

Bharatiya Jain Sanghatan's

Arts, Science & Commerce College, Wagholi, Pune-412207

DEPARTMENT OF PHYSICS

1. Name of the Department : **Physics**
2. Year of Establishment (General) : 1995-96
3. Names of Programmes / Courses offered (UG, PG, M.Phil., Ph.D., Integrated Masters; Integrated Ph.D., etc.)

UG	PG	Research	Other
B.Sc.			

4. Name of Interdisciplinary courses and The department/units Involved : NIL
5. Annual/ semester/choice based credit system :

Annual	F. Y.B.Sc.
Semester	S.Y. B.Sc.

6. Participation of the department in the Courses offered by other departments : NIL
7. Courses in collaboration with other Universities, Industries Foreign Institutions, etc. : NIL
8. Details of courses/Programmes discontinued (If any) With reasons : NIL
9. Number of teaching posts:

Designation	Sanctioned	Filled
Professors	--	--
Associate Professors	--	--
Asst. Professors	02	02

* Out of Total filled post: Associate Professor and Assistant Professor

10. Faculty profile with name, qualification, designation, specialization, (D.Sc./D. Litt. /Ph.D. / M. Phil. etc.,)

Name	Qualification	Designation	Specializa- -tion	No. of Years of Experience
Mr. Shivaji M. Sonawane	M.Sc., SET, NET, GATE	Head and Assistant Professor	Astronomy and Astrophysics	12
Miss Pallavi S. Doke	M.Sc. B. Ed	Assistant Professor	Electronics	04

11. List of senior visiting faculty - NIL
12. Percentage of lectures delivered and practical classes handled (programme wise) by temporary faculty: **Not Applicable**
13. Student -Teacher Ratio (programme wise):

Level	Class	Number of teachers	Student:Teacher Ratio
UG	Students Strength (FY+SY)	02	78:1

14. Number of academic support staff (technical) and Administrative staff; sanctioned and filled: **02**

Number of Support Staff (Lab Assistant and Lab Attendant)		
	Sanctioned	Filled
Lab Assistants	01	01
Lab Attendants	01	01
Total	02	02

15. Qualifications of teaching faculty with D.Sc./ D.Litt./ Ph.D./: M.Phil./P.G:

Qualifications of Teaching Faculty			
Ph.D.	M. Phil.	PG with SLET/NET	PG
		02	02

16. Number of faculty with ongoing projects from a) National b) International funding agencies and grants received. NIL

17. Departmental projects funded by DST-FIST; UGC, DBT, ICSSR, etc. and total grants received.-NIL

18. Research Centre /facility recognized by the University: Research Guide

19. SPPU, Pune recognized Research Center for M.Phil. and Ph.D.

Name of the Recognized Research Guide	M.Phil./ Ph.D.	No of Ph.D. students Guided		No of M. Phil students Guided	
		Completed	Ongoing	Completed	Ongoing

20. Associated Guides :

Name of the Recognized Research Guide	M.Phil./ Ph.D.	No of Ph.D. students Guided		No of M.Phil students Guided	
		Completed	Ongoing	Completed	Ongoing

19. Publications:

Publication by faculty: Mr. Sonawane S M

Sr. No.	Title of the Paper	Name of Journal	Year, Vol, PP	ISSN/ISBN No.	No. of co-author
1	“Development of Sb ₂ Te ₃ films for low-resistance contact to CdS/CdTe solar cells”	American Institute of Physics Journal(AIP) Impact Factor-1.293	Dec.2011	ISSN-81-8372-065-X.	02
2	“Studies on antimony telluride thin films as buffer layer for solar cell application”	Journal of Renewable and Sustainable Energy (JRSE) Impact Factor-1.5	May 2013	ISSN-1941-7012	02
3	“India’s Higher Education: - Opportunities and challenges”	Proceeding Journal	Dec.2012	ISBN 978-81-909640-7-6	01
4	Electrochemical Synthesis of ZnTe and Cu-ZnTe thin films for low resistive ohmic back contact for CdS/CdTe solar cells.	Journal of Nanomedicine and Nanotechnology,6-8 (2017) Impact Factor 5.573	Nov. 2017	ISSN: 2157-7439	2
5	Characterization of CdS thin film grown by Chemical Bath Deposition	Int. Res. J of Science & Engineering Impact Factor-4.11	January 2018	ISSN:2322-0015	1
6	Study of ZnTe and Cu:ZnTe thin Film as Interface Layer for Cadmium Telluride Solar Cells	Conference Proceeding	February 2018	ISBN-978-93-87317-98-7	1
7	Synthesis of Gold Nanoparticles	Conference Proceeding	February 2018	ISBN-978-93-87317-98-7	3

5	Characterization of Sb ₂ Te ₃ thin films prepared by electrochemical technique	Indian Journal of Applied and Pure Physics, Under Review (2018)	Dec. 2018	Communicated	2
6	Deposition and Characterization of Zinc Telluride as Interface Layer for CdTe Solar Cells	International Journal of Materials Research, Communicated (2019)	Feb. 2019	Communicated	2

Research Papers Published in Conference Saviours:

Sr. No.	Title of the paper presented	Title of Conference / Seminar	Organized by	Level
1	Development of Sb ₂ Te ₃ films for low-resistance contact to CdS/CdTe solar cells	56th DAE-Solid State Physics Symposium December 19-23, 2011.	SRM University, Kattankulathur, Tamil Nadu	International Conference
2	Synthesis and characterization of thin film for ohmic back contact to High Efficiency Solar Cells	Physics of Materials & Material Based Device Fabrication January 17-19, 2012.	Shivaji University, Kolhapur	International Conference
3	India's Higher Education: - Opportunities and challenges	Opportunities and Challenges in Higher Education 30 th Nov.-2nd Dec 2011.	H. V. Desai College, Pune	National Conference
4	Studies on antimony telluride thin films as buffer layer for solar cell application	Solar Energy Photovoltaic (ICSEP-2012), 19th - 21st December 2012	KIIT University, Bhubneshwar (Orisa)	International Conference

5	Hydrogen generation from Photo electrochemical (PEC) water splitting based on Nonomaterial and Sunlight	26-27 March 2012 Inovation-2012	B J S College,Wagholi	University of Pune
6	Tribal Issues in India and Indian Policies for Tribal Empowerment	Department of Adult ,Continuing Education &.Extension , University of Pune on April 2013.	University of Pune	National Conferance

Name of the Faculty	Research Papers			Total Publication	Books	Edited Book	Total Citation	H Index	Impact Factor
	International	National	Proceeding						
Mr. Sonawane S.M	05	10	05	20	00	00	5	1	1.5
Miss. Doke P.S	00	03	00	03	00	00	--	--	Yes

20. Areas of consultancy and income generated:

Non-remunerative consultancy is provided by faculty members for research projects at UG level.

21. Faculty as members in
a) National Committees b) International Committees c) Editorial Boards:

Name of the faculty	National /International/ Other Committee / Editorial Board
Mr. Sonawane S.M	Member of Paper setting at Savitribai Phule Pune University
	Member of Local organizing committee of Savitribai Phule Pune University

22 . Student projects:
a) Percentage of students who have done in-house projects including inter departmental/programme:
Year wise list of Research Project Students:

Sr. No	Year	No. of Research Project by Students
1	2014-2015	33
2	2015-2016	33
3	2016-2017	32
4	2017-2018	32
5	2018-2019	15

b) Percentage of students placed for projects in organizations outside the institution i.e. in Research laboratories/Industry/ other agencies:

23. Awards / Recognitions received by faculty and students:

Name of Faculty	Award / Recognition	Year
Mr. Sonawane S.M	“Best Oral Presentation Prize” at Raman Memorial Conference on 13 th and 14 th February 2015 at the Department of Physics, Savitribai Phule Pune University, Pune	2014-15
	Felicitated by Vice Chancellor Dr. Nitin Karmalkar, SPPU for outstanding contributions as National Cadet Corps (NCC) officer.	2017-18
	Council of Scientific & Industrial Research (CSIR), Delhi, India awarded travel Grant to attend 22nd International Conference and Expo on” NANOSCIENCE AND MOLECULAR NANOTECHNOLOGY ,November 06-08, 2017 Frankfurt, Germany” at Goethe University, Germany	2017-18

24. University Rank Holder Students:

Sr. No.	Year	University Rank Holders	Class	Percentage	Rank
1	2014-15	Awhale Kishori Tukaram	F.Y.B.Sc.	89.67	First
		Rajgurav Suraj Gurudev	S.Y.B.Sc.	83.10	First
2	2015-16	Yadav Preeti Bishwanath	F.Y.B.Sc.	88.00	First

		Phadtare Pratiksha Kalias	S.Y.B.Sc.	82.30	First
3	2016-17	Walke Archana Subhash	F.Y.B.Sc.	87.83	First
		Bhambe Komal Rajendra	S.Y.B.Sc.	87.50	First
4	2017-18	Phadtare Kirti Sudam	F.Y.B.Sc.	89.08	First
		Lokhande Arti Navnath	S.Y.B.Sc.	82.50	First
5	2018-19				

25. Corpus Fund (Toppers Scheme) of College : NIL

26 . List of eminent academicians and scientists / visitors to the department

Sr. No.	Name of the Guest	Name of Institute
1	Dr. Ram Takwale	Former Vice Chancellor of the University of Pune
2	Prof. Sanjay Dhole	Professor , Department of Physics, SPPU, Pune
3	Dr. Arun adsul	Ex-Vice Chancellor , SPPU Pune
4	Dr. H. M. Pathan	Assistant Professor Department of Physics, SPPU, Pune
5	Dr. K C Mohite	Principal , C.T.Bora College,Shirur ,Ex-Dean Faculty of Science S P Pune University
4	Dr. Sanjay Chakane	Principal , Arts, Science & Commerce College, Indapur, Pune
6	Dr. Adinath Funde	Assistant Professor Department of Physics, SPPU, Pune
7	Dr. Rajesh Kanavde	Scientist ,CSIR - Central Scientific Instruments Organisation, Chandigarh, India
8	Dr. Rajendra Prasad	Associate Professor ,National Defence Academy, Pune
9	Dr. S.K.Kolekar	Postdoctoral Scholar at University of South Florida
10	Dr. Sandip Patil	Assistant Professor, Modern College of Arts, Science and Commerce, , Pune
11	Mr. Mangesh Kute	Assistant Professor,Department of Physics, Abasaheb Garware College , Pune

12	Dr. Sagar Jagtap	Assistant Professor, Department of Physics, H V Desai College, Pune
13	Dr. Shridhar Bhat	Plant Head, ABS Electroplating Company, Sanaswadi, Pune
14	Mr. Goverdhan Veer	C++ Developer, Information Technology and Services, Pune India
15	Mr. Sunil Kadam	Director, CAD Line India Solution Pvt. Ltd, Pune.

27. Seminars/ Conferences/Workshops organized & the source of funding (International and National level workshop)

Title of Seminars/ Conferences/Workshops	National/ International	Funding Agency	Year	Sanctioned Amount in Rs.	Number of Students
Innovation in Nano Science and Nanotechnology (NANO-2017)	State Level	SPPU	2017	60000/-	65
Two Days Workshops on "Computer Hardware and Networking"	College Level	Self-funding	2017	15000/-	25
Two Days Workshop on "PCB designing"	College Level	Self-funding	2018	15000/-	24

26. Student profile Programme/course wise:

Name of the Course / Programme (refer Q. no. 4)	Year	Applications received	Selected	Enrolled		Pass percentage
				*M	*F	
F. Y. B.Sc.	2014-15	139	139	48	91	54.33
	2015-16	144	144	75	69	59.95
	2016-17	137	137	50	87	45.52
	2017-18	139	139	50	89	77.72
	2018-19	121	121	59	62	
S. Y. B.Sc.	2014-15	33	33	12	21	91.78
	2015-16	33	33	17	16	93.48
	2016-17	32	32	11	21	97.15
	2017-18	32	32	12	20	97.22
	2018-19	16	16	07	09	94.5

*M=Male F=Female

27. Diversity of Students:

Name of the Course	% of students from the same state	% of students from other States	% of students from abroad
Physics	100	NIL	NIL

28. How many students have cleared national and state competitive examinations such as NET, SLET, GATE, Civil services, Defense services, etc.? : **NIL**

29. Student progression:

Student progression	Against % enrolled
UG to PG	4
PG to M.Phil.	---
PG to Ph.D.	---
Ph.D. to Post-Doctoral	---
Employed	
• Campus selection	---
• Other than campus recruitment	5.97
Entrepreneurship/Self-employment	43.28

30. Details of Infrastructural facilities

1	Central Library	We have central Library consists 150 text and reference books, which are beneficial for students and teachers.
2	Internet facilities for Staff & Students	Department has computer facility is made available with internet connection for faculty and students.
3	Class rooms with ICT Facility	LCD projector, Maps, Charts are used during lectures and Practicals. It is fruitful to present some picture, videos and numerical information about different topics to students.
4	Laboratories	Department has Practical Laboratory, Dark Room, Staff Room attached with computer Lab,

31 . Number of students receiving financial assistance from college, university, Government or other agencies

- An average of 90% students get financial assistance from Central/State Government agencies in the form of Scholarship/Free ship.

32. Details on student enrichment Programme (special lectures / workshops /seminar) with external experts:

Year	Title/Type of Programme	Names of Resource Persons
2016-17	One day state level Seminar on Innovation in Nano Science and Nanotechnology (NANO-2017)	Dr. K.C. Mohite
		Dr. Rajendra Prasad
		Dr. Adinath M. Funde
		Dr. Rajesh Kanawade

2017-18	Two Day Workshop on Computer Hardware and Networking	Mr. Sunil Kadam
		Mr. Jeeven Kale
		Mr. Goverdhan Veer
2018-19	Two Day Workshop on PCB Designing	Mrs. Doke P S Mr. Sonawane S M

33. Teaching methods adopted to improve student learning

Sr.No.	Particulars	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
1	Practical's using computer software, (Origin, Mat lab, PSPICE , Excel)	03	03	03	03	03
2	Use of teaching Aids like Charts, Models, Audio, Visual, LCD Projector, OHP	08	10	12	15	12
3	Seminar by students	25	24	28	27	15
4	Class test/ tutorial	04	04	04	06	07
5	Project work/ Educational Tour			1	1	1
6	Problems Solving Sessions	04	05	04	05	05
7	Demonstrations	05	04	05	05	05
8	Viva / Oral	02	02	02	02	02
9	Home Assignment	06	06	05	06	08
10	Use of Internet / You Tube Clips	05	05	04	05	06

34 . Participation in Institutional Social Responsibility (ISR) and Extension activities

Staff members and Students are participated in various social activities such as:

Sr. No	Title/Type of Programme	Sr. No	Title/Type of Programme
1	• Swachha Bharat Abhiyaan	6	• Contribution in annual magazine
2	• National Service Scheme	7	• Avishkar Project competition.
3	• Blood Donations Camps	8	• PANI Foundation
4	• National Cadet Corps	9	• Social awareness programs
5	• Educational visits	10	• Police Mitra

35. SWOC analysis of the Department and Future plans

SWOC analysis**Strengths:**

1. Good infrastructural facilities.
2. Qualified and experienced staff with a spirit of team work.

Weaknesses:

1. No specialization in physics at undergraduate level.

Opportunities:

1. There is scope to start T.Y.B.Sc. Physics
2. Scope for acquiring grants for research, and teaching activities.

Challenges:

1. To give an impetus to job placement services to the students.

36. Future Plans:

Sr.No	Years	Plans
1	2018-19	<ol style="list-style-type: none"> 1. To organize workshop for student on fundamentals of Origin graph plotting 2. Development of Physics laboratories in the next two years 3. To equip the department with audio, visual and digital resources.
2	2019-20	<ol style="list-style-type: none"> 1. Application to start undergraduate Physics Subject 2. To work on consultancy projects 3. To apply for Minor/Major research project sponsored by various funding agencies
3	2020-21	<ol style="list-style-type: none"> 1. To start undergraduate course in Physics Subject 2. To start carrier oriented programmes in computer hardware and Networking courses 3. To organize state level seminar
4	2021-22	<ol style="list-style-type: none"> 1. To established collaborations with institutions, laboratories. 2. To conduct quality research and consultancy. 3. To organize two week summer schools programme for an undergraduate student
5	2022-23	<ol style="list-style-type: none"> 1. To plan research collaboration with industries 2. To start Diploma Course in Solar Photovoltaic technology 3. To organize National level Seminar

37. Faculty Profile

Profile of the Faculty



Mr. Shivaji M. Sonawane , M.Sc.,SET,NET,GATE,Ph.D.(Ongoing)

Assistant Professor,

- Head, Department of Physics
- U. G. Teaching Experience – 12 Years
- Number of Research Paper Published with ISSN/ISBN - 05
- Presented Research Papers in Seminars/Conference – 15
- Seminars / Conference / Workshop Attended – 13
- National Cadet Corps (NCC) ,Associate NCC Officer
- Syllabus Restructuring Workshops - 03
- Convener : COP of Physics Department
- Conference / Seminar / Workshops: As a member of organized committee – 05
- Email ID-sonawaneshivaji77@gmail.com



Mrs. Pallavi S. Doke , M.Sc. B.Ed

Assistant Professor,

- U.G. Teaching Experience-03 Year
- Number of Research Paper Published with ISSN/ISBN -02
- Seminars / Conference / Workshop Attended -03
- Email ID- pallavidoke17@gmail.com

38. Laboratories

Sr. No.	Name of laboratory	Area
1	F.Y.B.Sc. /S. Y. B. Sc. Laboratory	81.00 sq. meter
2	Dark Room	81.00 sq. meter
3	Computer Lab	25.08 sq. meter
4	Staff Room	25.08 sq. meter

39. Research & publications

Name of the Faculty	Research Papers		Total Publication
	International	National	
Mr. Sonawane .S.M	5	5	10
Miss. Doke P.S	00	03	03

40. Syllabus

Sr. No	Courses Name	Download
1	F.Y.B.Sc. Year-2013-14	http://www.unipune.ac.in/Syllabi_PDF/revised_2013/sci/10_F.Y.B.Sc.%20Physics.pdf
2	S.Y.B.Sc. Year- 2014-15	http://www.unipune.ac.in/Syllabi_PDF/revised_2014/science/sybsc/7%20%20S.Y.B.Sc.%20%20Physics.pdf

41. Achievements

Awards Received by Faculty:

- “Best Oral Presentation Prize” at Raman Memorial Conference on 13th and 14th February 2015 at the Department of Physics, Savitribai Phule Pune University, Pune
- Council of Scientific & Industrial Research (CSIR), Delhi, India awarded travel Grant to attend 22nd International Conference and Expo on” **NANOSCIENCE AND MOLECULAR NANOTECHNOLOGY** ,November 06-08, 2017 | Frankfurt, Germany” at Goethe University ,Germany

42. Training & Placement

Placement Activity: NIL

43. Prominent Alumni's:

Sr.No	Alumni's	Present Position
1	Dr.Pravin Walake	Asistant Professor, Kalina University, Mumbai
2	Dr.Ranjeet Borude	Post Doctorate, Nagoya University, Japan
3	Mr.Vilas Dade	Seco, Multinational Company, Pune
4	Mrs.Anita Darekar	ABS electroplating Pvt Ltd Company
5	Mrs.Kadale ashwini	MIT College, Alandi
6	Mr.Sainath Shirsagar	Kendriya Vidyalay, Pune
7	Mr.Pachange Prashant	Maharashtra State Board of Technical Education (MSBTE)
8	Mr.Taur Shailesh	Shahu College, Latur
9	Mr.Pankaj Bhujbal	Research Scholar, SPPU, Pune

44. Course Outcome:**Program Outcomes of UG in Physics (PO)**

POs describe what students are expected to know or be able to do at the time of graduation from the programme.

PO01. Be able to identify, formulate and solve the problems in the field of theoretical & experimental physics.

PO02. Recognize the need for and have an ability to engage in life-long learning and be able to demonstrate knowledge of contemporary issues.

PO03. Be able to plan, execute and report the results of an experiment or investigation, using appropriate methods to analyze data and to evaluate the level of its uncertainty

Program Specific Outcomes (PSO)**F Y B.Sc. & S Y B Sc. Physics Programme:**

PSO1: The student develop good experimental technique, including proper setup and care of equipment, conducting experiments and analyzing results and make meaningful comparisons between experiment and theory

PSO2: Develop deep understanding of the basics, fundamental & laws of physics like mechanics, optics, properties of matter, e-m theory, and environmental issues related to physics so that they can pursue higher studies.

PSO3: Students completing this course will have understanding of matter through courses like solid state physics, atomic and molecular physics, nuclear physics etc.

PSO4: Technical skills & Skills of computer software will be developed through practical course.

PSO5: Design new devices and systems that correlate with the fundamental for innovative research program.

Course Outcomes (CO)**F.Y. B.Sc. Physics****Term I:**

Mechanics	<ol style="list-style-type: none"> 1. Demonstrate an understanding of Newton's laws and applying them in calculations of the motion of simple systems. 2. Use the free body diagrams to analyze the forces on the object. 3. Understand the concepts of energy, work, power, the concepts of conservation of energy and be able to perform calculations using them. 4. Understand the concepts of elasticity and be able to perform calculations using them. 5. Understand the concepts of surface tension and viscosity and be able to perform calculations using them. 6. Use of Bernoulli's theorem in real life problems.
Physics Principles and applications	<ol style="list-style-type: none"> 1. To demonstrate an understanding of electromagnetic waves and its spectrum. 2. Understand the types and sources of electromagnetic waves and applications. 3. To understand the general structure of atom, spectrum of hydrogen atom. 4. To understand the atomic excitation and LASER principles. 5. To understand the bonding mechanism in molecules and rotational and vibrational energy levels of diatomic molecules.

Term II:

Heat and Thermodynamics	<ol style="list-style-type: none"> 1 Describe the properties of and relationships between the thermodynamic properties of a pure substance. 2 Describe the ideal gas equation and its limitations. 3 Describe the real gas equation. 4 Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process. 5 Analyze the heat engines and calculate thermal efficiency. 6 Analyze the refrigerators, heat pumps and calculate coefficient of performance. 7 Understand property 'entropy' and derive some thermo dynamical relations using entropy concept. 8 Understand the types of thermometers and their usage.
Electromagnetism	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the electric force, field and potential, and related concepts, for stationary charges. 2. Calculate electrostatic field and potential of simple charge distributions using Coulomb's law and Gauss's law. 3. Demonstrate an understanding of the dielectric and effect on dielectric due to electric field. 4. Demonstrate an understanding of the magnetic field for steady currents using Biot-Savart and Ampere's laws. 5. Demonstrate an understanding of magnetization of materials.

	6. Demonstrate quantitative problem solving skills in all the topics covered.
F Y B Sc Physics Practical	<ol style="list-style-type: none">1. Acquire technical and manipulative skills in using laboratory equipment, tools, and materials.2. Demonstrate an ability to collect data through observation and/or experimentation and interpreting data.3. Demonstrate an understanding of laboratory procedures including safety, and scientific methods.4. Demonstrate a deeper understanding of abstract concepts and theories gained by experiencing and visualizing them as authentic phenomena.5. Acquire the complementary skills of collaborative learning and teamwork in laboratory settings

S.Y. B.Sc.**Semester- I**

Mathematical Methods in Physics	<ol style="list-style-type: none">1. Understand the complex algebra useful in physics courses2. Understand the concept of partial differentiation.3. Understand the role of partial differential equations in physics4. Understand vector algebra useful in mathematics and physics5. Understand the singular points of differential equation.
Electronics	<ol style="list-style-type: none">1. Apply laws of electrical circuits to different circuits.2. Understand the relations in electricity3. Understand the properties and working of transistors.4. Understand the functions of operational amplifiers.5. Design circuits using transistors and operational amplifiers.6. Understand the Boolean algebra and logic circuits.

Semester-II

Oscillation, waves and sound	<ol style="list-style-type: none">1. Understand the physics and mathematics of oscillations.2. Solve the equations of motion for simple harmonic, damped, and forced oscillators.3. Formulate these equations and understand their physical content in a variety of applications,4. Describe oscillatory motion with graphs and equations, and use these descriptions to solve problems of oscillatory motion.5. Explain oscillation in terms of energy exchange, giving various examples.6. Solve problems relating to Undamped, damped and force oscillators and superposition of oscillations7. Understand the mathematical description of travelling and standing waves.8. Calculate the phase velocity of a travelling wave.
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	<ol style="list-style-type: none">9. Explain the Doppler Effect, and predict in qualitative terms the frequency change that will occur for a stationary and a moving observer.
Optics	<ol style="list-style-type: none">1. Acquire the basic concepts of wave optics2. describe how light can constructively and destructively interfere3. explain why a light beam spreads out after passing through an aperture4. summarize the polarization characteristics of electromagnetic waves5. appreciate the operation of many modern optical devices that utilize wave optics6. Understand optical phenomena such as polarization, birefringence, interference and diffraction in terms of the wave model.
S Y B Sc. Physics Practical	<ol style="list-style-type: none">1. After completing this practical course students will be able to2. Use various instruments and equipment.3. Design experiments to test a hypothesis and/or determine the value of an unknown quantity.4. Investigate the theoretical background to an experiment.5. Set up experimental equipment to implement an experimental approach.6. Analyze data, plot appropriate graphs and reach conclusions from your data analysis.7. Work in a group to plan, implement and report on a project/experiment.