP-UX programmers and system programmers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP-UX Fundamentals for Programmers (HP 51434A); previous high-level language experience; knowledge of one of the following HP-UX editors: vi, ex, or ed

Content:
- Introductory concepts
- Operands and data types
- Operators
- Expressions
- Control flow
- The C preprocessor
- Functions
- Pointers
- Structures
- Input and output
- C interface to the operating system
- Introduction to software development tools

HP 22960C—Pascal Programming

Please see Manufacturing Systems—HP 1000 Systems-A-Series Section

HP 22959C/HP 22961C—Programming in FORTRAN 77

Please see Business Systems-Commercial Systems Section

HP 51435A—Advanced HP-UX Tools

Objective:
- Provide programmers with experience using the advanced features of HP-UX and sophisticated HP-UX data manipulating tools

Audience:
Programmers and software development engineers who will need an in-depth understanding of programming and HP-UX

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
HP-UX Fundamentals for Programmers (HP 51434A)

Content:
- Advanced shell programming
- Advanced features of the vi editor
- In-depth look at regular expressions
- Advanced features of the ed editor
- Advanced features of the sed editor
- awk programming

HP 51436A—HP-UX System Administration for Series 300

Objective:
- Provide students with the necessary tools to become successful HP-UX system administrators

Audience:
System administrators for a Series 300 HP-UX System

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
HP-UX Fundamentals for Programmers (HP 51434A) or HP-UX Fundamentals for General Users (HP 51432A) and Shell Programming for General Users (HP 51433A)

Content:
- File system structure/generation
- Bootstrap procedures
- Run-levels
- Device files
- Backup procedures
- The administrator's toolbox
- System security/accounting
- The line printer spooler system
- Using and administering the uucp network
- HP-UX system installation and support

HP 35073A—HP-UX System Administration for Series 200
HP 35129B—HP-UX System Administration for Series 500

Objective:
- Prepare the system administrator to install, maintain, and expand a Series 200/500 HP-UX system

Audience:
System administrators for a Series 200/500 HP-UX system

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
HP-UX Fundamentals for Programmers (HP 51434A) or HP-UX Fundamentals for General Users (HP 51432A) and Shell Programming for General Users (HP 51433A)

Content:
- System security and account maintenance
- Adding new users
- System startup, shutdown, backup, and recovery
- Maintaining the file system
- System configuration and HP 9000 tuning
- System installation
- Conversion and compatibility issues

HP 51432A—HP-UX Fundamentals for General Users

Objective:
- Introduce general users to the interactive computing environment of HP-UX (licensed System V UNIX®)

Audience:
General users who are non-programmers and who will be day-to-day HP-UX users or users of tools and utilities that run under HP-UX

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- HP-UX hierarchical file structure
- File creation, removal, copying and manipulation
- The vi editor
- I/O redirection and pipelines
- Shell features
- File backups and directories

HP 51433A—Shell Programming for General Users

Objective:
- Provide general users with an understanding of shell programming

Audience:
General users who plan to become HP-UX system administrators

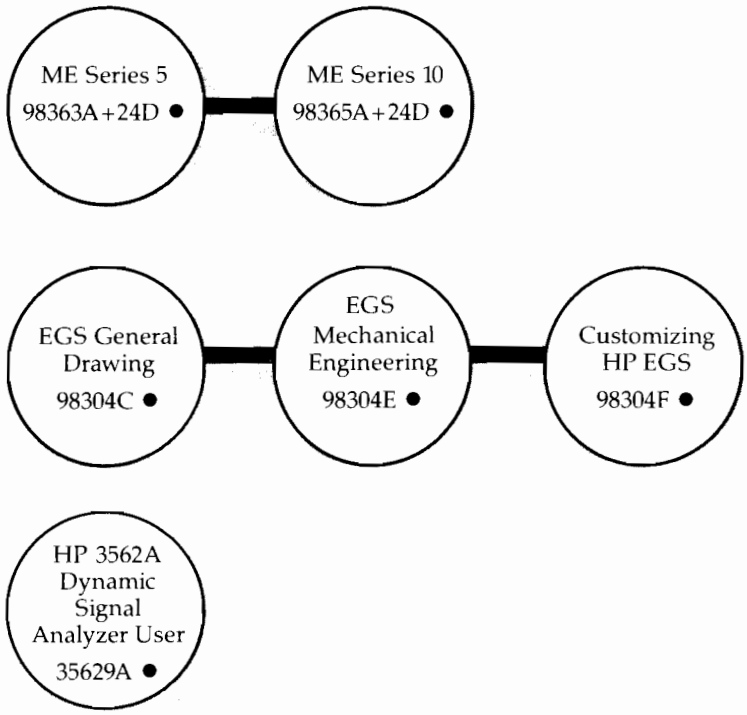
Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
HP-UX Fundamentals for General Users (HP 51432A)

Content:
- Complex shell programs
- Advanced shell features
- The ed and sed editors
- File system implementation and process scheduling

Mechanical Engineering and Dynamic Signal Analysis



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Mechanical Engineering and Dynamic Signal Analysis

HP 98363A + 24D—HP DesignCenter ME Series 5 Users Course

Objective:
- Familiarize students with basic concepts and functions of the 2D CAD system

Audience:
System managers and potential users who are new to the HP DesignCenter ME Series 5 System

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
Drafting and/or mechanical engineering knowledge; programming experience

Content:
- Design and drafting using ME CAD: user interface, grid/ruler, and geometry construction
- Modification of existing design dimensions
- Plotting and filing

HP 98365A + 24D—HP DesignCenter ME Series 10 Users Course

Objectives:
- Familiarize students with basic concepts and functions of the 2D CAD system
- Teach students to adapt the system to individual design needs

Audience:
System managers and potential users who are new to the HP Design Center ME Series 10 system

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Drafting and/or mechanical engineering knowledge; programming experience

Content:
- Design and drafting using ME Series 10: user interface, ruler, grid, and geometry construction
- Viewing and modification of existing designs
- Development of macros for variation design
- Development of tablet and screen menus
- High-level customized language applications

HP 98304C—EGS General Drawing

Objective:
- Teach the use of HP EGS hardware and fundamental HP EGS concepts

Audience:
New users of HP EGS software

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Understanding the menu layout, the grid system layers and nesting macro commands, and how to use productivity tools
- Understanding how the system parses characters
- Merging EGS drawings into Tech Writer Files
- Using precision drawing techniques
- Using advanced plotting techniques
- Writing short macros to simplify daily tasks
- Building or modifying a screen menu

HP 98304E—EGS Mechanical Engineering Drawing

Objective:
- Understand the Mechanical Engineering Personality

Audience:
New users with a mechanical engineering background

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP EGS General Drawing Course (HP 98304C) or equivalent hands-on experience with system

Content:
- Constructing isometric and orthographic drawings
- Using the parts file and materials lister
- Using and understanding the IGES translator

Mechanical Engineering and Dynamic Signal Analysis

HP 98304F—Customizing HP EGS

Objective:
- Teach advanced users to customize HP EGS for a specialized task

Audience:
Experienced users of HP EGS who are interested in tailoring the system for their own applications

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP EGS General Drawing Course (HP 98304C) and either HP EGS Mechanical Engineering Course (HP 98304E) or HP EGS Electrical Engineering Course (HP 98304D)

Content:
- Writing long macros using sensible programming techniques
- Creating library parts families
- Learning naming conventions, file types, how to create screen or tablet menus, and how to design the human interface of the personality

HP 35629A—Dynamic Signal Analyzer User

Objective:
- Learn the operation and measurement capabilities of the HP 3562A Dynamic Signal Analyzer

Audience:
New HP 3562A users who will be using the system for electrical, mechanical and control systems applications

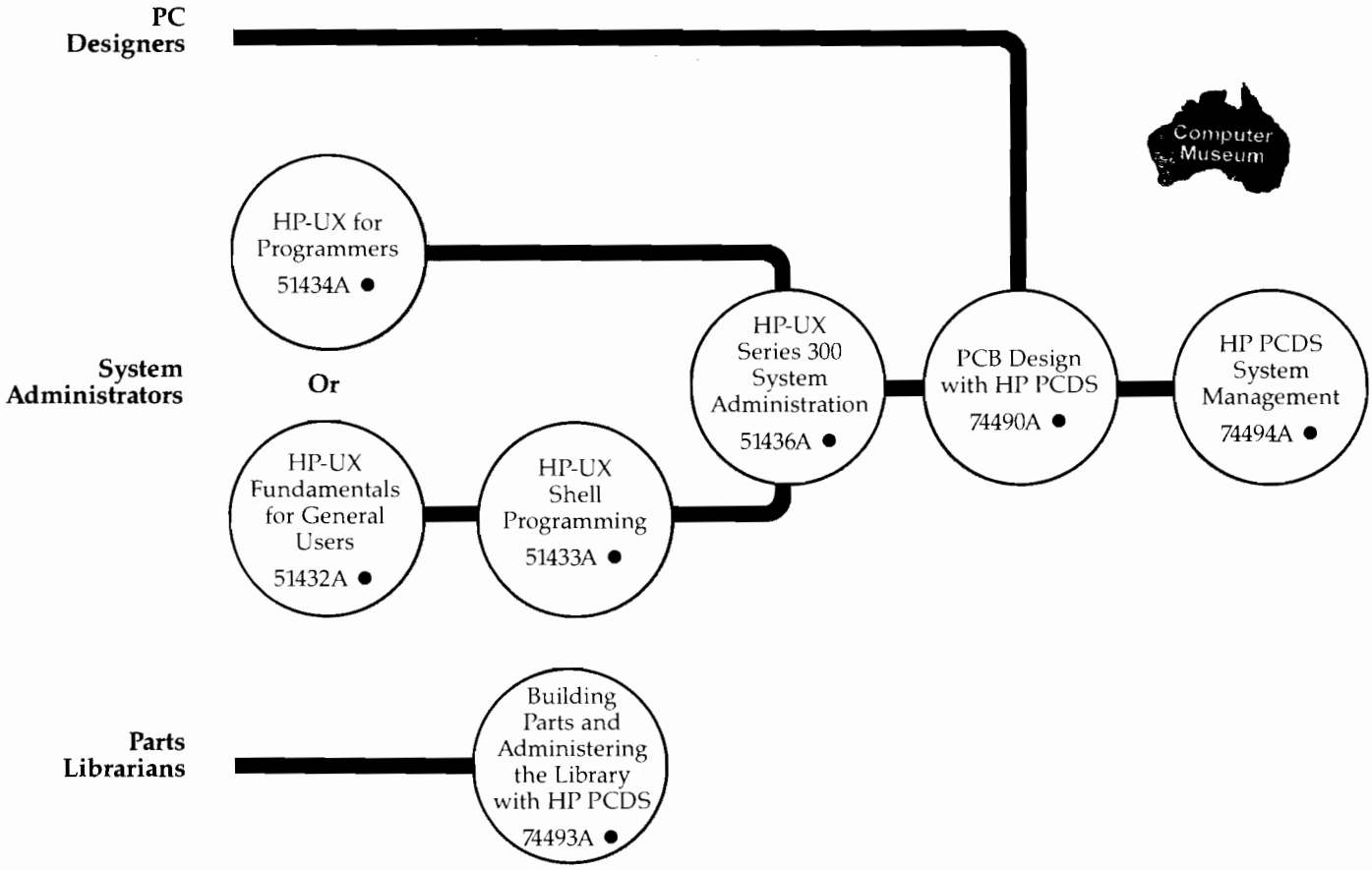
Length:
3 days

Delivery Method:
Classroom, on-site

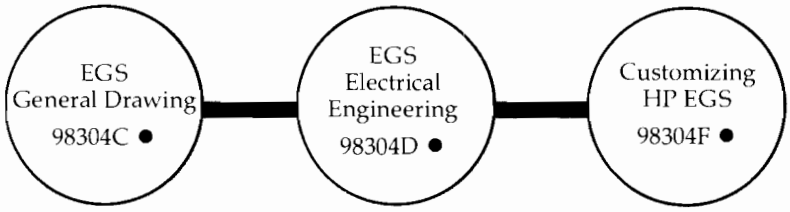
Prerequisite:
None. However, an engineering degree or experience with the concepts of the Fourier transforms or dynamic signal measurements would be helpful.

Content:
- Operation of the HP 3562A
- Measurements on the HP 3562A including auto power spectrum frequency response functions, excitation functions, time capture, time throughput and waveform math
- Additional measurement modes such as log resolution, swept sine, demodulation, synthesis and curve fitting

PC DESIGN SYSTEMS



HP EGS



● **HP Instructor**
■ **Self-Paced, CBT**

PC Design Systems

HP 51434A—HP-UX for Programmers

Please see Design Systems-HP-UX Section

HP 51436A—HP-UX Series 300 System Administration

Please see Design Systems-HP-UX Section

HP 51432A—HP-UX Fundamentals for General Users

Please see Design Systems-HP-UX Section

HP 51433A—HP-UX Shell Programming

Please see Design Systems-HP-UX Section

HP 74490A—PCB Design with HP PCDS

Objectives:
- Familiarize students with basic Printed Circuit Design System operation
- Teach students to design a printed circuit board from schematic to manufacturing outputs
- Teach students to modify parts and board blanks and to change logical design

Audience:
New users of PCDS

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- PCDS overview
- Placing parts and routing traces
- Verifying the board
- Generating documentation and manufacturing data
- Changing the logical design
- Designing for SMDs

HP 74494A—HP PCDS System Management

Objective:
- Enable the student to install and maintain the Printed Circuit Design System

Audience:
System administrators for PCDS

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
PCB Design with PCDS (HP 74490A); HP-UX training through system administration

Content:
- System manager overview
- Installing and securing PCDS
- Customizing PCDS
- Using PCDS on a network

HP 74493A—Building Parts and Administering the Library with HP PCDS

Objective:
- Learn to build parts using Printed Circuit Design System

Audience:
PCDS users and Parts Librarians

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
None

Content:
- Library module
- Entering parts information
- Building connectors, logos
- Understanding the schema
- Writing macros
- Library administration

Electronic Engineering

HP EGS

HP 98304C—EGS General Drawing

Please see Design Systems–Mechanical Engineering and Dynamic Signal Analysis Section

HP 98304D—HP EGS Electrical Engineering Drawing Course

Objective:
- Understand the Schematic Drawing Personality and the PC Board Personality

Audience:
New users with an electrical engineering background who are interested in drawing schematics and/or printed circuit boards.

Length:
2 days

Delivery Method:
Classroom, on-site

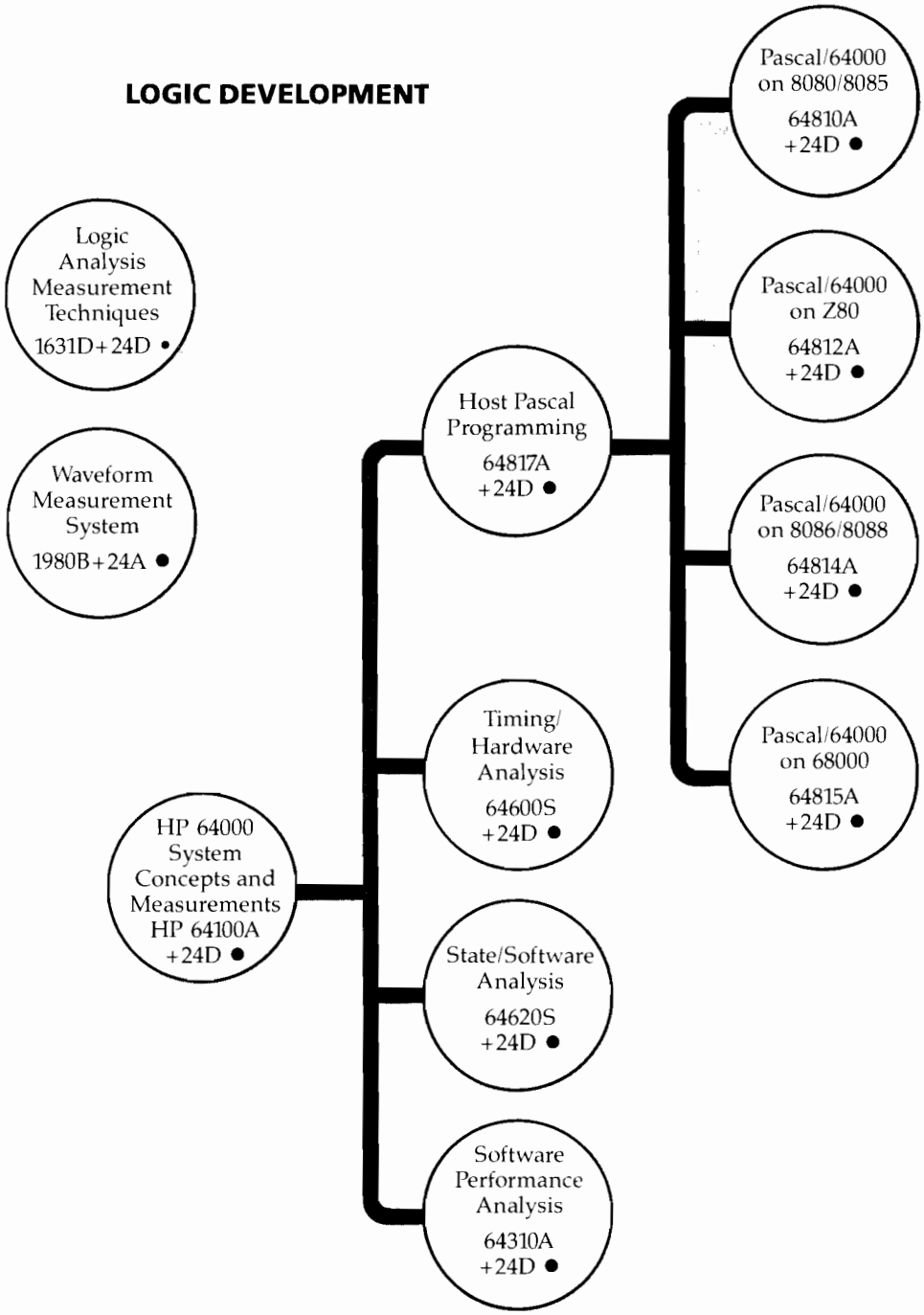
Prerequisites:
HP EGS General Drawing Course (HP 98304C) or equivalent hands-on experience with the system

Content:
- Creating library parts
- Generating connection lists
- Using the parts file to build a materials list
- Using the Rat's Nest Utility
- Formatting output for a Gerber Photoplotter or Excellon N/C Drill

HP 98304F—Customizing HP EGS

Please see Design Systems–Mechanical Engineering and Dynamic Signal Analysis Section

Microprocessor Development and Software Engineering



● **HP Instructor**
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Microprocessor Development and Software Engineering

Logic Development

HP 64100A + 24D—HP 64000 System Concepts and Measurements

Objectives:
- Gain in-depth understanding of the HP 64000 System capabilities and operations
- Learn to assemble, compile and link code modules
- Configure an emulator; load and run a program in emulation

Audience:
Logic engineers

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with logic/microprocessor terminology; ability to code in assembly language

Content:
- File system architecture
- Discs, editor, command files
- Assembler/compiler/linker
- Configuring/operating the emulator
- Emulation bus analysis

HP 64817A + 24D—HP 64000 Host Pascal Programming

Objectives:
- Learn to write programs in Pascal that can be executed on HP 64000 Development Stations
- Understand compiler errors and run-time errors, and how to correct them

Audience:
Logic engineers

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
System Concepts and Measurements (HP 64100A+24D) and knowledge of at least one high level language

Content:
- Pascal blocks/statements
- Arrays, strings, sets
- Records and files
- Input/output
- Dynamic data structures

HP 64810A + 24D—Pascal/64000 on 8080/8085
HP 64812A + 24D—Pascal/64000 on Z80
HP 64814A + 24D—Pascal/64000 on 8086/8088
HP 64815A + 24D—Pascal/64000 on 68000

Objectives:
- Learn to write Pascal code for specific microprocessor
- Learn how to interface Pascal modules
- Use the preprocessor commands to enhance the features of Pascal

Audience:
Logic engineers

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
System Concepts and Measurements (HP 64100A+24D) and Host Pascal Programming (HP 64817A+24D)

Content:
- Compiler options, directives and generated symbols
- Multiple module programs
- ADDR function, Shift/Rotate
- User defined operators
- Dynamic heap and set space allocation
- Using an emulator to debug Pascal

HP 64600S + 24D—HP 64000 Timing/Hardware Analysis

Objectives:
- Understand full capabilities of the HP 64600S Timing Analyzer
- Practice use of timing module with the state module via the intermodule bus
- Understand effects of resolution, skew, asynchronous triggering

Audience:
Logic engineers

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
System Concepts and Measurements (HP 64100A+24D); understand basic concepts related to timing analysis

Content:
- Timing analysis background and applications
- Physical description and syntax description
- Measurements
- 16 Channel machines
- Intermodulated bus interaction

Microprocessor Development and Software Engineering

HP 64620S + 24D—HP 64000 State/Software Analysis

Objectives:
- Understand full capabilities of the HP 64620S State/Software Analyzer
- Learn to use "trace list" and "overview" modes
- Practice techniques of performance measurement and system characterization

Audience:
Logic engineers

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
System Concepts and Measurements (HP 64100A+24D) and understand basic concepts related to State Analysis

Content:
- Overview of State Analysis
- Measurement concepts
- Measurement examples
- Physical description
- Syntax

HP 64310A + 24D—HP 64000 Software Performance Analysis

Objectives:
- Learn to make benchmarks and performance comparisons
- Measure memory activity and evaluate program activity of specific modules

Audience:
Logic engineers

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisite:
System Concepts and Measurements (HP 64100A+24D)

Content:
- New measurement concepts
- Measurement examples
- Physical description
- Syntax description
- Measurement labs

HP 1631D + 24D—HP 1631A/D Logic Analysis Measurement Techniques

Objectives:
- Learn to select the most suitable tool for the specific measurement at hand from the choices of analog, timing, or state analysis
- Gain experience in setting up the HP 1631A/D Logic Analyzer through the use of the input menus
- Develop expertise in correctly interpreting the logic measurement results

Audience:
New or first time logic analyzer users, engineers and technicians who are working with logic circuit hardware

Length:
2 days

Delivery Method:
Classroom, on-site

Prerequisites:
Students must be able to read a circuit schematic and have a basic knowledge of microprocessors

Content:
- Applications in the product development process
- Analog and timing analysis
- State analysis
- Preprocessors and inverse assembler
- Cross domain analysis
- Analog/timing post processing and chart modes
- Relative addressing and peripherals

Microprocessor Development and Software Engineering

HP 1980B + 24A—Waveform Measurement System Course

Objectives:
- Learn to create custom application programs to make waveform measurements
- Develop techniques for automating waveform comparison/tolerance tests
- Understand how to construct a data base useful to your specific application
- Learn measurement algorithms and data structures to help measure waveform/voltage and timing parameters

Audience:
HP 1980A/B system users who need to become expert at using the system's full capabilities

Length:
2 days

Delivery Method:
On-site

Prerequisites:
HP Series 200/300 BASIC Workstation (98510C); familiarity with the basic use of the HP 1980A/B Waveform Measurement System

Content:
- Time domain measurement capabilities: characterization and comparison
- Remote use
- HP 19680A digital waveform storage
- Trigger flag
- Automating measurements by characterization and comparison measurement blocks
- Structured programming
- HP 19800A program development aids
- Creating programs with the HP 19800A: subprograms such as system initialization, waveform data acquisition, characterization using the HP 19860A, trigger flag, and HP 1965A counter, comparison using the HP 19860A and trigger flag, and semiautomatic applications
- Advanced programming concepts and topics
- Manipulation of data array contents to make complex measurements

Software Engineering

HP 05096A—SA/SD for Test and Measurement Software

Objectives:
- Teach students to use Structured Analysis to analyze and model system requirements in test and measurement applications
- Teach students to use Structured Design to design reuseable software modules for test and measurement applications
- Familiarize students with graphical and textual communication tools such as Context Diagrams, Control Flow Diagrams, Data Flow Diagrams, Mini-specs, Data Dictionaries, Structure Charts, and Module Specifications
- Provide students with an efficient method for designing, developing, and supporting test and measurement application software

Audience:
System engineers and software engineers responsible for developing test and measurement application software

Length:
3 days

Delivery method:
Classroom, on-site

Prerequisites:
Students should be familiar with instrument control in a high level language such as BASIC or Pascal

Content:
- Software life cycle overview
- Introduction to Structured Analysis for test and measurement software
- Introduction to Structured Design for test and measurement software
- Application of SA/SD to each phase of the Software Life Cycle

HP 51473A—Architecture for Test and Measurement Software

Objectives:

- Familiarize students with HP's software architecture for developing test and measurement application software in a modularized, reuseable format
- Teach students to implement a Structured Design in HP 9000 Series 200/300 BASIC
- Provide students with an efficient method of implementing and supporting application software using software building blocks and software tools

Audience:

System engineers and software engineers responsible for the design, implementation, and support of test and measurement application software for HP 9000 Series 200/300 systems

Length:

2 days

Delivery Method:

Classroom, on-site

Prerequisites:

HP 9000 Series 200/300 BASIC; familiarity with instrument-control applications

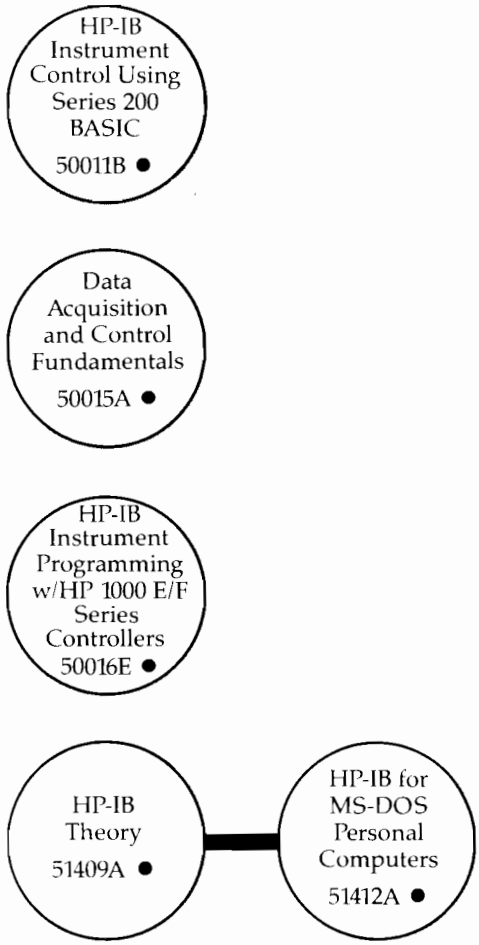
Content:

- Software architecture overview
- Module documentation standards
- Software tools
- Software architecture design rules
- Summary discussion

TEST AND MEASUREMENT

- INSTRUMENT CONTROL/HP-IB
- GENERAL PURPOSE INSTRUMENTATION
- MICROWAVE AND COMMUNICATIONS

Instrument Control/HP-IB



* Controller, I/O and language training is listed in Design System—Workstation Section

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■ **Self-Paced, CBT**

Instrument Control/HP-IB

HP 50011B—HP-IB Instrument Control Using Series 200 BASIC

Objective:
- Learn to develop your own customized HP-IB system using BASIC on a Series 200 controller

Audience:
System programmers and test system engineers who are programming an HP-IB system to perform automated test or measurement/control tasks

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Series 200/300 BASIC Workstation (HP 98510C)

Content:
- Review of HP Series 200 BASIC I/O commands
- HP-IB: definition, concepts, structure, and applications
- HP-IB operation and commands
- Structured programming techniques
- Interrupts: definition, concepts, structure and applications
- Buffers and buffered I/O
- Benchmarking programs
- Additional interfaces: RS-232, GPIO, BCD, data communications

HP 50015A—Data Acquisition and Control Fundamentals

Objectives:
- Introduction to the basic principles and concepts of data acquisition and control
- Learn to measure physical phenomena including temperature and pressure
- Develop techniques for proper grounding and guarding
- Introduction to analog and digital input/output signal processing, on-off control mode, and PID (proportional, integral, and derivative) algorithm basics

Audience:
Students interested in using data acquisition and control

Length:
3 days

Delivery Method:
Classroom

Prerequisites:
None

Content:
- Introduction to data acquisition systems and sensors
- Course controller and data acquisition equipment familiarization exercises
- Temperature measurement: thermocouples, RTD's, thermistors, integrated circuits, radiation temperature sensors, heat flux sensors
- Temperature measurement exercise
- Pressure measurement: general, flow, strain
- Strain gauge exercises
- Current loop
- Common mode voltage
- Guarding and common mode rejection
- Guidelines for analog cables
- Guidelines for digital cables
- Common mode rejection exercise
- The analog input path: multiplexers; peak, average, and RMS detectors; sample and hold; analog to digital conversion; sampling; and scanning
- The analog output path
- The digital input/output path
- Relay contact protection
- Digital I/O exercise
- Control modes exercise
- Interface bus

Instrument Control/HP-IB

HP 50016E—HP-IB Instrument Programming with HP 1000 E/F Series Controllers

Please see Manufacturing Systems–HP 1000 Systems M/E/F Series Section

HP 51409A—HP-IB Theory

Objectives:
- Gain familiarity with the concepts of an interface
- Understand the objectives and key specifications of ANSI/IEEE Std 488-1978
- Learn specifics regarding the Hewlett-Packard implementation of the IEEE Std 488, HP-IB

Audience:
Test engineers, technicians, system programmers, and others who have a need to use computer-controlled instrumentation, but do not have prior experience

Anyone needing instruction in the connection and operation of systems operating under computer control will also find this course beneficial

Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
This course is not specific to any computer language or computer system, therefore, there are no prerequisites.

Content:
- Structure of the HP-IB interface bus including its mechanical, electrical, and functional aspects
- HP-IB message concept
- HP-IB programming techniques and HP-IB system/instrument installation considerations

HP 51412A—HP-IB for MS™-DOS Personal Computers

Objective:
- Gain familiarity with the HP-IB Command Library for MS™-DOS and how it can be used to control HP-IB instruments and peripheral devices

Audience:
Programmers, technicians, engineers, and personal computer users who will be performing HP-IB instrument control functions using the MS™-DOS personal computers

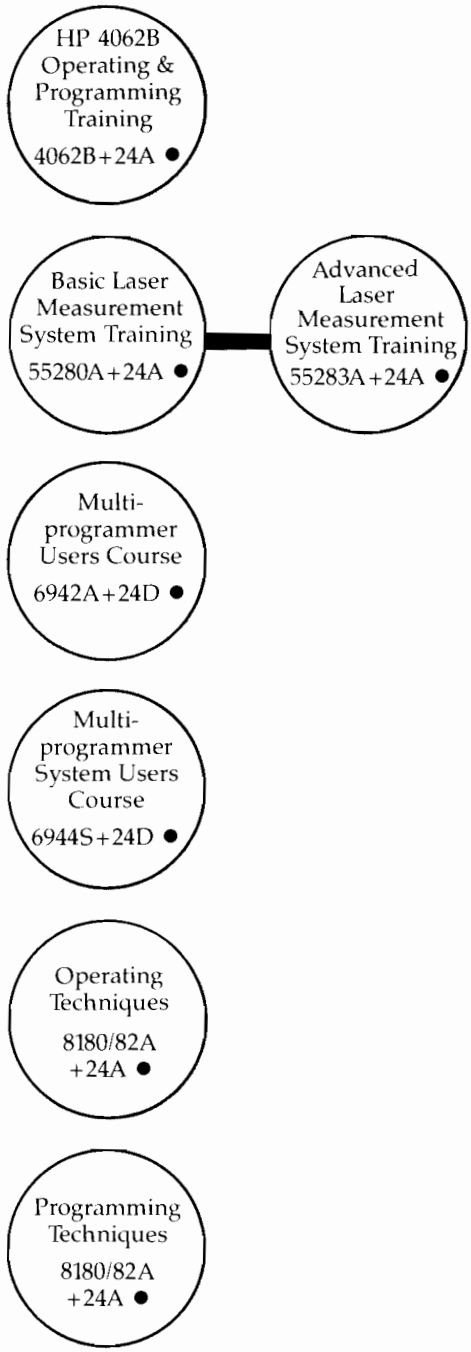
Length:
1 day

Delivery Method:
Classroom, on-site

Prerequisites:
HP-IB Theory Course (HP 51409A); experience using HP Vectra PC, HP Touchscreen, or IBM PC/XT/AT (This includes experience using MS™-DOS version 2.0 or higher which includes the hierarchical directory structured disk format)

Content:
- The fundamental operation of HP-IB and MS™-DOS, and how the HP-IB capabilities are implemented in the peripheral driver and I/O library
- Procedures for installing the HP-IB drivers and redirection of printer output to HP-IB printers and plotters
- HP-IB instrument control using interpretive BASIC, Compiled BASIC, Pascal and C Language programs

General Purpose Instrumentation



● HP Instructor
■ Self-Paced, CBT

HP 4062B + 24A—HP 4062B Operating and Programming Training

Objectives:
- Learn to perform measurements manually
- Write programs to perform parametric measurements
- Write programs to perform single-device measurements and wafer-stage measurements with an automatic prober
- Manipulate data and create graphs for analysis

Audience:
Users and programmers of the HP 4062B Parametric Tester

Length:
3 days

Delivery Method:
On-site

Prerequisites:
You should be familiar with HP Series 200 controllers in both operation and programming, and the automatic prober used with your HP 4062B. If an external mass storage unit is being used, you should also be familiar with the I/O operations of that specific mass storage device.

Content:
- System overview: hardware and software concepts
- System start-up
- VFP (Virtual Front Panel)
- Fundamental programming: concepts, TIS, PARA, group execution of TIS statements, swept bias measurements and X-Y graphs, single device measurements, storing data, and single-chip measurements
- Subprogram linking and running
- Wafer-stage measurements using an automatic prober: probing pattern generator (PPG), probed measurements, and monitoring system status using VFP
- Graphics output and data manipulation: wafer mapping and statistical graphs
- Diagnostics

HP 55280A + 24A—Basic Laser Measurement System Training

Objectives:
- Learn to quickly become proficient in the operation of the HP 5528A Laser Measurement System
- Develop expertise in installing the optics, aligning the laser beam to optic travel, and setting up the measurement display as appropriate for the measurement

Audience:
Users of the HP 5528A Laser Measurement System

Length:
1 day

Delivery Method:
On-site

Prerequisite:
Familiarity with the tools on which the measurements are to be made

Content:
- Basic measurement considerations
- Laser principles
- System component descriptions
- Distance/angular principles
- Measurement procedures and techniques
- Data analysis
- Accuracy considerations

HP 55283A + 24A—Advanced Laser Measurement System Training

Objective:
- Expand your laser measurement abilities through practical exercises on advanced topics

Audience:
Advanced laser measurement engineers and technicians

Length:
1 day

Delivery Method:
On-site

Prerequisites:
Basic Laser Measurement System Training (HP 55280A+24A)

Content:
- Straightness and squareness principles
- Measurement procedures and techniques
- Recording data
- Data analysis
- Accuracy considerations

HP 6942A + 24D—Multiprogrammer Users Course

Objectives:
- Learn to program the HP 6942A Multiprogrammer to perform measurement and control functions
- Develop an understanding of the use of the memory card, real time clock, and data formatting/conversion capabilities of the HP 6942A

Audience:
Process control engineers, automatic test system engineers, test system programmers and operators

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
Familiarity with HP Series 80 or Series 200 controllers

Content:
- HP 85 controller overview
- HP 6942A and HP-IB: instruction syntax and gate/flag handshake
- Output parallel instruction, digital and relay output cards
- Input parallel instruction, digital input cards
- Set and read format instructions
- Read value instruction, D/A converters, pulse train card
- Instruction processing modes
- HP 69790B memory card: concepts, I/O modes, registers and pointers, memory input and output instructions
- HP 69756A timer/pacer card: IP and IE instruction with repeat and wait factors
- Controller interrupt programming: SRQ status, secondary talk address, AC and self test interrupts
- Real-time clock: set and read clock instructions
- Wait and wait until instructions
- Counter card
- Input interrupt instruction
- Output interrupt instruction
- HP 69776A interrupt card

HP 6944S + 24D—Multiprogrammer System Users Course

Objective:
- Learn to operate and program the HP 6944S system, including writing applications software

Audience:
Process control engineers, automatic test engineers, test system programmers and system operators

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
Familiarity with HP Series 200 Controller and BASIC programming is strongly recommended.

Content:
- Series 200 controller overview
- HP 6944S installation and configuration
- HP 14752A program structure
- Digital I/O function
- Soft front panel
- System error handling/interrupt
- Memory test system
- Time base counter functions
- Analog I/O functions
- Scanning system/operation
- Buffered ADC

HP 8180/82A + 24A—HP 8180/82A Operating Techniques

Objectives:
- Learn to use the HP 8180A Data Generator and HP 8182A Data Analyzer to perform basic propagation delay, setup, and hold time measurements
- Use the system to perform real time comparisons to test the stability of a device

Audience:
Engineers and senior technicians using the HP 8180A and HP 8182A

Length:
1 day

Delivery Method:
On-site

Prerequisites:
None

Content:
- Data generator: description, data memory, timing, control and output parameters, front panel layout/display, page concept/configure main generator parameters
- Data analyzer: description, triggering, clocking, high and low speed memories, comparator, glitch detector, sample techniques, front panel layout, pages/configure main analyzer parameters
- Measurements: propagation delay, setup time, hold time, data stability including glitches and real time comparison

HP 8180/82A + 24H—HP 8180/82A Programming Techniques

Objective:
- Learn to design and develop programs to perform measurements with the HP 8180A Data Generator and HP 8182A Data Analyzer and Controller

Audience:
Engineers and senior technicians using the HP 8180A and HP 8182A

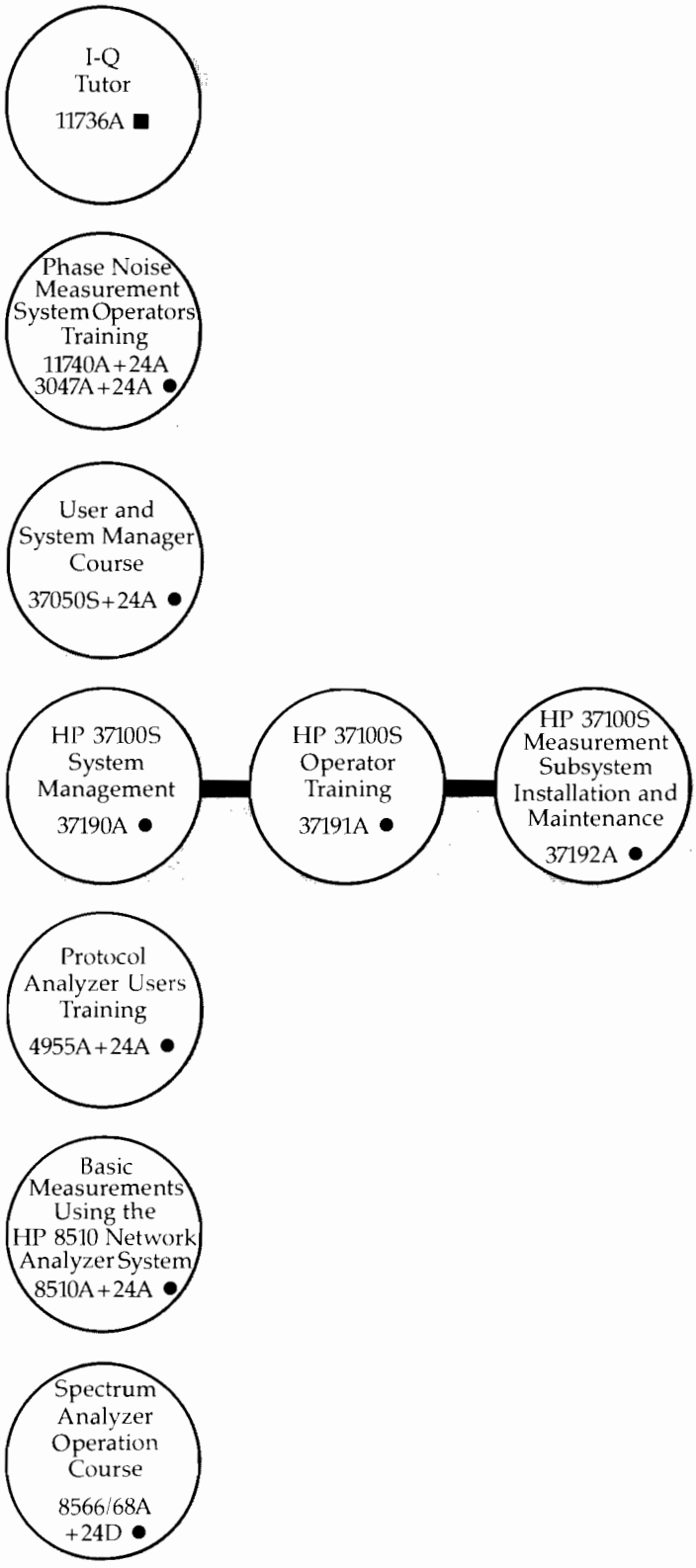
Length:
1 day

Delivery Method:
On-site

Prerequisite:
HP 8180/82A Operating Techniques (HP 8180/82A+24A)

Content:
- Addressing
- Generator configuration: pages, programming techniques, binary transfer, talker modes/state information, service requests
- Analyzer configuration: input page, data transfer, binary data transfer, talker modes/state information, service requests/error information
- Measurement setup and connections
- Program development and programming workshop

Microwave and Communications



● **HP Instructor**
■ **Self-Paced, CBT**

HP 11736A—I-Q Tutor

Objective:
- Gain familiarity with digital communications through an interactive, tutorial computer program. The material is presented without the involvement of difficult mathematics or deep theoretical discussions.

Audience:
Students having an interest in digital communications

Length:
Self-paced

Delivery Method:
Self-paced

Prerequisites:
None

Content:
- Magnitude and phase
- Practical digital modulation techniques
- Multi-path fade
- High power amplifier nonlinearities
- Experimental exercises
- I-Q modulation/demodulation
- Nyquist filters, bandwidth, and the FCC

HP 11740A + 24A/HP 3047A + 24A—Phase Noise Measurement System Operators Training

Objectives:
- Understanding of the nature of phase noise and how it is measured
- Gain experience in measuring phase noise with HP 3047A/11740A systems using both the phase detector and frequency discriminator methods
- Practice recalling, storing, and outputting measurement results of the HP 3047A/11740A systems
- Develop expertise in evaluating measured data for common abnormalities
- Learn procedures for viewing detected phase noise in real time

Audience:
R&D engineers, production engineers, and technicians who intend to operate HP 3047A or 11740A systems

Length:
2 days

Delivery Method:
On-site

Prerequisites:
This is an entry-level course, however, it is recommended that the student have a prior familiarity with:
- Basic network measurement concepts, practices, and terminology including S-parameters, dB, Rho, and SWR
- Vector representation of a microwave signal
- Manual operation of the individual test instruments
- HP Series 200 controller operation

Content:
- Phase noise concepts
- Measurement techniques
- System overview and initialization
- Making a measurement
- Outputting results
- Evaluating results
- Special topics
- Labs

HP 37050S + 24A—Users and System Managers Course

Objectives:
- Become familiar with the HP 37050S system applications, hardware, measurements, data bases, and analysis of results
- Learn the system management concepts of planning, coordination, start-up, configuration, software installation, task scheduling, data base management, and system maintenance as these concepts relate to the HP 37050S system

Audience:
System managers, users, and technicians who will be working with the HP 37050S FDM Network Monitoring System

Length:
5 days

Delivery Method:
On-site

Prerequisites:
System managers should be familiar with the operation of the HP 1000 A-Series computer. There are no prerequisites for users and technicians who wish to attend this course.

Content:
- Overview of system hardware, operation, and manuals
- Overview of training materials
- Introduction to system
- Role of system users
- User interface
- Extracting data base information
- Measurement using the system
- Analyzing results
- Task formation and application
- Review of system hardware, operation, and system manager's manual
- Planning system operation
- Data base interaction
- High capability FDM commands
- ATM, PMG, and FFT software systems
- TSS initialization
- Altering help information
- Altering data base schema
- System boot-up and generation
- Software installation
- Summation and checklist

HP 37190A—HP 37100S System Management

Objectives:
- Perform user management function e.g., add user names and passwords, allocate capabilities, etc.
- Manage the security of communications with the measurement subsystems
- Configure an HP 37100S system to meet their specific needs
- Install the software and boot-up an HP 37100S system
- Plan and create a workable system data base
- Update an HP 37100S data base by adding, modifying or deleting information
- Alter the system generation
- Integrate HP 37100S software revisions into an existing system

Audience:
System managers and users of the HP 37100S remote access and test system

Length:
8 days

Delivery Method:
On-site

Prerequisites:
Introduction to RTE (HP 22950B) and RTE-A System Management (HP 22955C)

Content:
- System description
- Measurements description
- Role of key personnel
- Engineering considerations
- Site planning and preparation
- System installation and configuration
- Software installation and modification
- System acceptance criteria
- Managing and using the software
- Localization
- External instruments
- System security
- System management
- System support
- System diagnostics
- Networking

Microwave and Communications

HP 37191A—HP 37100S Operator Training

Objectives:
- Log-on to the system
- Test and troubleshoot telephone circuits using the HP 37100S software
- Update the HP 37100S data base
- Use the HP 37100S to maintain circuit records
- Log-off from the system

Audience:
System managers and users of the HP 37100S remote access and test system

Length:
3 days

Delivery Method:
On-site

Prerequisites:
Experienced in maintenance of telephone circuits

Content:
- System description
- Measurements description
- Using the software packages
- Operator's maintenance

HP 37192A—HP 37100S Measurement Subsystem Installation and Maintenance

Objectives:
- Configure, install and power-up the HP 37100S Measurement Subsystem hardware
- Troubleshoot a Measurement Subsystem and repair it by board replacement

Audience:
System managers and users of the HP 37100S Remote Access and Test System

Length:
3 days

Delivery Method:
Given at selected locations in Europe and the US or by special arrangement at customer's site

Prerequisites:
Working knowledge of electronics

Content:
- System description
- Site planning
- Measurement Subsystem installation and configuration
- System diagnostics and Measurement Subsystem maintenance

HP 4955A + 24A—Protocol Analyzer Users Training

Objectives:
- Learn to use the HP 4955A Protocol Analyzer with character-oriented protocols, byte-oriented protocols, and custom data sets
- Write BASIC programs for calculating network statistics and providing custom displays
- Gain sufficient experience with the HP 4955A to enable you to obtain the full analysis potential of the analyzer

Audience:
Datacomm manager or technician, telecommunications manager, or field service engineer

Length:
1 day

Delivery Method:
On-site

Prerequisites:
Familiarity with data codes (ASCII or EBCDIC), asynchronous/synchronous transmission protocols and BASIC

Content:
- Fundamentals: architecture, top level menus
- Advanced triggers: trigger types, level 2 BSC triggers, level 2 SDLC/HDLC triggers
- Data and State lab
- Non-standard protocols: standards and the real world, custom datacodes
- Simulation: interface control, reset asynchronous simulation lab, synchronous simulation lab
- BASIC programming: datacomm extension to BASIC, BASIC functions, live keyboard program

HP 8510A + 24D—Basic Measurements Using the HP 8510 Network Analyzer System

Objectives:
- Learn the skills necessary for day-to-day use of the HP 8510
- Provide guidelines in the areas of planning measurement strategies, evaluating measurement accuracy, performing first level fault location, and verifying system performance
- Gain experience in operation of the HP 8510

Audience:
Engineers and technicians responsible for the operation of HP 8510 systems

Length:
3 days

Delivery Method:
Classroom

Prerequisites:
Prior to attending the course the student should: 1) understand basic network measurement concepts and terminology such as S-parameters, dB, Rho, and SWR, 2) understand vector representation of a microwave signal, and 3) have a familiarity with HP-IB instrument control techniques.

Content:
- Principles of network analysis
- System block diagram
- Front panel overview
- Connection techniques
- Response measurement calibration
- Sources of measurement error
- Accuracy enhancement
- 1-port measurement calibration
- Full 2-port measurement calibration
- Measuring noninsertable devices
- Waveguide devices
- Modify cal kit
- Measuring devices with high gain/loss
- Introduction to programming the HP 8510
- Time domain measurements
- Measurement accuracy analysis
- System performance verification

HP 8566/68A + 24D—Spectrum Analyzer Operation Course

Objectives:
- Learn to use the advanced capabilities of the instrument to obtain accurate measurements more quickly
- Develop functional modular software to generate automatic measurement programs on an HP Series 200 controller

Audience:
Engineer and senior technicians responsible for integrating the HP 8566A or 8568A Spectrum Analyzer into an automatic test system

Length:
4 days

Delivery Method:
Classroom

Prerequisites:
Familiarity with swept-tuned heterodyne receiver operation principles, the presentation of modulated signals in the frequency domain, and a working knowledge of BASIC

Content:
- Front panel overview
- Remote operation fundamentals: programming, HP-IB system level commands, outputting data
- Frequency resolution and accuracy
- Dynamic range
- IF signal processing
- Amplitude accuracy and enhancement
- Advanced remote operation: accessing display and function memory, input to display memory, operator entries, service requests, and display graphics
- Remote operation with modular software: program organization, instrument state, modular vs. non-modular software

HARDWARE MAINTENANCE

Hardware Maintenance

Sharpen Your Technical Skills with HP Maintenance Training

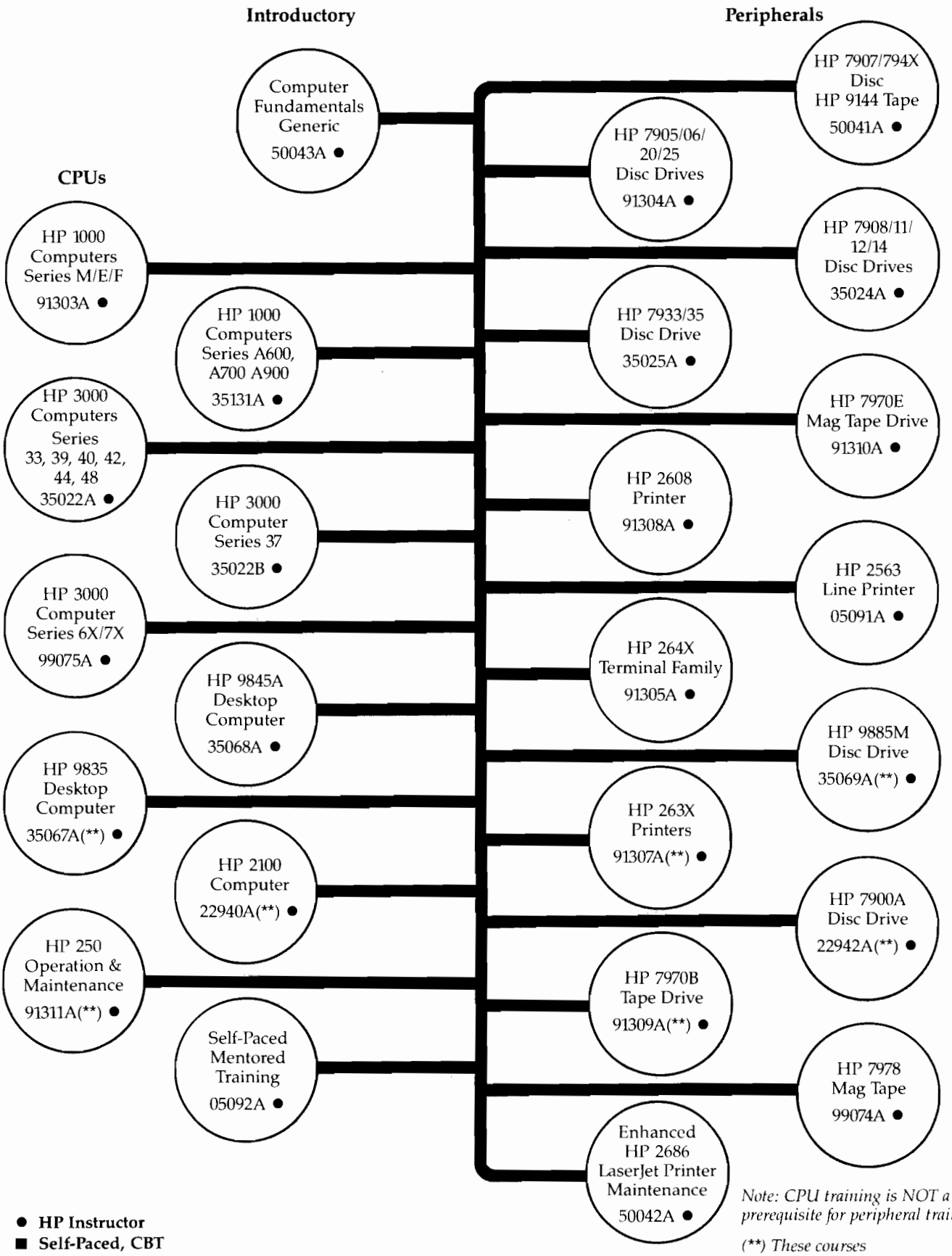
High-quality maintenance depends upon high-quality training, and Hewlett-Packard offers a wide range of courses which provide instruction in the latest diagnostic, troubleshooting, and repair techniques. The products studied in these classes include computer CPU's, peripherals, and selected instruments. Courses are offered in a classroom lecture/lab format as well as in self-paced packages (computer only).

Each course (or module) focuses on the operational service and maintenance techniques of a particular processor or peripheral product. This flexible approach allows you to combine modules and design a training program that meets the specific requirements for maintaining your system.

Each course provides in-depth technical instruction for HP customers who maintain their own HP products. Classroom courses incorporate a balance of theory and practical hands-on experience that provides maintenance personnel with the skills needed to troubleshoot, repair, and maintain these products. Service manuals and handbooks are provided for each student for reference during class as well as later. In addition, our self-paced, mentored training gives students the opportunity to learn at their own pace in a classroom environment with an expert available to answer questions and provide technical backup.

Our extensive Computer Self-Paced Learning Series provides you with a cost-effective means of training service personnel in the maintenance of some of our computer products right at your site. Courses in this series are fully self-contained. Each includes an extensive self-paced learning guide, service documentation, and special service tools. The student provides the hardware product and any necessary common tools.

Hardware Maintenance



● **HP Instructor**
■ **Self-Paced, CBT**

Note: CPU training is NOT a prerequisite for peripheral training.

(**) These courses available on sufficient demand only.

Hardware Maintenance

HP 50036A—HP ATS 1000 Service Training

Objective:
- To provide the fundamental knowledge to troubleshoot an ATS 1000 system; specifically, the HP 9411B, 9412A, 9414A, 9415A switch products to the replacement assembly level

Audience:
Service and technical maintenance personnel

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisites:
Introduction to RTE (HP 22905B); HP-IB Instrument Control (HP 50011B); digital electronics background coupled with computer and instrument working experience, and system level troubleshooting experience is desired.

Content:
- Theory of operation
- Installation and adjustment procedures
- Preventive maintenance
- Troubleshooting techniques
- Replacement procedure
- 40% lecture and 60% lab

HP 50043A—Computer Fundamentals

Objectives:
- To provide the student with a basic course in computer fundamentals focused on computer and peripheral hardware maintenance
- To provide the student with basic operating principles of central processing units, disc drives, printers, and magnetic tape devices
- To provide the student a knowledge of basic digital logic building blocks including AND, OR, NAND, NOR, XOR, etc.
- To provide the student with the basic computer math skills to convert binary to octal and hexedecimal and back again.
- To provide hands-on digital lab experiments to reinforce course concepts using a microprocessor based training system.

Audience:
Electronic technicians unfamiliar with basic digital computing concepts and technology.

Length:
5 days

Delivery Method:
60% Lecture/Video training tapes 40% Hands-on lab exercises

Prerequisites:
Basic course in AC/DC theory, some experience in electronic maintenance and troubleshooting

Content:
- Basic computer terminology
- Digital computer fundamentals
- Basic peripheral technologies
- Basic digital building blocks
- Understanding binary, octal, and hexedecimal numbers
- Hands-on laboratory exercises

Hardware Maintenance

HP 35022A—HP 3000 Series 30/33, 4X, 5X System Maintenance

Objectives:
- Diagnose and repair malfunctions to the field replaceable assembly level
- Study ROM-based, off-line and on-line diagnostic utilities
- Learn site verification and installation procedures, including MPE I/O configuration and theory of operation to the block diagram level

Audience:
Service and technical maintenance engineers

Length:
15 days

Delivery Method:
Classroom, on-site

Prerequisites:
Terminal training: HP 264X Series Operation and Maintenance (HP 91305A) or HP 262X self-paced learning program (HP 2627A+49A) or HP 264X self-paced learning program (HP 2648A+49A); System Operator (HP 22807C); skill in digital hardware maintenance

Content:
- Theory of operations (block diagrams)
- ROM-based diagnostics
- Diagnostic utility system (off-line diagnostics)
- I/O operation
- MPE I/O configuration
- System backup and boot-up
- MPE I/O and memory utilities
- Power supply adjustment and replacement
- Site preparation
- System hardware installation
- 50% lab, 50% lecture

HP 35022B—HP 3000 Series 37 Computers

Objectives:
- Diagnose and repair malfunctions to the field replaceable level
- Study ROM-based, off-line, and on-line diagnostic utilities
- Learn site verification and installation procedures, including MPE I/O configuration, and theory of operation to the block diagram level

Audience:
Service and technical maintenance engineers

Length:
10 days

Delivery Method:
Classroom lecture and lab with self-paced units

Prerequisites:
Terminal training: HP 95305A–264X terminals, or HP 2627A+49A self-paced learning program, or HP 2648A+49A–264X self-paced learning program; HP 22807C–System Operator; digital electronics background.

Content:
- Theory of operations (block diagrams)
- ROM-based diagnostics
- Diagnostic Utility System (off-line diagnostics)
- I/O operation
- MPE I/O configuration
- System back-up and boot-up
- MPE I/O and memory utilities
- Power supply adjustment and replacement
- Site preparation
- System hardware installation
- 60% lecture/self-paced, 40% lab

Hardware Maintenance

HP 99075A—HP 3000 Series 6X and 7X System Maintenance

Objectives:
- Diagnose and repair malfunctions to the field replaceable assembly level
- Adjust and maintain the series 6X and 7X computers

Audience:
Service and technical maintenance engineers

Length:
8 days

Delivery Method:
Classroom, on-site

Prerequisites:
HP 3000 Series 3X/4X/5X System Maintenance (HP 35022A) or equivalent experience

Content:
- Theory of operations (Block Diagrams)
- ROM-based diagnostics
- Diagnostic utility system (DFF-Line Diagnostics)
- Fault locating diagnostics
- Installation and configuration procedures
- Troubleshooting techniques
- 50% lecture and 50% lab

HP 91303A—HP 1000 M/E/F Series Maintenance

Objectives:
- Learn specific theory needed to troubleshoot, repair by major subassembly replacement, and maintain the HP 1000 M/E/F Series computers
- Obtain an introduction to programming in machine language
- Implement standard HP 1000 Series instructions

Audience:
Service and technical maintenance engineers

Length:
8 days

Delivery Method:
Classroom, on-site

Prerequisites:
A strong background in digital electronics, including binary, octal, and decimal number system conversions; knowledge of machine/assembly language programming also desirable

Content:
- Front panel operation
- Machine language programming
- Self tests
- Diagnostics operation
- Initial binary loader
- Boot-up operation
- Power supply adjustment and replacement
- Firmware installation and test
- Block diagrams
- Memory
- I/O structure, I/O operations
- Dual channel port controller
- Memory protect
- Dynamic mapping system
- I/O extender
- 40% lab, 60% lecture

Hardware Maintenance

HP 35131A—HP 1000 A600/A700/A900 Series Maintenance

Objectives:
- Obtain specific theory and lab exposure needed to troubleshoot and repair by major subassembly replacement the HP 1000 A600/A700/A900 computers
- Gain an introduction to the VCP (Virtual Control Plan) and learn to program in machine language

Audience:
Service and technical maintenance engineers

Length:
8 days

Delivery Method:
Classroom, on-site

Prerequisites:
A strong background in electronics, including binary octal and decimal number system conversions; knowledge of machine/assembly language programming also desirable

Content:
- Virtual control panel
- Boot-up procedure
- Hardware organization
- Memory and mapping
- I/O operation and theory
- 40% lab, 60% lecture
- Machine language
- Diagnostics
- Microcoded self test
- 24612 off-line
- FTEST on-line

HP 35068A—HP 9845B Computer Maintenance

Objective:
- Gain the fundamental knowledge required to troubleshoot and repair to the replaceable subassembly level, adjust and maintain the HP 9845 computer

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- System exerciser tests
- Self, ROM, and cartridge tests
- Installation procedure
- Replacement procedure
- Preventive maintenance
- Troubleshooting
- 60% lab, 40% lecture

HP 91304A—HP Disc Drive Maintenance

Option 001: 7905/06
Option 002: 7920/25

Objective:
- Acquire the fundamental knowledge needed to troubleshoot and repair to the replaceable subassembly level, adjust, align, and maintain the HP multi-access controller disc drive family using the HP 13354-60005 disc service unit and diagnostics

Audience:
Service and technical maintenance engineers

Length:
2 days lecture and either 3 days lab on the HP 7905/06 (option 001) or 3 days lab on the HP 7920/25 (option 002)

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
  - –13037 controller
  - –disc drive
- Adjustment and alignment procedures
- Preventive maintenance
- Replacement procedures
- Use of the disc drive service unit for adjustment, alignment, and preventive maintenance
- Use of diagnostic on HP 1000 system
- Troubleshooting techniques

Hardware Maintenance

HP 50041A—HP 7907/794X Disc Drives, 9144 Tape Drives

Option 001: HP 7907A Disc
Option 002: HP 794X Disc and 9144 Tape Drives

Objectives:
- Obtain the fundamental knowledge needed to trouble-shoot and repair to the replaceable assembly level
- Adjust and maintain the HP 7907 disc drives
- Adjust and maintain the HP 794X disc and HP 9144 tape drives

Audience:
Service and technical maintenance engineers

Length:
3 days

Delivery Method:
Classroom lecture and lab with self-paced segments

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- CS-80 External Exerciser
- ROM-based diagnostics
- Installation procedures
- Preventive maintenance procedures
- Removal and replacement procedures
- 70% lecture/self-paced, 30% lab

HP 35024A—HP 7908/11/12/14 Disc Drive Maintenance

Objective:
- Obtain the fundamental knowledge needed to trouble-shoot and repair to the replaceable subassembly level; adjust and maintain the HP 7907/08/11/12/14 disc drives

Audience:
Service and technical maintenance engineers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- CS80 external exerciser (HP 85)
- Internal MPU diagnostics
- Installation procedure
- Replacement procedure
- Preventive maintenance
- 60% lab, 40% lecture

HP 35025A—HP 7933/35 Disc Drive Maintenance

Objective:
- Gain the fundamental knowledge required to trouble-shoot and repair to the replaceable subassembly level, adjust and maintain the HP 7933/35 disc drives

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- CS80 external exerciser (HP 85)
- Internal MPU diagnostics
- Installation procedure
- Replacement procedure
- Preventive maintenance
- 60% lab, 40% lecture

Hardware Maintenance

HP 50042A—Enhanced HP 2686 LaserJet Printer Maintenance

Objectives:
- To provide the student with basic knowledge needed to troubleshoot and repair LaserJet printers to the board level
- To provide the student with basic HP personal computer to LaserJet printer configuration information with a hands-on configuration and test exercise
- To provide actual hands-on troubleshooting exercises to sharpen troubleshooting skills

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Self-paced, augmented by lecture, and configuration and troubleshooting labs. Students will be mentored to assure key troubleshooting steps are followed.

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Adjustment and alignment procedures
- Diagnostics
- Troubleshooting procedures
- Replacement part identification
- HP PC to LaserJet printer configuration information
- Configuration and troubleshooting exercises

HP 91307A—HP 2631/35 Printer Maintenance

Objective:
- Provide the student with the fundamental knowledge to troubleshoot and repair to the replaceable subassembly level; adjust and maintain the HP 263X printing terminal

Audience:
Service and technical maintenance engineers

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisites:
Digital electronics background and the manual dexterity necessary to do precise mechanical adjustment

Content:
- Theory of operation
- Internal self-test
- Replacement procedures
- Preventative maintenance
- Diagnostics
- HP-IB configuration

HP 91308A—HP 2608 Line Printer Maintenance

Objective:
- Use standard test equipment and diagnostic program to troubleshoot, repair, adjust, align, and maintain the HP 2608 dot-matrix line printer

Audience:
Service and technical maintenance engineers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisites:
Digital electronics background and good manual dexterity

Content:
- Introduction to dot-matrix printing
- Theory of operation to the functional level
- Alignment procedures
- Programming considerations
- HP 1000 based diagnostics
- Troubleshooting
- 50% lab, 50% lecture

HP 05091A—HP 2563 Line Printer Maintenance

Objective:
- Use standard test equipment and diagnostic program to troubleshoot, repair, adjust, align, and maintain the HP dot-matrix line printer

Audience:
Service and technical maintenance engineers

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Introduction to dot-matrix printing
- Functional level theory of operation
- Alignment procedures
- Programming considerations
- Troubleshooting techniques
- 50% lab, 50% lecture

Hardware Maintenance

HP 91310A—HP 7970E Magnetic Tape Unit Maintenance

Objective:
- Learn the fundamentals needed to troubleshoot, repair by major subassembly replacement, maintain, adjust, and align the HP 7970E magnetic tape unit

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Alignment procedures
- Preventive maintenance
- Troubleshooting
- Diagnostic on HP 1000
- 60% lab, 40% lecture

HP 99074A—HP 7978 Series Magnetic Tape Unit Maintenance

Objective:
- Learn the fundamentals needed to troubleshoot, repair by major assembly replacement, maintain, adjust, and align the HP 7978 series magnetic tape unit

Audience:
Service and technical maintenance engineers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Alignment procedures
- Preventive maintenance
- Troubleshooting
- Diagnostic on HP 1000
- 60% lab, 40% lecture

HP 91305A—HP 264X Terminal Maintenance

Objective:
- Acquire the fundamental knowledge needed to troubleshoot and repair to the replaceable subassembly level, adjust, align, and maintain the HP 264X terminals

Audience:
Service and technical maintenance engineers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Adjustment and alignment procedures
- Preventive maintenance
- Replacement procedures
- Basic terminal operation (HP 2648A)
- Use of alignment and test tools for maintenance
- Troubleshooting techniques
- Microcoded self-test procedures
- 50% lab, 50% lecture

Hardware Maintenance

Self-Paced Mentored Training

HP 05092A—Self-Paced Mentored Training

OPTION NUMBER:		DAYS
001:	HP110 Portable Computer	2
002:	HP150 Personal Computer	3
003:	HP150I Personal Computer	3
004:	HP150 Emulator	1
005:	HP85A/B Personal Computer	2
006:	HP86A/B Personal Computer	2
007:	HP9121S/D Disc Drive	1
008:	HP9122 Disc Drive	1
009:	HP9133/34 Disc Drive	1
010:	HP9114A Disc Drive	1
011:	HP2225A ThinkJet Printer	1
012:	HP82905A Printer	1
014:	HP7470A Plotter	1
015:	HP7475A Plotter	1
016:	HP9872A Plotter	1
017:	HP262X Terminal	1
018:	HP264X Terminal	3
019:	Etherlink/150	1
020:	HP72425A Vectra PC	3
021:	HP150II Personal Computer	3
022:	HP9807A Integral PC	4
023:	HP2686A/D LaserJet Printer	4

Objective:
- To provide student with basic knowledge needed to troubleshoot and repair to board level in the maintenance of the products listed

Audience:
Service & technical maintenance engineers

Length:
Specified above

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Adjustment and alignment procedures
- Diagnostics
- Troubleshooting procedures
- Replacement part identification

Classroom Courses Available Upon Demand

HP 91311A—HP 250 Operation and Maintenance

Objective:
- Provide the student with the knowledge and experience to solve 85% of all service problems associated with the HP 45250 (SAM) and HP 45260 (SAMSON), exclusive of the peripheral devices. The student will also be competent in troubleshooting and reinstalling all field replaceable major subassembly

Audience:
Service and technical maintenance engineers

Length:
10 days

Delivery Method:
Classroom, on-site

Prerequisites:
Digital electronics background coupled with some working experience on electromechanical devices such as motors and solenoids

Content:
- Theory of operation
- CE service diskette
- HP 250 hardware modules
- HP-IB configuration
- Asynchronous Communication Interface (ACI)
- Intelligent Network Processor (INP)
- Troubleshooting
- 30% lecture and 70% lab time

Hardware Maintenance

HP 22940A—HP 2100 Computer Operation and Maintenance

Objective:
- Provide the student with the fundamental knowledge to troubleshoot and repair the HP 2100 using subassembly replacement procedures

Audience:
Service and technical maintenance engineers

Length:
10 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Machine level programming
- Diagnostics (off-line)
- Replacement procedures
- Preventative maintenance
- 50% labs, 50% lecture

HP 35067A—HP 9835A Computer Maintenance

Objective:
- Provide the fundamental knowledge to troubleshoot and repair to the replaceable subassembly level, adjust and maintain the HP 9835 computer

Audience:
Service and technical maintenance engineers

Length:
4 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- System exerciser tests
- Self, ROM, and cartridge tests
- Installation procedure
- Replacement procedure
- Preventative maintenance
- Troubleshooting
- 40% lecture and 60% lab time

HP 22942A—HP 7900A Disc Drive Maintenance

Objective:
- To provide the fundamental knowledge needed to troubleshoot and repair to the replacement subassembly level, adjust, align, and maintain the HP 13210 controller disc drive family using the HP 13219A disc service unit and diagnostics

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation: HP 13210 controller disc drive
- Adjustment and alignment procedures
- Preventative maintenance
- Replacement procedures
- Use of the disc drive service unit for adjustment, alignment, and preventative maintenance
- Use of diagnostic on HP 1000 system
- Troubleshooting techniques
- 40% lecture and 60% lab time

HP 35069A—HP 9885A Operation and Maintenance

Objective:
- Provide the student with the knowledge to troubleshoot and repair to the replaceable subassembly level, adjust and maintain the HP 9885 disc drive

Audience:
Maintenance and service personnel

Length:
3 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Alignment specifications and adjustments
- Disassembly and reassembly
- Preventative maintenance
- Internal microdiagnostics
- 40% lecture and 60% lab time

Hardware Maintenance

HP 91309A—HP 7970B Magnetic Tape Unit Maintenance

Objective:
- To provide the fundamental knowledge needed to troubleshoot, repair by major subassembly replacement, maintain, adjust, and align, the HP 7970B magnetic tape unit

Audience:
Service and technical maintenance engineers

Length:
5 days

Delivery Method:
Classroom, on-site

Prerequisite:
Digital electronics background

Content:
- Theory of operation
- Alignment procedures
- Preventative maintenance
- Troubleshooting
- Diagnostic on HP 1000
- 40% lecture and 60% lab time

Self-Paced Learning Series

SERVICE PACKAGE

HP 85B+49A-0000	HP85A/B Computer
HP 86B+49A-0000	HP86A/B Computer
HP 45710A+49A-0	HP110 Computer
HP 45711B+49A-0	HP110+ Computer
HP 45600A+49A-0	HP120 Computer
HP 45500A+49A-0	HP125 Computer
HP 45610A+49A-0	HP150 Computer
HP 45610B+49B-0	HP150I Computer
HP 45849A+49A-0	HP150II Computer
HP 45641A+49A-0	HP159 Emulator
HP 45644A+49A-0	Etherlink
HP 2225D+49A-00	HP2225A ThinkJet Printer
HP 2227A+49A-00	HP2227A QuietJet Printer
HP 2392A+49A-00	HP2392A Terminal
HP 2393A+49A-00	HP2393A Terminal
HP 2602A+49A-00	HP2602A Printer
HP 2603A+49A-00	HP2603A Printer
HP 2627A+49A-00	HP2627A Terminal
HP 2648A+49A-00	HP264X Terminals
HP 2932A+49A-00	HP293X Printers
HP 7225A+49A-00	HP7225A Plotter
HP 7440A+49A-00	HP7440A Plotter
HP 7470A+49A-00	HP7470A Plotter
HP 7475A+49A-00	HP7475A Plotter
HP 7550A-49A-00	HP7550A Plotter
HP 7570A-49A-00	HP7570A Plotter
HP 7945A+49A-00	HP794X Disc Drives
HP 9020A+49A-00	HP9020A Computer
HP 9114A+49A-00	HP9114A Disc Drive
HP 9121D+49A-00	HP9121S/D Disc Drives
HP 9134A+49A-00	HP9133/34 Disc Drives
HP 9807A+49A-00	HP9807A Computer
HP 9816A+49A-00	HP9816A Computer
HP 9836C+49A-00	HP9826/36 Computer
HP 9872A+49A-00	HP9872A Plotter
HP 9888A+49A-00	HP9888A I/O Extender
HP 9915A+49A-00	HP9915A Computer
HP 12025A+49A-0	HP12025A I/O Extender
HP 72425A+49A-0	HP72425A Computer
HP 82902M+49A-0	HP82901/02 Disc Drives
HP 82904A+49A-0	HP82904A Bus Extender
HP 82905B+49A-0	HP82905A Printer
HP 82906A+49A-0	HP82906A Printer

VIDEO PACKAGES		Standard	Format
HP 99072HV+49A	Disc Mass Storage Prestudy	NTSC	VHS
HP 99072HW+49A	Disc Mass Storage Prestudy	NTSC	Beta
HP 99072HZ+49A	Disc Mass Storage Prestudy	NTSC	Umatic
HP 99072HC+49A	Disc Mass Storage Prestudy	PAL	VHS
HP 99073HV+49A	Computer Printer Prestudy	NTSC	VHS
HP 99073HW+49A	Computer Printer Prestudy	NTSC	Beta
HP 99073HZ+49A	Computer Printer Prestudy	NTSC	Umatic
HP 99074HA+49A	Mag Tape Unit Prestudy	NTSC	VHS
HP 99074HB+49A	Mag Tape Unit Prestudy	NTSC	Beta
HP 99074HD+49A	Mag Tape Unit Prestudy	NTSC	Umatic

Objectives:
- Proceed at your own pace in learning how to repair and maintain HP computer products
- Work through a complete instructional program on troubleshooting and repair techniques

Audience:
Service and technical maintenance personnel

Length:

Delivery Method:
Classroom, on-site

Prerequisites:
Students should be skilled in digital electronic fundamentals; recommend two years computer maintenance experience

Content:
- Theory of operation
- Functional operation
- Problem analysis
- Troubleshooting
- Adjustments
- Repair and maintenance
- Diagnostics and self-test

INDEX

Index

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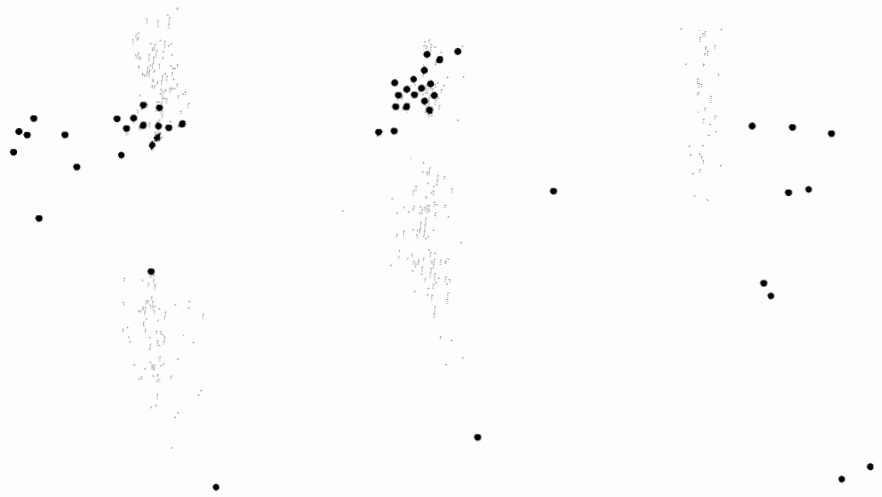

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