

Centre of Excellence Government College Sanjauli, Shimla-6

Bachelor of Science with Physics

Courses offered



Vision

To make the college a benchmark of quality education, applying innovative approaches of teaching and learning, empowering students to discover their full potential academically and socially.

Mission

To nurture intellectual excellence and social leadership amongst the educators and learners, in order to succeed in the increasingly competitive globalized world.

HIMACHAL PRADESH UNIVERSITY
SYLLABUS AND SCHEME OF EXAMINATION FOR B.Sc. WITH
PHYSICS

Year	Course Type	Course Code	Title of paper	*Credits
I	CORE COURSE-I	PHYS101TH PHYS101IA	MECHANICS Theory	4
		PHYS101PR	MECHANICS Lab	2
	CORE COURSE-IV	PHYS102TH PHYS102IA	ELECTRICITY, MAGNETISIM AND EMT Theory	4
		PHYS102PR	ELECTRICITY, MAGNETISIM AND EMT Lab	2
II	CORE COURSE-VII	PHYS201TH PHYS201IA	STATISTICAL AND THERMAL PHYSICS Theory	4
		PHYS201PR	STATISTICAL AND THERMAL PHYSICS Lab	2
	CORE COURSE-X	PHYS202TH PHYS202IA	WAVES AND OPTICS Theory	4
		PHYS202PR	WAVES AND OPTICS Lab	2
	SEC 1 (CHOOSE ANY ONE FROM GIVEN TWO)	PHYS203TH PHYS203IA	PHYSICS WORKSHOP SKILLS Theory	3+1 (TH+IA = 3 SE = 1)
		PHYS203SE	PHYSICS WORKSHOP SKILLS Skill Exam	
		PHYS204TH PHYS204IA	COMPUTATIONAL PHYSICS Theory	
		PHYS204SE	COMPUTATIONAL PHYSICS Lab	
	SEC 2 (CHOOSE ANY ONE FROM GIVEN TWO)	PHYS205TH PHYS205IA	ELECTRICAL CIRCUITS AND NETWORK SKILLS Theory	3+1 (TH+IA = 3 SE = 1)
		PHYS205SE	ELECTRICAL CIRCUITS AND NETWORK SKILLS Skill Exam	
		PHYS206TH PHYS206IA	BASIC INSTRUMENTATION SKILLS Theory	
		PHYS206SE	BASIC INSTRUMENTATION SKILLS Skill Exam	
III	DISCIPLINE SPECIFIC ELECTIVES DSE:1A (CHOOSE ANY ONE FROM GIVEN THREE)	PHYS301TH PHYS301IA	ELEMENTS OF MODERN PHYSICS Theory	4+2 (TH+IA = 4)
		PHYS301PR	ELEMENTS OF MODERN PHYSICS Lab	
		PHYS302TH PHYS302IA	SOLID STATE PHYSICS AND ELECTRONICS Theory	PR = 2) OR 5+1 (TH+IA = 5)
		PHYS302PR	SOLID STATE PHYSICS AND ELECTRONICS Lab	
		PHYS303TH PHYS303IA	ASTRONOMY AND ASTROPHYSICS Theory	TU = 1)
		PHYS303TU	ASTRONOMY AND ASTROPHYSICS Tutorials	

DISCIPLINE SPECIFIC ELECTIVES DSE:1B (CHOOSE ANY ONE FROM GIVEN THREE)	PHYS304TH PHYS304IA	NUCLEAR AND PARTICLE PHYSICS Theory	5+1 (TH+IA = 5 TU = 1) OR 4+2 (TH+IA = 4 PR = 2)
	PHYS304TU	NUCLEAR AND PARTICLE PHYSICS Tutorials	
	PHYS305TH PHYS305IA	QUANTUM MECHANICS Theory	
	PHYS305PR	QUANTUM MECHANICS Lab	
	PHYS306TH PHYS306IA	PHYSICS OF DEVICES AND INSTRUMENTS Theory	
	PHYS306PR	PHYSICS OF DEVICES AND INSTRUMENTS Lab	
SEC 3 (CHOOSE ANY ONE FROM GIVEN TWO)	PHYS307TH PHYS307IA	RADIATION SAFETY Theory	3+1 (TH+IA = 3 SE = 1)
	PHYS307SE	RADIATION SAFETY Skill Exam	
	PHYS308TH PHYS308IA	APPLIED OPTICS Theory	
	PHYS308SE	APPLIED OPTICS Skill Exam	
SEC 4 (CHOOSE ANY ONE FROM GIVEN TWO)	PHYS309TH PHYS309IA	WEATHER FORECASTING Theory	3+1 (TH+IA = 3 SE = 1)
	PHYS309SE	WEATHER FORECASTING Skill Exam	
	PHYS310TH PHYS310IA	RENEWABLE ENERGY AND ENERGY HARVESTING Theory	
	PHYS310SE	RENEWABLE ENERGY AND ENERGY HARVESTING Skill Exam	

***TH = Theory, IA = Internal Assessment, PR = Practical, TU = Tutorials and SE = Skill Exam**

Comprehensive Continuous Assessment (CCA) and yearly Scheme in BSc with Physics of Three years

Scheme of Examination English shall be the medium of instructions and Examinations. Examinations shall be conducted at the end of each year as per the academic calendar notified by H.P. University Shimla-5. Each course of 6 credits will carry 100 marks (theory + practical) and will have following components:

I. Theory 50 marks

Yearly Examination

II. Comprehensive Continuous Assessment 30 marks

- a) Assignment/Quiz/Seminar/model/ Mid-Term Examination 15 marks
- b) Attendance 05 marks
- c) Lab Seminar /Lab CCA 10 marks

II. Practical 20 marks

Practical examination will have following components:

- i) Performing the two practical exercises assigned by the examiner in terms of requirement of chemicals/apparatus/ theory/ reaction (if any) involved, procedure/ scheme/ observations/calculations and results. 10 marks
- ii) ii) viva-voce examination 5 marks
- iii) iii) Practical note book and regularity during practical classes 5 Marks

Theory Paper (CCA + yearly Examination) +Practical [30 +50 +20] =100 marks

Each Skill Enhancement course will be of 4 credits and scheme of examination for these courses is as under: {CCA+ Project + yearly Examination [30 +20+ 50] =100 marks }

Criterion for marks on the basis of Class-room attendance (0 - 5 marks) under component CCA/ IA be defined as follows:

- a) Attendance 75 -- 80% = 3 marks
- b) Attendance 81 – 90 % = 4 marks

c) Attendance 91% and above = 5 marks

d) Candidates securing 75% Attendance after condonation will not be entitled to get any mark.

Assessment methods

In the undergraduate education of Physics leading to the B.Sc. with Physics degree, the assessment and evaluation methods focus on testing the conceptual understanding of basic concepts and theories, experimental techniques and the ability to apply the knowledge acquired to solve new problems and communicate the results and findings effectively. The courses offered in the undergraduate Physics by Himachal Pradesh University are assessed for monitoring the progress towards achieving the learning objectives is an important assessment component, which provides both teachers and students feedback on progress towards learning goals. University of Himachal Pradesh University examination system has 30 percent internal assessment for theory component, and 20 percent for physics laboratory components. These marks should be distributed in periodic assessments in different modes to serve the intended purpose.

Assessment Methods for the Theory component of Core courses

The evaluation scheme of the Himachal Pradesh University allots 30 percent marks for internal assessment of theory papers and 50 percent marks for Substantive Summative Assessment at the end of the year. Teachers may use a judicious combination of the following methods to assess students for CCA marks: i) Mid term examination(compulsory) ii) regular problem based assignments, iii) periodic class tests, iv) individual seminar presentations

Assessment Methods for the Physics Laboratory component of Core courses

The 20 percent internal assessment for the evaluation scheme for laboratory courses is best used in continuous evaluation of students' performance in the lab. Annual laboratory examination include these components: i) evaluation of experiments through i) written report of

each experiment(Practical file) and ii) Viva-Voce on any experiment, iii) skill test, iv) written test on experiments done in the lab and data analysis, to test the comprehension and analysis of the experiment done by the students

ASSESSMENT METHODS FOR SKILL ENHANCEMENT COURSES

Learning in skill enhancement courses is largely experience based. Student performance in these courses is best assessed under continuous evaluation. Students could be assigned a specific task or project individually or in group and they could be assessed for their success by demonstrating their project by presentation along with showing the working model of the task for which 20 percent of the marks are assigned. The evaluation scheme of SEC courses also include 30 percent CCA and 50 percent theory of SEC courses.

Add On/Bridge Courses Offered by the Department

Class	Name of Course	Description	Agency
All Students of the Department	Avogadro	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	UCSF Chimera	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Biopython	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	CellDesigner	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Inkscape	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Arduino	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Linux	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	JAVA	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Digital Divide	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Latex	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	Libre Office	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
	HTML	Skill Development Value Added Course	IIT Bombay Spoken Tutorials
BSc 1st Year	Standard Operating Procedure (SOP)	Bridge Course Guidelines, Procedures and Rules	Department of Physics, Government College Sanjauli,