

Devrukh Shikshan Prasarak Mandal's

**Nya. TATYASAHEB ATHALYE ARTS, Ved. S.R. SAPRE  
COMMERCE & Vid. DADASAHEB PITRE SCIENCE  
COLLEGE, DEVRUKH [AUTONOMOUS]**



**Syllabus for T.Y. B.Sc.**

**Program: B.Sc.**

**Course: Physics**

**Credit Based Semester and Grading System with the  
Effect from**

**Academic Year 2021-22**

**Syllabus for B.Sc. Physics (Theory and Practical)**  
**As per credit based system**  
**Third Year B.Sc.2021–2022.**

The revised syllabus in Physics as per credit based system for the Third Year B.Sc. Course will be implemented from the academic year 2021–2022.

**Preamble:**

The systematic and planned curricula from these courses shall motivate and encourage learners to understand basic concepts of Physics.

**Objectives:**

- To develop analytical abilities towards real world problems
- To familiarize with current and recent scientific and technological developments
- To enrich knowledge through problem solving, hands on activities, study visits, projects etc.

<b>SEMESTER V</b>				
<b>Theory</b>				
<b>Course</b>	<b>UNIT</b>	<b>TOPICS</b>	<b>Credits</b>	<b>Lectures per Week</b>
<b>USPH501</b>	I	Mathematical Methods in Physics	<b>2.5</b>	<b>4</b>
	II	Mathematical Methods in Physics		
	III	Thermal and Statistical Physics		
	IV	Thermal and Statistical Physics		
<b>USPH502</b>	I	Solid State Physics	<b>2.5</b>	<b>4</b>
	II	Solid State Physics		
	III	Solid State Physics		
	IV	Solid State Physics		
<b>USPH503</b>	I	Atomic Physics	<b>2.5</b>	<b>4</b>
	II	Atomic Physics		
	III	Molecular Physics		
	IV	Molecular Physics		
<b>USPH504</b>	I	Electrodynamics	<b>2.5</b>	<b>4</b>
	II	Electrodynamics		
	III	Electrodynamics		
	IV	Electrodynamics		

<b>Practicals</b>			
<b>USPHP05</b>	Practicals of Course USPH501 + Course USPH502	<b>2.5</b>	<b>6</b>
<b>USPHP06</b>	Practicals of Course USPH503 + Course USPH504	<b>2.5</b>	<b>6</b>
<b>Project</b>			
<b>USPHPR1</b>	USPH501 + USPH502 + USPH503 + USPH504	<b>1</b>	<b>4</b>

## PRACTICALS - SEMESTER V

The T. Y. B. Sc. Syllabus integrates the regular practical work with a series of skill experiments. During the teaching and examination of Physics laboratory work, simple modifications of experimental parameters may be attempted. Attention should be given to basic skills of experimentation which include:

i)	Understanding relevant concepts.
ii)	Planning of the experiments
iii)	Layout and adjustments of the equipments
iv)	Understanding designing of the experiments
v)	Attempts to make the experiments open ended
vi)	Recording of observations and plotting of graphs
vii)	Calculation of results and estimation of possible errors in the observation of results

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**i) Regular Physics Experiments:** A minimum of **06** experiments from each of the course are to be performed and reported in the journal.

**ii) Skill Experiments:** All the skill experiments are compulsory and must be reported in the journal. Skills will be tested during the examination through viva or practical.

The certified journal must contain a minimum of **12** regular experiments (**06** from each group), **with ALL** Skill experiments in semester V. A separate index and certificate in journal is must for each semester course.

There will be **THREE** turns of **3Hrs each** for the examination of practical courses.

**PRACTICAL COURSE: USPHP06**

<b>Sr. No.</b>	<b>Name of the Experiment</b>
1	Band gap of germanium diode
2	Design and study of transistor as a stable multivibrator
3	Design and study of Wien bridge oscillator
4	Design and study of first order active low pass filter
5	LM317 constant current source
6	Design and study of first order active high pass filter using op amp
7	Synchronous counter using IC 74193
8	Diode as a temperature sensor
9	Hall effect
10	Solar cell characteristics
11	Schmitt trigger using op amp
12	hysteresis loop by CRO
<b>SKILL EXPERIMENTS</b>	
<b>Sr. No.</b>	<b>Name of the Experiment</b>
1	Estimation of errors from actual experimental data

2	Soldering and testing of an astable multivibrator (Tr./IC555) circuit on PCB
3	Optical Leveling of Spectrometer
4	Schuster's method
5	Laser beam profile
6	Use of electronic balance: Find the density of a solid cylinder
7	Dual trace CRO: Phase shift measurement
8	C1/C2 by B G
9	Internal resistance of voltage and current source
10	Use of DMM to test diode, transistor and $\beta$ factor

<b>References:</b>	
1.	Advanced course in Practical Physics: D. Chattopadhyaya, PC. Rakshit & B. Saha (8 <sup>th</sup> Edition) Book & Allied Pvt. Ltd.
2.	BSc Practical Physics: Harnam Singh. S. Chand & Co. Ltd. – 2001.
3.	A Text book of Practical Physics: Samir Kumar Ghosh New Central Book Agency (4 <sup>th</sup> edition).
4.	B Sc. Practical Physics: C. L. Arora (1st Edition) – 2001 S. Chand & Co. Ltd.
5.	Practical Physics: C. L. Squires – (3rd Edition) Cambridge University Press.
6.	University Practical Physics: D C Tayal. Himalaya Publication.
7.	Advanced Practical Physics: Worsnop & Flint.