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

Academic Year	Meeting Number	Date
2022-23	8	30/04/2022

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

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S.No.	Title	Content
1	Agenda of BOS	Minutes of the Meeting
2	Enclosure-I	Revision of syllabi for DSE-Allied courses of Semester-I UG Programs.
4	Enclosure-II	Revision of list of Examiners and Paper Setters.

Shree Manibhai Virani & Smt. Navalben Virani Science College, Rajkot

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BOARD OF STUDIES- PHYSICS

Date: 30-04-2022   Time: 12:30

Shree Manibhai Virani & Smt. Navalben Virani Science College, Rajkot

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BOARD OF STUDIES- PHYSICS

Agenda:

1) **Introductory remarks by Chairperson**
   - **Confirmation of MoM & ATR of previous BoS held on 18/12/2021**
   - **Departmental activities and updates**
2) **Syllabi of DSE cluster courses for Sem.-3 of B.Sc. (All other departments) Programs**
3) **Question paper pattern for DSE cluster courses for Sem.-3 of B.Sc. (All other departments)   Programs.**
4) **List of paper setters and examiners for DSE cluster courses for Sem.-3 of B.Sc. (All other departments)   Programs**
5) **Any other agenda with permission of the Chair**

The Members Unanimously resolved to authorize the Chairperson of the BoS to finalize on the above mention agenda:

S.No.	Name of Member	Signature
1.	Dr. B S Trivedi	Bnm
2.	Dr. B A Joshi	absent
3.	Dr Dipak Dave	D.J. Dave
4.	Dr. H.C.Mandavia (Subject expert)	online
5.	Dr. H H Joshi (V. C. Nominee)	online
6.	Dr. Ashish Kothari	Athish

1. **Welcome and introductory remarks by Chairman**

Welcome to all the members of the Board of Studies to the second meeting after conferment of extension of the autonomous status (up to 2023-24) to the college by UGC.

I, as Chairperson of the BoS place on record the gratitude of the department to the previous members of this BoS for their kind and able contribution towards the effective implementation of academic autonomy.

Due to C-19 pandemic first national lockdown was observed on 22nd March 2020 followed by circumstances developed then onwards; following activities have been carried out by the department.

Revised syllabi framed for the bellow stated -Allied courses of Semester-3 for UG Programs. - Enclosure-I

Sr. No.	Course	Hours of Instruction/ Week	Credit	Offered to	Semester
1	**DSE-Cluster 1: Physics-3**	03 Hrs/WK	3	B. Sc. (All other Departments) Programs	3

2	**DSE-Cluster 1 Practical**	6 Hrs /week	2	B. Sc. (All other Departments) Programs	3

Annexure I

Department: Physics   Programs: **B.Sc. (Other Departments)**

Semester – III		
Course Code	**Course Title**	**Credits**
21UPHIDC301	**Electronics and Mathematical physics**	3

Course Description:

This course covers some of fundamental concepts of different topics of Electronics and Mathematical physics which are useful for B.Sc. (Other Departments) students.

Course Purpose:

As this course is design for study B.Sc. (Other Departments) students as DSE Cluster subject different fundamental concepts of electronics and mathematical physics are covered in such a way that it can be helpful to them in future study.

Course Outcomes: Upon completion of this course, the learner will be able to

CO No.	CO Statement	Blooms taxonomy Level (K_1 to K_6)
CO_1	Vector	K3
CO_2	Electrostatics	K3
CO_3	Optics	K2
CO_4	Electronics	K2
CO_5	Digital Electronics	K1, K3

Course Content	Hours
Module-I : Vectors ● Introduction ● Review of vector algebra ● Triple products and product of four vectors ● Vector transform ● Gradient, The operator , divergence, The Curl ● Product rules and numericals	08 hrs

Module-II: Electrostatic	**07 hrs**
● Introduction	
● Coulomb's law	
● Electric field, Charge distribution, Field lines	
● Electric flux, Gauss's law, Application of Gauss's law	
● Electric field around infinite line of chart, Electric field around charged spherical shell, Electric field around charged solid sphere	
● The divergence of E, The curl of E, Electric potential	
● Poisson's and laplace equation	
Module III: Optics	**09 hrs**
Geometrical Optics	
● Fermat's principle, Law of reflections and refraction by Fermat's principle	
● Dispersive power of Prism	
Wave Optics	
● Interference, Condition for constructive and destructive interference	
● Newton's Ring	
● Interference by thin film	
Module IV: Electronics	**7 hrs**
● Transistor biasing	
● Operating point , factors affecting Q-point, Stability factor	
● Fixed biased circuit	
● Emitter bias circuit	
● Voltage divider bias	
● Single stage transistor amplifier	
● Practical circuit of transistor amplifier, Load line analysis, Voltage gain, Frequency response and band width	
● Special devices: Thermister and its characteristics Phototransistor and its characteristics	
Module V: Digital Electronics	**8 hrs**
● Logic gates and Boolean algebra	
● Analog and digital signals	
● Binary number system	
● Decimal – Binary conversions, Logic gates, Combination of Logic gates – NAND and NOR gates	
● NAND gate as universal gate, Encoders and Decoders	
● Merits and demerits of digital electronics	
● Boolean Theorems, DeMorgan's Theorems	

Text Book:
1. R.Murugeshan & Kiruthiga Sivaprasath (2010). *Modern Physics*. S.Chand Comp. (For unit III to V)
2. R.K.Gaur, S.L.Gupta (2012). *Engineering Physics*. Dhanpat Rai Publications. (For unit I)
3. V.K.Mehta & Rohit Mehta(2014). *Principles of Electronics.* S.Chand Comp. (For unit II)
4. N Subrahmanyan, B. Lal and M. Avadhanulu (2013) A text book of Optics, S. Chand Publication
5. B.LTheraja (2002). Modern Physics. S Chand Publication.

Reference Books:

1. A.S. Vasudeva (2013). *Modern Engineering Physics*, S.Chand Company.
2. David Halliday, Robert Resnick, Jearl Walker (2013), *Halliday and Resnick Physics*, John   Wiley publication.
3. Brij Lal and Subrahmaniam (2007), *Heat and Thermodynamics*. S Chand & Company Pvt Ltd

DSE Cluster Practical

Physics Practical – Electricity and Mechanics

21UPHIDC102	physics Practical	6 Hrs/Week	2 Credits

Course Description:

The practical course includes all fundamental practical of measurement , mechanics and electricity and different circuit fabrication

Course Purpose:

The course of practical is develop to make student well verge to electricity tools , circuit fabrication and measurement methodology

Course Outcomes: Upon completion of this course, the learner will be able to

CO No.	CO Statement	Blooms taxonomy Level (S_1 to S_6)
CO_1	Basic measurement methods	S1
CO_2	Basic circuit analysis	S1
CO_3	Current –Voltage characteristics of different electronics components	S1 & S3
CO_4	Optical properties of body	S2
CO_5	Circuit fabrication	S2 & S3

List of Practical

- To determine prism angle and refractive index of prism.
- To determine refractive indices of mercury spectral lines using EDF prism.
- To determine dispersive power and dispersive curve of a prism.
- To determine wavelength of monochromatic light by Newton's rings.
- To determine wavelength of mercury light by diffraction grating.
- Resolving power of diffraction grating using vernier slit.
- I-V characteristic of CB amplifier.
- I-V characteristic of CE amplifier.
- I-V characteristic of CC amplifier.
- Study of maximum power transfer theorem.
- Study of multimeter.
- Low resistance by projection method.
- Low resistance by potentiometer.
- Energy gap of a thermistor.
- IV characteristic of a thermistor.
- Characteristic of photo transistor.

- Verification of truth table of AND, OR, NOT, NAND and NOR gates.
- Study of NAND gate as universal gate.
- Fabrication I Thevenin's theorem.
- Fabrication II Norton's theorem.

Text books :
- V.K.Mehta & Rohit Mehta., Principles of Electronics S.Chand Comp.
- Fundamentals Of Physics By Halliday, Resnick & Walker, Welly Publication.

Reference books :
- Modern Physics - R.Murugeshan & Kiruthiga Sivaprasath, S.Chand Comp.
- . Engineering Physics - R.K.Gaur, S.L.Gupta, Dhanpat Rai Publications

Reference Book: (For Practical)
1. C.L.Arora Practical Physics, S. Chand Comp.
2. Chauhan & Singh Advanced Practical Physics. Pragati Prakashan.
3. Experimental Physics, University Granth Nirman Board, (Gujarati Medium)
4. A.K.Sawhney. A Course in Electronic Measurements and Instrumentation, DhanpatRai and Co.

Pedagogic tools:
- Chalk and Board
- Power point presentation
- Seminar
- Videos

Methods of Assessment & Tools:
Components of CIE: 30 marks (Example as below)

Sr. No.	Component	Content	Duration (if any)	Marks	Sub Total
A	Test 1	1st 2 units	$1^{1/2}$ hours	5 (Set for 30)	20
	Test 2	All 5 units	3 hours	15 (Set for 60)	
B	Assignment	2		08	10
C	Class activity			12	
				Grand Total	**30**
Assignment		● Abstract and executive summary ● Experimental design ● Concept mapping ● Student generated handbook ● Essay writing etc…			
Class activity		● Reaction paper ● Quiz ● One-minute paper			

	● Situation based question
	● Application card etc..

Note : Any other assessment tools or methods can be adopted as per requirement of the course.