



**SARVODAYA KELAVANI SAMAJ MANAGED,**

**SHREE MANIBHAI VIRANI AND SMT. NAVALBEN VIRANI SCIENCE COLLEGE,  
An Autonomous College - Affiliated to Saurashtra University, Rajkot.**

Re-Accredited at 'A' Level by NAAC  
STAR college Scheme & Status by MST-DBT  
UGC- College with Potential for Excellence (CPE)  
UGC-DDU KAUSHAL Kendra  
GAAA – Highest Grade A-1 by KCG, Government of Gujarat  
GPCB-Government of Gujarat approved Environment Audit Center  
UGC-Autonomous College

**Board of Studies (BoS)**

**DEPARTMENT OF PHYSICS**

**COMPOSITION / AGENDA / NOTES / ATTENDANCE / MoM**

<b>Academic Year</b>	<b>Meeting Number</b>	<b>Date</b>
2017- 2018	4	

**Shree Manibhai Virani & Smt. Navalben Virani Science College, Rajkot**  
**(Autonomous)**  
**Affiliated to Saurashtra University, Rajkot**  
**Department of Physics**

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1	Agenda of BOS	Minutes of the Meeting
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3	Enclosure-II	Scheme of instruction and Examinations.
4	Enclosure-III	Syllabus of B.Sc. PCM Semesters III & IV.
5	Enclosure-IV	Evaluation Norms.
6	Enclosure-V	Question Paper pattern.
7	Enclosure-VI	List of Examiners and Paper Setters.

**Shree Manibhai Virani & Smt. Navalben Virani Science College, Rajkot**  
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**BOARD OF STUDIES- PHYSICS**

**Date:**

**Time:**

**Venue:**

**AGENDA:**

1. **Regulations** for B. Sc. PCM Program.
2. **Scheme of Instruction and Examinations** for all semesters of B. Sc. PCM for students admitted from 2017-2018 and onwards
3. **Syllabi for 3<sup>rd</sup> & 4<sup>th</sup> semester** courses of B. Sc. PCM Program.
4. **Evaluation norms** for all general courses of B. Sc. PCM Program.
5. **Framing of question paper pattern** for Semester End Evaluation (SEE)
6. **List of Examiners and Paper Setters** for Semester End Examination (SEE)
7. **Any other matter** with permission of the chair

**BoS Members:**

S.No.	Name	Designation	Present/Absent
1.	Mr. B. G. Panelia	Chair person	
2.	Dr. B. A. Joshi	Faculty member	
3.	Dr. B. S. Trivedi	Faculty member	
4.	Dr. P. C. Shah	Faculty member	
5.	Ms. H. K. Bhatt	Faculty member	
6.	Dr. D. J. Dave	Subject Expert, AC Nominee	
7.	Dr. H. C. Mandavia	Subject Expert, AC Nominee	
8.	Dr. H. H. Joshi	Subject Expert, VC Nominee	
9.	Dr. G. J. Baldha	Industry Representative	

The BoS in Physics met as indicated above and discussed on the above Agenda.

All the members appreciated the material presented to them by the department with respect to the agenda. Sharing their expertise with proactive inputs, they deliberated on the agenda and unanimously resolved that Regulations, Scheme of Instruction and Examinations as appended are to be recommended to Academic Council for approval for students admitted from **AY 2017-2018 & onwards:**

1. The Regulations framed for the following program:
  - B.Sc. PCM (Majoring in Physics) - **Enclosure-I**
2. The Scheme of Instruction & Examinations framed for all semesters of the following program:
  - B.Sc. PCM (Majoring in Physics) - **Enclosure-II**
3. The Syllabi framed for the courses of the 3<sup>rd</sup> & 4<sup>th</sup> Semesters of the following program:
  - B.Sc. PCM (Majoring in Physics) - **Enclosure-III**
4. Evaluation Norms:
  - B.Sc. PCM (Majoring in Physics) - **Enclosure-IV**
5. Question paper pattern:
  - B.Sc. PCM (Majoring in Physics) - **Enclosure-V**
6. The members unanimously resolved to authorize the Chairperson of the BoS to finalize on the following:
  - List of paper setters and examiners for courses of 3<sup>rd</sup>& 4<sup>th</sup> semesters of UG Program B.Sc. PCM (Majoring in Physics) - **Enclosure-VI**

S.No.	Name of Member	Signature
1.	Mr. B. G. Panelia	
2.	Dr. B. A. Joshi	
3.	Dr. P. C. Shah	
4.	Dr. B.S. Trivedi	
5.	Ms. H. K. Bhatt	
6.	Dr. D. J. Dave	
7.	Dr. H. C. Mandavia	
8.	Dr. H. H Joshi	
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**Department of PHYSICS**

**B. Sc. PCM (Majoring in Physics)  
Regulations for Students Admitted from A.Y. 2017-2018 & Onwards**

**ELIGIBILITY**

Candidate who has passed 02 years Higher Secondary Certificate (10+2) examination with Science subjects in respective streams of Gujarat State or any other examination recognized as equivalent there to with a good academic record, shall be eligible for admission, subject to such other conditions prescribed by the Saurashtra University and State Government from time to time. All admissions are provisional and subject to the approval of Saurashtra University.

**DURATION OF THE PROGRAMME**

The Program shall extend over a period of three years comprising of six semesters with two semesters in one academic year. Each semester normally consists of 90 teaching days.

**STRUCTURE OF THE PROGRAMME**

Each UG program shall have a curriculum comprising theory and practical courses with a specified syllabus. The curriculum of the program is a blend of theory courses and practical courses as Core, Discipline Specific Electives (DSE) and Generic Electives (GE). In addition, project, internship/training and personality development courses as Ability Enhancement Courses (AEC) and Skill Enhancement Courses (SEC) shall be offered.

The medium of instruction and examinations shall be English except for courses on languages other than English

**EVALUATION**

The evaluation shall generally comprise of Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) with percentage weightage as specified below, unless specified otherwise in the Scheme of Instruction and Examinations.

<i>Theory Courses</i>		<i>Practical Courses</i>	
Continuous Internal Evaluation (CIE)	30%	Continuous Internal Evaluation (CIE)	40%
Semester End Examination (SEE)	70%	Semester End Examination (SEE)	60%

For the purpose of computation of credits the following mechanism is adopted:

- a) 1 hour instruction of Theory = 1 Credit
- b) 1 hour instruction of Tutorial = 1 Credit
- c) 2-3 hours instructions of Practical = 1 Credit

## **ISSUE OF MARKSHEET AND DEGREE CERTIFICATE**

The college shall publish the result after evaluation and with the recommendations of Result Passing Board at the end of each semester. On approval/ratification of the results by the Academic Council, the candidate will be recommended to Saurashtra University for award of the degree on completion of all courses and components of the curriculum.

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**Department of Physics  
B. Sc. PCM (Majoring in Physics)**

**SCHEME OF INSTRUCTION AND EXAMINATIONS  
For Students Admitted from A.Y. 2017-2018 & Onwards**

**OBJECTIVES OF THE PROGRAMME**

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

- This programme will enable students to acquire knowledge on the fundamentals of Physics , Chemistry , Mathematics to enable them to understand emerging and advanced concept in Modern Physics and help them to take their career in this field.
- After completion of the program, the students can able to acquire the necessary theoretical and practical competencies in Physics to enable them to undertake higher studies in recognized Institutions of higher learning and engage gainful self-employment.
- The Program is intended to help the students to be the innovative and versatile personalities in the field of Physics with quality education and provide the skilled manpower required by Research and Development, Institutions of Higher Learning and Industry.

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**SCHEME OF INSTRUCTION AND EXAMINATIONS**  
**For Students Admitted from A.Y. 2017-2018 & Onwards**

<b>SEMESTER: I</b>							
<b>Course Code</b>	<b>Course</b>	<b>Hours of Instruction/ week</b>	<b>Exam Duration</b>	<b>CIE</b>	<b>SEE</b>	<b>Total</b>	<b>Credits</b>
<b>Part- I</b>							
<b>17ULCEN01</b>	<b>Functional English -I</b>	3	3	40	60	100	3
<b>Part- II</b>							
<b>17UPHCC01</b>	<b>Core 1: Modern Physics</b>	4	3	30	70	100	4
<b>17UPHDA01</b>	<b>DSE Allied 1: Mathematics-1</b>	4	3	30	70	100	4
<b>17UPHDA02</b>	<b>DSE Allied 2: Chemistry-1</b>	4	3	30	70	100	4
<b>17UPHCC02</b>	<b>Core 2: Physics Practical-1</b>	5	4	40	60	100	3
<b>17UPHDA03</b>	<b>DSE Allied 3: Mathematics Practical – 1</b>	5	3	40	60	100	3
<b>17UPHDA04</b>	<b>DSE Allied 4: Chemistry Practical-1</b>	5	5	40	60	100	3
	<b>TOTAL</b>	<b>30</b>				<b>700</b>	<b>24</b>
<b>Part- III</b>							
<b>17UAEES01</b>	<b>AECC – I : Environmental Sciences</b>	1	-	-	-	-	-
<b>17UAEVE01</b>	<b>SEC-I: Value Education - I</b>	1	-	Remarks			1
							<b>25</b>



SEMESTER: II							
Course Code	Course	Hours of Instruction / week	Exam Duration	CIE	SEE	Total	Credits
Part- I							
17ULCEN02	Functional English - II	3	3	40	60	100	3
Part- II							
17UPHCC03	Core3: Classical Physics	4	3	30	70	100	4
17UPHDA05	DSE Allied 5: Mathematics - 2	4	3	30	70	100	4
17UPHDA06	DSE Allied 6: Chemistry -2	4	3	30	70	100	4
17UPHCC04	Core 4: Physics Practical - 2	5	4	40	60	100	3
17UPHDA07	DSE Allied 7: Mathematics Practical - 2	5	3	40	60	100	3
17UPHDA08	DSE Allied 8: Chemistry Practical-2	5	5	40	60	100	3
	<b>TOTAL</b>	<b>30</b>				<b>700</b>	<b>24</b>
Part- III							
17UAEEES01	AECC – I : Environmental Sciences	1	-	Remarks			2
17UAEEVE02	SEC-II: Value Education - II	1	-	Remarks			1
							<b>27</b>

<b>SEMESTER: III</b>							
<b>Course Code</b>	<b>Course</b>	<b>Hours of Instruction / week</b>	<b>Exam Duration</b>	<b>CIE</b>	<b>SEE</b>	<b>Total</b>	<b>Credits</b>
<b>Part- I</b>							
<b>17ULCEN03</b>	<b>Advanced English Language - I</b>	3	3	40	60	100	3
<b>Part- II</b>							
<b>17UPHCC05</b>	<b>Core 5: Optics &amp; Relativity</b>	4	3	30	70	100	4
<b>17UPHDA09</b>	<b>DSE Allied 9: Mathematics - 3</b>	4	3	30	70	100	4
<b>17UPHDA10</b>	<b>DSE Allied 10: Chemistry -3</b>	4	3	30	70	100	4
<b>17UPHCC06</b>	<b>Core 6: Physics Practical-3</b>	5	4	40	60	100	3
<b>17UPHDA11</b>	<b>DSE Allied 11: Mathematics Practical - 3</b>	5	3	40	60	100	3
<b>17UPHDA12</b>	<b>DSE Allied 12: Chemistry Practical -3</b>	5	5	40	60	100	3
	<b>TOTAL</b>	<b>30</b>				<b>700</b>	<b>24</b>

<b>SEMESTER: IV</b>							
<b>Course Code</b>	<b>Course</b>	<b>Hours of Instruction / week</b>	<b>Exam Duration</b>	<b>CIE</b>	<b>SEE</b>	<b>Total</b>	<b>Credits</b>
<b>Part- I</b>							
<b>17ULCEN04</b>	Advanced English Language - II	3	3	40	60	100	3
<b>Part- II</b>							
<b>17UPHCC07</b>	<b>Core 7: Heat &amp; Electronics</b>	4	3	30	70	100	4
<b>17UPHDA13</b>	<b>DSE Allied 13 : Mathematics - 4</b>	4	3	30	70	100	4
<b>17UPHDA14</b>	<b>DSE Allied 14: Chemistry -4</b>	4	3	30	70	100	4
<b>17UPHCC08</b>	<b>Core 8: Physics Practical-4</b>	5	4	40	60	100	3
<b>17UPHDA15</b>	<b>DSE Allied 15: Mathematics. Practical - 4</b>	5	3	40	60	100	3
<b>17UPHDA16</b>	<b>DSE Allied 16: Chemistry Practical -4</b>	5	5	40	60	100	3
	<b>TOTAL</b>	<b>30</b>				<b>700</b>	<b>24</b>

<b>SEMESTER: V</b>							
<b>Course Code</b>	<b>Course</b>	<b>Hours of Instruction / week</b>	<b>Exam Duration</b>	<b>CIE</b>	<b>SEE</b>	<b>Total</b>	<b>Credits</b>
<b>Part: II</b>							
<b>17UPHCC09</b>	<b>Core 9: Mechanics</b>	4	3	30	70	100	4
<b>17UPHCC10</b>	<b>Core 10: Recent Trends in Physics (Self Study)</b>	1	3	15	35	50	4
<b>17UPHDC01 / 17UPHDC02</b>	<b>DSE Core 1/2: Optical Science/ Solid State Physics</b>	4	4	30	70	100	4
<b>17UPHCC11</b>	<b>Core 11: CBT</b>	-	-	50	-	50	2
<b>17UPHCC12</b>	<b>Core 12: Physics Practical 5</b>	9	4	40	60	100	3
<b>17UPHDC03 / 17UPHDC04</b>	<b>DSE Core 3/4 : Physics Practical 6/7</b>	6	4	20	30	50	2
	<b>Project/Internship/ Training</b>	4	-	-	-	-	-
	<b>Generic Elective –I From pool of UG Courses</b>	2	-	100	-	100	1
	<b>TOTAL</b>	<b>30</b>				<b>550</b>	<b>20</b>

<b>SEMESTER: VI</b>							
<b>Course Code</b>	<b>Course</b>	<b>Hours of Instruction / week</b>	<b>Exam Duration</b>	<b>CIE</b>	<b>SEE</b>	<b>Total</b>	<b>Credits</b>
<b>Part: II</b>							
<b>17UPHCC13</b>	<b>Core 13: Electrodynamics and Nuclear Physics</b>	4	3	30	70	100	4
<b>17UPHDC05 / 17UPHDC06</b>	<b>DSE Core 5 / 6 : Electronics/ Electronic Communication</b>	4	3	30	70	100	4
<b>17UPHCC14</b>	<b>Core 14: Physics Practical 8</b>	9	4	40	60	100	3
<b>17UPHDC07 / 17UPHDC08</b>	<b>DSE Core 7 &amp; 8: Physics Practical 9/10</b>	5	4	20	30	50	2
<b>17UPHCC15</b>	<b>Core 15: Project/ Internship/ Training</b>	6	3	60	40	100	2
	<b>Generic Elective –II From pool of UG Courses</b>	2	-	100	-	100	1
	<b>TOTAL</b>	<b>30</b>				<b>550</b>	<b>16</b>

### Part III

Course Code	Semester	Particulars	Hrs of instruction/week	No. of Courses	Credit/Course	Total Credits
<b>Ability Enhancement Compulsory Course (AECC)</b>						
As per common list	I & II	<b>AECC-I</b> Environment Science	1	1	2	2
	IV & V	<b>AECC-II</b> Communication Skill/Soft Skills	2	2	1	2
					<b>Sub Total</b>	<b>4</b>
<b>Skill Enhancement Course (SEC)</b>						
As per common list	I	<b>SEC-I</b> Value Education-I	1	1	1	1
	II	Value Education-II	1	1	1	1
	Any Sem between II - V	<b>SEC-II</b> *Co-Curricular Course	> 40 hours in total	1	1	1
	Any Sem between II - V	<b>SEC-III</b> **Value Added Courses	40 hours in total	1	1	1
					<b>Sub Total</b>	<b>4</b>
					<b>Grand Total</b>	<b>8</b>

**\*Co-Curricular Courses** - Option to students to choose 1 from a list of courses offered by the college, such as Add on Courses, Gandhian Studies Certificate Course, Women Studies Course, etc.

**\*\*Value Added Courses** - Option to student to choose at least 1 from a list of courses offered by UG departments.

## TOTAL MARKS & CREDIT DISTRIBUTION

S.No	PART	Total Marks	Total Credits
1.	<b>PART I:</b> Language Course	400	12
2.	<b>PART II :</b> Core, DSE Allied, DSE Elective, Generic Elective	3500	120
3.	<b>PART III:</b> AECC- I & II, SEC- I,II & III	Remarks	08
<b>TOTAL</b>		<b>3900</b>	<b>140</b>

- PART- I: LANGUAGE COURSE**

The following are compulsory courses offered in First to Fourth semesters

S.No	Semester	Course Code	Course
1.	<b>I</b>	16ULCEN01	Functional English- I
2.	<b>II</b>	16ULCEN02	Functional English- II
3.	<b>III</b>	16ULCEN03	Advanced English Language -I
4.	<b>IV</b>	16ULCEN04	Advanced English Language -II

- PART-II: CORE, DSE ALLIED, DSE CORE, GE  
CORE COURSES [Theory]**

S.No	Semester	Course Code	Course
1.	<b>I</b>	17UPHCC01	Modern Physics
2.	<b>II</b>	17UPHCC03	Classical Physics
3.	<b>III</b>	17UPHCC05	Optics & Relativity
4.	<b>IV</b>	17UPHCC07	Heat & Electronics
5.	<b>V</b>	17UPHCC09	Mechanics
6.		17UPHCC010	(Self Study) Recent Trends in Physics
7.		17UPHCC011	CBT
8.	<b>VI</b>	17UPHCC013	Electrodynamics and Nuclear Physics
9.		17UPHCC014	Practical of (Core 13)
10.		17UPHCC015	Project/Internship/Training

- **CORE COURSE [Practical]**

S.No	Semester	Course Code	Course
1.	<b>I</b>	17UPHCC02	Core 2 Physics Practical 1
2.	<b>II</b>	17UPHCC04	Core 4 Physics Practical 2
3.	<b>III</b>	17UPHCC06	Core 6 Physics Practical 3
5.	<b>IV</b>	17UPHCC08	Core 8 Physics Practical 4
8.	<b>V</b>	17UPHCC12	Core 12 Physics Practical 5
11.	<b>VI</b>	17UPHCC14	Core 14 Physics Practical 8

**DSE CORE COURSE (Theory & Practical)**

Students are required to opt for any one of the courses offered in the Fifth and Sixth semester respectively

S.No	Seme ster	Theory		Practical	
		Course Code	Course	Course Code	Course
1.	<b>V</b>	17UPHD C01/02	DSE Core 1/2: Optical Science / Solid State Physics	17UPHD C03/04	DSE Core 3/4 : Physics Practical 6/7
2.	<b>VI</b>	17UPHD C05/06	DSE Core 5/6 : Electronics/ Electronic Communication	17UPHD C07/08	DSE Core 7/8: Physics Practical 9/10

**DSE ALLIED COURSES (Theory)**

Sr.No	Semester	Course Code	Course
1.	<b>I</b>	17UPHDA01	Mathematics -1
		17UPHDA02	Chemistry - 1
2.	<b>II</b>	17UPHDA05	Mathematics - 2
		17UPHDA06	Chemistry-2
3.	<b>III</b>	17UPHDA09	Mathematics - 3
		17UPHDA10	Chemistry-3
4.	<b>IV</b>	17UPHDA13	Mathematics - 4
		17UPHDA14	Chemistry-4



- **DSE ALLIED SUBJECT [Practical]**

Sr.No	Semester	Course Code	Course
1.	I	17UPHDA03	Mathematics Practical - 1
		17UPHDA04	Chemistry Practical - 1
2.	II	17UPHDA07	Mathematics Practical - 2
		17UPHDA08	Chemistry Practical - 2
3.	III	17UPHDA11	Mathematics Practical - 3
		17UPHDA12	Chemistry Practical-3
4.	IV	17UPHDA15	Mathematics Practical - 4
		17UPHDA16	Chemistry Practical - 4

- **GENERIC ELECTIVE**

S.No	Semester	Course
1.	V	Generic Elective-1: From pool of UG Courses
2.	VI	Generic Elective-2: From pool of UG Courses

**B.Sc. Physics  
SEMESTER-III**

<b>17UPHCC05</b>	<b>Optics &amp; Relativity</b>	<b>4 hours/week</b>	<b>Credits:4</b>
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**OBJECTIVES OF THE PROGRAMME:**

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- This programme will enable students to acquire knowledge on the fundamentals of Physics.
- The Program is intended to help the students to be the innovative and versatile personalities in the field of Physics with quality education and provide the skilled manpower required by Research and Development, Institutions of Higher Learning and Industry.

**UNIT I:      *Special Theory of Relativity, General Theory of Relativity (Introduction)*  
*(10 Hr)***

- Introduction to Special theory of Relativity
- Newtonian Relativity
- Inertial and non inertial reference frames
- Galilean Transformations
- Ether medium
- Michelson Morley experiment
- Attempts to preserve the concept of ether
- Special theory of relativity
- Lorentz transformations
- Consequences of Lorentz transformations

**UNIT II:      *Interference*  
*(10Hr)***

- Introduction
- Techniques to obtain interference
- Young's double slit experiment
- Lloyd's Mirror
- Fresnel Biprism
- Interference by thin films (Parallel and wedge shaped)
- Newton's Ring experiment

**UNIT III: *Diffraction***

**(12 Hr)**

- Introduction
- Comparison between interference and diffraction
- Types of diffraction
- Fraunhofer diffraction at a single slit
- Fraunhofer diffraction at double slits
- Plane diffraction grating
- Rectilinear propagation of light
- Zone plate
- Theory of Zone plate
- Comparison between zone plate and convex lens
- Diffraction pattern of straight edge

**UNIT IV: *Optics Laser***

**(12 Hr)**

- Introduction
- Interaction of light with matter
- Einstein relations
- Light amplification and its conditions
- Population inversion
- Pumping
- Meta stable states
- Principle pumping schemes
- Optical resonance and cavity
- Types of laser: Ruby laser, He-Ne laser, Nd-Yag laser and semiconductor laser (operation and working)

**UNIT V: *Optical Fibers***

**(10 Hr)**

- Introduction
- Optical fiber
- Critical angle of propagation
- Modes of propagation
- Acceptance angle
- Fractional refractive index and numerical aperture
- Types of optical fiber
- Applications

**Text Book:**

1. *ROBERT RESNICK* , **Introduction to Special Relativity**  
Publication: Wiley Eastern Private Limited.
2. *H C Verma* , **Concept of Physics** Publication : Bharati Bhavan,  
ISBN:9788177091878

**Reference Books:**

1. *Sears and Zeemansky* , **University Physics**
2. *N N Bhargav and Kushreshtha*, **Basic Electronics and Linear Circuits**
3. *N N Bhargav and Kushreshtha*, **Electronic Device and Circuits**

**B.Sc. PCM (Majoring in Physics)**  
**SEMESTER-III**

<b>17UPHCC06</b>	<b>Core:6 Physics Practical 3</b>	<b>5 hours/week</b>	<b>Credits:3</b>
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- Exp 1. Young Modulus of cantilever.
- Exp 2. Young Modulus by bending.
- Exp 3. Thermistor.
- Exp 4. M.I of a Flywheel
- Exp 5. Zener diode - voltage regulation
- Exp 6. Determination of Load line and Q point of BJT.
- Exp 7. Figure of merit of B.G
- Exp 8. Voltage sensitivity of B.G.
- Exp 9. RC coupled amplifier
- Exp 10. Study of multimeter
- Exp 11. Fabrication – I: Zener diode as voltage regulator
- Exp 12. Fabrication - II: Diode bridge



- General bridge balance equation
- Measurement of inductance : Maxwell bridge, Maxwell LC bridge, Anderson bridge
- Measurement of capacitance : De Sauty's bridge
- Ballistic galvanometer

**UNIT IV: *Field effect transistor* (10 Hr)**

- Introduction
- Types of FET
- Junction field effect transistor
- Working principle of JFET
- Schematic symbol of JFET
- Importance of JFET
- Difference between BJT and JFET
- JFET characteristics
- Parameters of JFET
- Advantages of JFET
- Introduction to MOSFET and its working

**UNIT V: *Digital Electronics* (12 Hr)**

- Introduction
- Binary codes and weighted binary codes
- EBCDIC and ASCII codes
- Boolean algebra
- Logic gates: AND, OR, NOT, NAND, NOR, EXOR
- Laws of Boolean algebra
- De Morgan's theorems
- Reducing Boolean expressions
- Universal logic gates
- Adder and subtractor
- Encoder and decoder.

**Text Books:**

1. *H C Verma* ,**Concept of Physics** , Publication : Bharati Bhavan , ISBN:9788177091878
2. *Young, Hugh D., Freedman, Roger A. Sears & Zemansky's University Physics.*  
Publication : Addison-Wesley, ISBN:9780321733382
3. *A.P.Malvino & D.P.Leach. , Digital Principles and Applications*  
Publication : Tata Mc Graw-Hill, New Delhi., ISBN: 0-07-060 175-5

**Reference Books:**

1. *N N Bhargava and Kushreshtha* ,**Basic Electronics and Linear Circuits**
2. *Allen Mottershead,* **Electronic Device and Circuits**
3. *D.S. Mathur, S. Chand Publications,* **Elements Of Properties Of Matter**
4. *C.Kittel* , **Introduction to Solid State Physics**

**B.Sc. PCM (Majoring in Physics)**  
**SEMESTER-IV**

<b>17UPHCC08</b>	<b>Core:8 Physics Practical 4</b>	<b>5 hours/week</b>	<b>Credits: 3</b>
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- Exp 1. UJT
- Exp 2. High resistance by leakage
- Exp 3. De Sauty's bridge
- Exp 4. Diffraction Gratings
- Exp 5. Maxwell Needle
- Exp 6. FET characteristics
- Exp 7. Study of basic logic gates.
- Exp 8. Study of combination of gates
- Exp 9. Study of universal gates.
- Exp10. FET as a voltmeter.
- Exp11. Fabrication : Construction of AND gate
- Exp 12. Fabrication : Construction of NOR gate
- Exp 13. Full Wave / Half Wave Rectifier