Departmental Profile

1. Name of the Department- PHYSICS
2. Year of Establishment – 1948
3. Infrastructure-

(a) Class Rooms available – Numbers and Covered area in Sqft.

S. No.	Class	Room No	Area
1	UG Class room	G 46	50x 30 square ft
2	MSc Prev (I & II SEM)	G 36	20x 30 square ft
3	MSc Final (III & IV SEM)	G 41	20 x 30 square ft

(b) Laboratories – Numbers and Covered area in Sqft.

S. No.	Class	Room No	Area
1	B Sc I Lab	G 37	30 x 20 square ft
2	Computer Lab	G 27	30 x 20 square ft
3	Research Lab	G 47	30 x 20 square ft
4	M Sc Gen Lab	G 45	30 x 30 square ft
5	B Sc II Lab	G 28	50 x 30 square ft
6	BSc III Lab	G 29	40 x 30 square ft
7	MSc Final Gen Lab	G 30	30 x 20 square ft

(c) List of Equipments lab wise

BSc. 1st Year (Physics practical instrument list)

GROUP-A

1. Moment of inertia of a flywheel.
2. Bar pendulum & radius of Gyration due to gravity.
3. Oscillation of two spring in series and parallel.
4. Barton's Apparatus.
5. Torsional Pendulum.

6. Searl Method.
7. Poison’s ratio of rubber tube.
8. Poiseuillesmethod .
9. Perpendicular axis with the help of inertia table.
10. Jaeger’s Apparatus.
11. Maxwell’s needle (dynamical method).
12. Young elasticity coefficient by binding.
13. An additional travelling microscope.

GROUP-B

1. M &H magneto meter’s.
2. CRO(cathode ray oscilloscope)
3. Magnetic field along the axis of a current carrying circular coil.
4. Thevenin theorem.
5. Norton’s theorem.
6. Maximum power transfer.
7. L-C-R Circuit.
8. L-R Circuit.
9. Measurement of C using different frequencies.
10. Center of circular coil along Magnetic field.

BSc. 2nd Year (Physics practical instrument list)

1. To find the thickness of wire using optical bench.

2. Determination of wavelength of sodium light with help of Fresnel Bi-prism.
3. Spectrometers for determine the refractive index.
4. Newton’s circular ring.
5. Wavelength of laser light by diffraction grating.
6. Determination of refractive index of ordinary and extra-ordinary rays for the calcite prism.
7. Newton’s ring method (cooling).
8. Sugar solution by colorimeter.
9. C_p/C_v.
10. Sonometer.

BSc. Final year (Physics practical instrument list)

1. FET Characteristic apparatus.
2. Connecting wire.
3. Voltmeter.
4. Resistance thermometry
5. Heater for.
6. MOSFET Characteristic apparatus.
7. Capacitance and permittivity kit.
8. Plates.
9. Specific resistance and energy gap of a semiconductor kit.
10. Thermometer.
11. Apparatus of Anderson bridge.
12. Speaker.
13. Oscillator.
14. Zener diode kit.

15. Miliameter.
16. Battery.
17. CRO (cathode ray oscilloscope).
18. Half wave-Full wave rectifier unit.
19. Photo diode kit.
20. LED characteristic apparatus.
21. Regulated power supply.
22. Transistor characteristic apparatus.
23. Solar cell characteristic kit.

MSc. 1st sem.(Physics practical instrument list)

1. Abbe's refractometer.
2. Searle's apparatus.
3. Opto-electronic Device. (LDR/Opto-coupler).
4. Ionisation potential of mercury using gas filled diode.
5. Hartman's apparatus.
6. Prism spectrometer (Cauchy).
7. Optical bench (thickness of wire).
8. Optical bench (Fresnel's Bi-prism).
9. Stefan's constant.
10. Thin film apparatus.
11. Plank constant setup.

MSc.1st sem. (ICT Experiment)

1. MS-Word.
2. MS-Power point.
3. MS-Excell.

Total computer-10+5

Printer-3

Scanner-1

MSc. 2nd sem. (Practical instrument list)

1. Photovoltaic cell.
2. Half-wave/full-wave rectifier.
3. Rd-5.
4. Modulation/Demodulation.
5. Transistor.
6. IC 555.
7. Hysteresis loop.
8. FM/AM.
9. SCR.
10. MOSFET

MSc. 3rd sem.(Practical instrument list)

1. Energy band gap in semiconductor diode.
2. Oscilloscope.
3. IC regulated source for laser light experiment.

4. Audio frequency sine wave generator.
5. e/m by magnetron method.
6. Power supply for electromagnet.
7. Half and full adder.
8. Lattice dynamics kit.
9. Lattice dynamics electrical analogue experiments.
10. Hall effect board.

MSc. 4th sem. (Digital electronics)

1. Study of RS,JK,D flip-flop using NAND gates.
2. Study of Half adder and full adder using NAND gates.
3. Study of half subtractor and full subtractor using NAND gates.
4. Study of decimal to BCD encoder using IC 74147.
5. Study of BCD to decimal decoder using IC 7442.
6. Study of BCD to seven segment decoder using IC 7447.
7. Study of binary to gray code converter using EX-OR gates.
8. Study of 16:1 multiplexer using ICs 74150 and 74154 and analysis.
9. Study of 1:16 de-multiplexer using ICs 74150 and 74154 and analysis.
10. Study of RAM circuit.
11. Study of ROM circuit.
12. Study of ALU.

(d) Details of Departmental Library (Total Books 3806)

Year	Books Purchased	Journal		CD's	e resources Subscribed	e journal Subscribed	Thesis
		National	International				
2013-14	195	Nil	Nil	Nil	Nil	Nil	Nil
2014-15	-	Nil	Nil	Nil	Nil	Nil	Nil
2015-16	-	Nil	Nil	Nil	Nil	Nil	Nil
2016-17	44	Nil	Nil	10 e Books	NPTEL, UGC SWAYAM	Nil	02
2017-18	42	Nil	Nil	10 e Books	NPTEL, UGC SWAYAM	Nil	02

4. Courses offered-

Year	Courses	Intake			Actual enrollment			New courses offered
	BSc, MSc, PhD	UG	PG	Ph.D	UG	PG	Ph.D	nil
2013-14		400	20	06	400	14	03	
2014-15		400	20	06	400	15	03	
2015-16		400	20	06	400	20	01	
2016-17		400	20	06	400	19	04	
2017-18		400	20	06	400	19	03	

5. Faculty Strength

No. of Teachers Available	Year				
	2013-14	2014-15	2015-16	2016-17	2017-18
Professors	nil	nil	nil	01	02
Asstt. Professors	07	07	07	06	06
Regular	07	07	07	07	08
Adhoc	nil	nil	nil	nil	nil
Contractual	nil	nil	nil	nil	nil
Guest faculty	02	02	02	02	01
Visiting Faculty	NIl	Nil	Nil	01(honorary)	01(Honarary)

Annexure

List of Faculty

Name	Designation	Qualification	Pay	Total experiences	No. of years in the college
Dr A. Oudhia	Professor	MSc, M Phil, PhD		28 years	02 years
Dr VinodDubey	Professor	MSc, PhD		24 years	02 months
Dr Samir Thaker	Professor	MSc, PhD		24 years	01 year
Dr PravinDewangan	A.P.	MSc, PhD		24 years	12 years
Dr B G Sharma	A.P.	MSc, PhD		24 years	13 years
Dr Alok Luka	A.P.	MSc, PhD		21 years	13 years
Dr Neetu Sing	A.P.	MSc, PhD		05 years	4 years
Dr B R Verma	A.P.	MSc		03 years	2 years

6. Sanctioned , working strength and Vacant position (Faculty)

Category	Sanctioned			Working			Vacant			Grant total
	Prof.	Asstt. Prof.	Total	Prof.	Asstt. Prof.	Total	Prof.	Asstt. Prof.	Total	
Regular	01	09	10	nil	08	08	01	01	02	10
Contract basis/ guest faculty	nil	nil	nil	nil	01					01

6. Qualification of Faculty

Category	No. of Ph.D.	No. Of M. Phil	Other	Total
Regular	07	03	03	08
Contract basis	nil	nil	nil	nil

7. Non Teaching Staff-

(i) Sanctioned- 4+4+3

(ii) Working – List to be provided in Annexure (attached)

(iii) Vacant -2+2+2

8. Research Profile

Year	Research Publication	Research projects	Seminar/conference/ workshop/ synopsis	Other research and consultancy related activity
2013-14		Nil		Nil
2014-15		Nil		Nil
2015-16		Nil		Nil
2016-17		01		Nil
2017-18		01		Nil

National Level Events organized

Name of the Department	Year	Title of the Seminar/ Workshop	Funding agency
Physics	2014	Physics Olympiad	HomiBhabhaCenter for science Education, BARC
Physics	2015	Physics Olympiad	HomiBhabhaCenter for science Education, BARC
Physics	2016	NGPE (National Graduate Physics Exam)	Indian Association Of Physics Teachers, Kanpur
Physics	2017	NGPE (National Graduate Physics Exam)	Indian Association Of Physics Teachers, Kanpur

9. Teaching learning methods adopted by the department List the methods.

- Chalk and talk
- Flipped Class Room (Group Discussions)
- Experiential Learning (Practicals and projects)
- Project based Learning
- Seminar by Students
- Teaching by Students
- Power Point Presentations
- Online Learning Platforms (NPTEL, SWAYAM)

10.Achievements of students (Provide details separately)

Year	Examination Physics	Co curricular activities	Extracurricularactivities
2013-14	100% PG 73.91% BSc III	Extension lectures (CPE Funding)	
2014-15	100%PG		Visit to Govt School

	77.5% BSc III		Jamgaon
2015-16	98%PG 93% BSc III	DST workshop on physics teaching attended by PG students	
2016-17	99%PG 98.26% BSc III	1.Hands on Training and workshop on Materials Modeling 2.Extension Lectures (UGC Funding)	Industry Visit CIPET , Raipur Student participated in entrepreneurship programme in C IPET AishwaryaPurohit.. Sachin Sahu was awarded with gold medal for NSS
2017-18	100%PG 97.84% BSc III	Hands on Training and workshop on Materials Modeling 3 UG students did summer internship in CIPET and completed project work	Collaboration with NGO Kopalvani for project work PG students KanchanTiwari, Atmaram and..... won state level events

Annexure enlist separately

11.Achievements of Teacher.

Year	Achievement of Teachers	Enclose Details Separately
2013-14	Prof Biyani was Expert in National and international physics Olympiad	
2014-15	Prof Biyani was Expert in National and international physics Olympiad	
2015-16		
2016-17	01 faculty member promoted to the post of professor 02 faculty members were Chair person in National Conference, 01 faculty member was Reviewer of Elsevier journal, 01 faculty was member , central board of studies, 01faculty was Resource person, state level RUSAworkshops.	

2017-18	1 faculty was Co Convenor of International conference 2 faculty members were members of organizing committee of international conference.	

12. Research scholars enrolled/ Ph. D. Awarded

Year	Name of Supervisor	Research Scholars enrolled	Research completed & Ph.D. awarded
2013-14	Dr R. B. Sahu	03	01
2014-15	Dr A. K. Jaiswal	03	Nil
2015-16	Nil	Nil	Nil
2016-17	Dr Anjali Oudhia	04	02
2017-18	Dr Anjali Oudhia	03	nil

Annexure enlist separately

Name of Supervisor	Title of the Research	Year of Registration	Year of Completion/ Ph.D. awarded
Dr Anjali Oudhia	Green synthesis of II-VI group quantum Dots and study of their optical properties	2012	2018
Dr anjaliOudhia	Biotemplate based synthesis of ZnO nanoparticles and study of their optical properties	2012	2018

14. Board of studies Meeting-

Year	Date of meeting	Resolution passed	Remarks
2013-14	13. 03.2014	UG and PG Syllabus approved	No changes
2014-15	11.05.2015	UG and PG Syllabus approved	No changes
2015-16	26.02.2016	UG and PG Syllabus approved	No changes
2016-17	12.04-2017	1. One new theory paper	Question paper pattern

		introduced titled Information and Communication Technology 2. a lab course on ICT was introduced In MSc Ist SEM 3. Materials modelling experiments were introduced in MSc IIIrd SEM.	changed in A(MCQ), B(Very Short answer type), C(Long Answer Type) Formatin MSc Ist SEM
2017-18	27.04.2018	One new paper titled " Physics of nano-materials" was introduced in MSc IVth SEM	MSc Syllabus was elaborated for detailed description of content for ease of paper setting in new pattern

15. Selection of students for admission-

Year	Total application received	Admission given to candidate of minimum % on merit
2013-14	69	20 (cut off percentage 60% General)
2014-15	79	20 (cut off percentage 64% General)
2015-16	95	20 (cut off percentage 65% General)
2016-17	174	20 (cut off percentage 68% General)
2017-18	182	20 (cut off percentage 68% General)

16. Selection of contract appointment of teachers

Year	No. of Posts vacant	Application received	Appointment given to candidate on merit
2013-14	02	03	02 (MSc first class with 68% and 61%)
2014-15	02	12	02 (MSc first class with 85% and 66%)
2015-16	01	11	01 (MSc first class with 79%)
2016-17	02	26	02 (NET , MSc first class with 82%)
2017-18	03	31	03 (NET, PhD, MSc first class with 75%)

17. Extension activities done by the Department-

Year	Name of extension activity	Target group	Funds received from
2013-14	Extension Lectures organized (8)	PG Students	CPE
2014-15	Visit to Govt H S School Jamgaon (31.01. 2014)	PG students	CPE
2015-16	Nil	Nil	Nil
2016-17	Adoption of Govt H.S. School, Pt RSU Premises, Raipur for science education	PG students of our department and High School students of the school	UGC
2017-18	Collaboration with NGO for deaf and dumb students " KopalVani" for MSc Project	PG students of Physics and around 150 students of KopalVani	Inhouse

Annexure- Report & Photographs

18. Facilities of recreation activities-

List of facilities available with the Department

Year	Recreation facilitates developed	Funds received from
2013-14		
2014-15	Green Corner developed in front of the staff room of Physics (ECO CLUB)	Janbhagidari
2015-16		
2016-17	A short film was made for motivating students towards higher education	RUSA
2017-18	Physics Gallary was developed by PG students	Inhouse student initiative

19. Innovative reforms of the Department-

List of innovative practices under way in the department

Year	Innovative reforms taken	Target group	Impact of reform
2013-14	Learning by Teaching concept was introduced for PG students as a student centric teaching methodology	PG students	Senior PG students teach MSc Ist SEM students. The junior students interacted more with their seniors and learning from each other was fun for them.
2014-15	Flipped Classroom teaching method was introduced for PG students	PG students	Students were given topics from their syllabus and they taught in the class while the teacher and other students interacted and discussed together to clarify concepts.
2015-16	National Graduate Physics Exam (NGPE) was organized to enhance problem solving skills in students	UG students	45 students participated itenhanced conceptual clarity in students of physics , motivated them for deep learning.
2016-17	ICT based paper and Lab Course were introduced in MSc Ist SEM. Materials modelling was introduced in Lab course of MSc IIIrd SEM	PG students	Students are being trained in ICT applications and are learning novel modelling and simulation techniques.
2017-18	A new paper was introduced titled 'Physics of	PG students	Students will get exposure to recent developments in

	Nanomaterials' in MSc IVth SEM		Nanomaterials and nanoscience .

20. Achievements of the Department-

S. No.	Items	Status before autonomy (befor 2013)	Status at present (After 2013)
1	UG intake		
2	PG intake		
3	UG Programmes		
4	PG Programmes	20	20
5	M.Phil/ Ph.D.	06	06
6	Research publication	50	
7	Research projects	nil	01
8	Organizing seminar/ Conferences	01	03
9	Attending seminar/ conference	12	24
10	Extension activities	nil	05
11	Consultancy	nil	nil
12	Faculty	10	10
13	Faculty with Ph.D.	7	7
14	Infrastructure	Nil	Nil
15	Library	3806	4087
16	Result analysis		
17	Placement		
18	Any other		New papers on ICT and nano materials, ICT based lab courses and materials modelling lab course were introduced

Annexure

Student achievement

Year	Examination	Co curricular activities	Extracurricular activities
2013-14	98% PG and %UG	Extension lectures (CPE Funding)	
2014-15	98%PG		
2015-16	98%PG	DST workshop on physics teaching attended by PG students	
2016-17	99%PG	1.Hands on Training and workshop on Materials Modeling 2.Extension Lectures (UGC Funding)	Industry Visit CIPET , Raipur Student participated in entrepreneurship programme in C IPET Aishwarya Purohit..... Sachin Sahu was awarded with gold medal for NSS
2017-18	100%PG	Hands on Training and workshop on Materials Modeling 3 UG students did summer internship in CIPET and completed project work	Collaboration with NGO Kopalvani for project work PG students Kanchan Tiwari, Atmaram and..... won state level events

Annexure

Research Supervisors

Name of Supervisor	Title of the Research	Year of Registration	Year of Completion/ Ph.D. awarded
Dr Anjali Oudhia	Green synthesis of II-VI group quantum Dots and study of their optical properties	2012	2017
Dr Anjali Oudhia	Biotemplate based synthesis of ZnO nanoparticles and study of their optical properties	2012	2017

Annexure

Extension Activities reports and photographs

Year	Name of extension activity	Target group	Funds received from
2013-14	Extension Lectures organized	PG Students	CPE
2014-15	Visit to Govt HS School Jamgaon	PG students	CPE
2015-16	Nil	Nil	Nil
2016-17	Adoption of Govt H.S. School, Pt RSU Premises, Raipur for science education	PG students of our department and High School students of the school	UGC
2017-18	Collaboration with NGO for deaf and dumb students " Kopal Vani" for MSc Project	PG students of Physics and around 150 students of Kopal Vani	In house

Report:

2013-14

Visit to Govt HS school, Jamgaon

1. PG Students taught Class 11^{th} and 12^{th} students of the school
2. The department gifted some simple instruments for physics lab of the school
3. Various competitions were organized by the students and gifts were distributed.