

SEMESTER-II
Physics (Vocational Skill Course)
Course code: USPHPVSC2
Title: - PCB Making

Learning Objectives:

1. Learn techniques required for soldering of electronic components.
2. Learn to create effective PCB layouts.

Learning Outcomes:

On successful completion of this course students will be able to:

1. Solder basic electronic components on a PCB.
2. Develop schematic electronic circuit designing skills.
3. Develop PCBs.

Unit I: Circuit Prototyping Skills

(15 Hours)

1. Soldering electronic components
2. Circuit assembly on general purpose board
 - A. Bridge rectifier with capacitor filter and regulator
 - B. Second order active Filter
 - C. Wheatstone bridge for temperature measurement
 - D. 555 based LED flasher
3. Testing
4. Soldering of surface mount devices

Unit II: PCB Design Software

(15 Periods)

1. Schematic circuit entry software
2. PCB Layout
 - A. Footprint assignment
Creating board outlines for various layers: Bottom routing, Solder mask bottom, Legend or silk screen Top, Drill layer
 - B. Placement on the board
 - C. Routing
 - D. Post processing, Assembly and testing

List of Experiments:

1. Single side PCB
2. Double side PCB
3. Multi-layer PCB
4. Schematic / Components design review.
5. Determine what footprints are required to be built, and build them incorporating.
6. Component placement.
7. Power and Ground Plane assignment.
8. Critical net routing.

References:

1. Electronic Product Design Vol. I Basic for PCB Design – by Er. Mehta S.D.
2. Printed circuit boards: Design fabrication , Assmbly and testing – R S Khandpur.
3. PCB Design and Layout Fundamentals – by Roger Hu
4. PCB Design and Technology – by Walter C Bosehart

Internal Continuous Assessment: 40% (20 Marks)	Semester End Examination: 60% (30 Marks)
Continuous Evaluation through: Practical's	

Format of Question Paper:**VSC: 2 credits****VSC of 2 credits, Duration: 30 Hrs , Total marks: 50****(30 Marks for Theory paper + 20 Marks for Practical Exam.)**

Semester End Theory Examination: 60% (30 Marks)	Internal Semester End Practical Examination: 40 % (20 Marks)
As per paper pattern attached	As per practical exam. pattern attached

F.Y.B. Sc. Physics Evaluation pattern and Question paper pattern for Semester End VSC Practical Examination

Internal Continuous Assessment: 40% (20 Marks)	Duration of semester End examination (Internal)
Viva/ assignment/ objective question test (15 Marks), Overall performance (5 Marks) = 20 Marks	1 Hr
External Semester End Examination: 60% (30 Marks)	Duration of semester End examination (External)
As per paper pattern	2 Hr

Continuous Evaluation through: Practical

Format of Question Paper:

Major Practical: 2 credits

Practical of 2 credits, Duration: 30 Hrs , Total marks: 50

(30 Marks for External Practical Exam + 20 Marks for Internal Practical Exam.)

Paper Pattern for 30 marks External Semester End Practical Examination:

Duration - This examination shall be of **Two hours** duration in laboratory

Sr. No.		Total 30 Marks
1	Experimental performance	20 Marks
2	Journal	05 Marks
3	VIVA	05 Marks

Paper Pattern for 20 marks Internal Semester End Practical Examination:

Duration - This examination shall be of **One hour** duration in laboratory

Sr. No.		Total 20 Marks
1	Practical/Theoretical/ Combined Performance	15 Marks
2	Overall Performance	05 Marks