RCETECCC02 - PCB Design

Course outcomes:

- Understand a single layer and multilayer PCB
- Create and fabricate a PCB
- Evaluate and test a PCB

Syllabus:

Unit I

Introduction to High-Speed PCB Design

PCB Design Flow in General -- How Does One Decide if it is a High - Speed Design - Complexity of Design-- High-Speed Design Considerations.

Unit II

Signal Integrity for PCB Design

Signal Integrity -- Need for Signal Integrity -- Signal Integrity Issues in a PCB -- Reflections, Ringing, Overshoot and Undershoot -- Signal attenuation.

Unit III

PCB Transmission Lines and Controlled Impedance

PCB Transmission Lines -- Interconnection Treated as a Transmission Line -- Controlled Impedance Structures in PCBs -- Microstrips Differential Pair -- Striplines Differential Pair.

Unit IV

PCB Stackup Design & PCB Technology

PCB Stackup Design -- Selecting High-Speed Materials -- Effect of Different Styles of Fibreglass Weaves on Impedance -- Terms and Definitions for Stackup.

Unit V

EMI and EMC

Electromagnetic Compatibility (EMC) -- Sources of EMI -- Best PCB Design Practices for EMC -- EMC or EMI.

Reference Text Books:

1. Printed circuit Board Design and technology, Walter C. Bosshart
2. Printed Circuits Handbook, Sixth Edition,by Clyde F. Coombs, Jr, Happy T. Holden,Publisher: McGraw-Hill Education Year: 2016
3. Complete PCB Design Using OrCAD Capture and PCB Editor,Kraig Mitzner Bob Doe Alexander Akulin Anton Suponin Dirk Müller, 2nd Edition 2009.
4. Introduction to System-on-Package, Rao R Tummala&MadhavanSwaminathan, McGraw Hill, 2008.
5. EMC and Printed circuit board,Design theory and layout, Mark I Montrose IEEE compatibility society
6. Flexible Printed circuit board Design and manufacturing ,By Robert torzwell
7. Web-based Current literature.