

**TENTATIVE AGENDA for
PCB DESIGNER CERTIFICATION PREPARATION**

Day 1 - Workshop

8:00 am REGISTRATION AND PRESESSION COFFEE BREAK

8:30 am INTRODUCTION TO DESIGNER CERTIFICATION

DESIGN CONSIDERATIONS

- Interrelated Considerations for Design
- Copper Clad Laminates
- Thermal Management Techniques for Printed Boards
- Thermal Management Techniques for Assemblies
- Testing Techniques and Procedures
- Reliability Terms and Design Issues
- Purpose of Tooling Holes
- Purpose of Stiffeners

Mini-Quiz and Discussion

Lunch

LAYOUT PRINCIPLES

- Printed Board and Printed Board Assembly Viewing Principles
- Functional Electrical Characteristics
- Schematic/Logic Symbols and Transformation
- Placement and Routing Techniques
- Characteristics of Grid Systems
- Features Formed in Copper
- Legend and Polarity Markings
- Legend Marking Location

Mini-Quiz and Discussion

COMPONENT AND ASSEMBLY ISSUES

- Considerations for Component Mounting
- Axial and Radial Lead Mounting Differences
- Design Differences for SMT Versus Through-Hole
- Differences Between Automatic and Manual Insertion
- Differences Between Manual & Pick-and-Place SMT Placement
- DIP and SIP Components

5:00 pm ADJOURNMENT

Day 2 - Workshop

8:00 am PRESESSION COFFEE BREAK

8:30 am RECAP of FIRST DAY

COMPONENT AND ASSEMBLY ISSUES (Continued from Day 1)

- DIP and Chip Carrier Sockets

- Clinched and Unclinched Leads
- Edge-Board Connectors
- Bus Bar Mounting Characteristics
- Purpose of Eyelets
- Point-to-Point Wires
- Jumper Wires

Mini-Quiz and Discussion

PRINTED BOARD CHARACTERISTICS

- Board and Assembly Panelization
- Tolerancing Methods
- Hole Types and Their Tolerances
- Conductive Pattern Location to Datum References
- Through-Hole Land and Tolerance Requirements
- Coating and Markings Used on Printed Boards

Mini-Quiz and Discussion

Lunch

DOCUMENTATION ISSUES

- Minimum Drawing Requirements
- Minimum Requirements for Master Drawing
- Solder Resist and Location Techniques
- Dimensioning and Datum Symbols
- Master Drawing Hole and Conductor Description
- Printed Board Profiling Dimensioning and Tolerances
- Plated-Through Hole Dimensions and Grid Location
- Tooling Hole Location Documentation
- Nonstandard Parts Information
- Artwork Acceptance Criteria
- Documentation for Fastening Hardware

5:00 pm ADJOURNMENT

Day 3 - Exam

(Note flexible start time - Testing may begin as early as 7:30 a.m. or as late as 9:30 a.m.)

8:30 am	RECAP/QUESTIONS & ANSWERS
9:00 am	CERTIFICATION TESTING
11:00 am	TESTING COMPLETE/LUNCH
1:00 pm	REVIEW OF EXAMINATION
3:00 pm	ADJOURNMENT

TIMES ARE APPROXIMATE

- * Coffee/Refreshment Breaks at approximately 10:00 a.m. and 3:15 p.m.
- * Break for Lunch 12:00 p.m. to 1:00 p.m. on the first two days