The Kelkar Education Trust's

V G Vaze College of Arts, Science and Commerce

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V G Vaze College of Arts, Science and Commerce

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 1

Course: Classical Physics (Physics Paper-I)

Course Code	Paper Title	Credit
FPHT101	Classical Physics	2

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1. Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHT101
iii) Course Title	:	Classical Physics
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	15
viii) No. of lectures per week	:	03
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:60 marks (4 Questions of 15 marks) Internal Assessment 40 marks: (Test 15 marks, Project/ Assignment 15 marks Class Participation: 10 marks)
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

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Programme: FYBSc	Semester: I
Course : Classical Physics	Course Code : FPHT101

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	3		15	15	10		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Prerequisite	**1. Basic knowledge Newton's laws of Physics** **2. Basic idea about laws of reflection, refraction** **3. Basic idea of Interference, laws of thermodynamics**

Course Objectives	
1.	Understand Newton's laws and apply 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 friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them
4.	Understand the concepts of lens system and interference.
5.	Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.
6.	Demonstrate quantitative problem solving skills in all the topics covered

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Course Content			
Unit No.	**Module No.**	**Content**	**Lectures**
1	I	**Chapter 1: Newton's Laws of Motion** 1.1 Newton's first, second and third laws of motion, 1.2 Interpretation and applications 1.3 Pseudo forces, Inertial and non-inertial frames of reference. 1.4 Worked out examples (with friction present) **Chapter 2 : Elasticity** 2.1 Review of Elastic constants Y, K, η and σ; 2.2 Equivalence of shear strain to compression and extension strains. 2.3 Relations between elastic constants, Couple for twist in cylinder **Chapter 3 : Fluid Dynamic** 3.1 Equation of continuity, Bernoulli's equation, applications of Bernoulli's equation, 3.2 Streamline and turbulent flow, lines of flow in air foil 3.3 Poiseuille's equation.	15
2	II	**Chapter 4: Lenses** 4.1 Lens Maker's Formula (Review) 4.2 Newton's lens equation, magnification-lateral 4.3 Longitudinal and angular. Equivalent focal length of two thin lenses Thick lens, cardinal points of thick lens 4.4 Ramsden and Huygens eyepiece **Chapter 5: Interference –I (Division of wave front)** 5.1 Introduction 5.2 Lloyd's Single Mirror **Chapter 6: Interference –II (Division of Amplitude)** 6.1 Interference in thin films 6.2 Fringes in Wedge shaped films, Newton's Rings (Reflective).	15
3	III	**Chapter 7 : Behavior of real gases** 7.1 Real gas equation 7.2 Van der Waal equation **Chapter 8 :Thermodynamics** 8.1 Thermodynamic Systems 8.2 Zeroth law of thermodynamics Concept of Heat, The first law of thermodynamics 8.3 Non Adiabatic process and Heat as a path function Internal energy 8.4 Heat Capacity and specific heat 8.5 Applications of first law to simple processes General relations from the first law 8.6 Indicator diagrams	15

		8.7 Work done during isothermal and adiabatic processes Worked examples, Problems	

Semester I: Classical Physics – Paper I (Paper Pattern)	
Duration: 2 hours	**Marks: 60**
Q.1 (Unit 1)	15 marks
Q.2 (Unit 2)	15 marks
Q.3 (Unit 3)	15 Marks
Q.4 Based on all module	15 Marks

Course Outcomes **Students should be able to...**	
CO1	Apply Newton's laws of the motion of simple systems.
CO2	To analyze the forces using free body diagrams on the object.
CO3	Apply the concepts of friction and the concepts of elasticity, fluid mechanics and be able to perform calculations using them
CO4	To understand the concepts of lens system and interference.
CO5	Apply the laws of thermodynamics to formulate the relations necessary to analyze a thermodynamic process.

Recommended Resources	
Reference Books	Main References: 1. Halliday, Resnick and Walker, Fundamentals of Physics (extended) – (6th Ed.), John Wiley and Sons. 2. H. C. Verma, Concepts of Physics – (Part–I), 2002 Ed. Bharati Bhavan Publishers. 3. Problems in General Physics by Iradov 4. Brijlal,Subramanyam and Avadhanulu A Textbook of Optics, 25th revised ed.(2012) S. Chand 5. Brijlal, Subramanyam and Hemne, Heat Thermodynamics and Statistical Physics, S Chand, Revised, Multi-coloured,2007 Ed. 6. Jenkins and White, Fundamentals of Optics by (4th Ed.), McGraw Hill International. **Additional References :** 1. Thornton and Marion, Classical Dynamics – (5th Ed) 2. D S Mathur, Elements of Properties of Matter, S Chand & Co. 3. R Murugeshan and K Shivprasath, Properties of Matter and Acoustics S Chand & Co. 4. M W Zemansky and R H Dittman, Heat and Thermodynamics, McGraw Hill.

	5. D K Chakrabarti, Theory and Experiments on Thermal Physics, (2006 Ed) Central books. 6. C L Arora, Optics, S Chand. 7. Hans and Puri, Mechanics –, 2nd Ed. Tata McGraw Hill 8. Sears and Zemansky's University Physics by Young and Freedman

This is the Final syllabus which has been approved by the following BOS Members:

1. Dr. Suresh Kadam : Head Department of Physics
2. Prof S Bapat (Vice-Chancellor Nominee)
3. Dr. Sunil Patange : Subject expert from other university (DRBAMU)
4. Dr. Ravi Kawale: Subject expert from other university (DRBAMU)
5. Mr Gangadhar Nair : Industry sector
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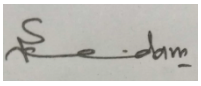
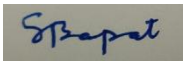
7. Dr. Manoj P. Mahajan: Faculty Member
8. Mr. Ashitosh Trigune : Faculty Member
9. Mr. Mahesh Kedare : Faculty Member



Dr.S N Kadam

Chairmen BOS Physics



Prof S.G Bapat

Vice-Chancellor Nominee

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 1

Course: Modern Physics (Physics Paper-II)

Course Code	Paper Title	Credit
FPHT102	Modern Physics	2

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1.Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHT102
iii) Course Title	:	Modern Physics
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	15
viii) No. of lectures per week	:	03
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:60 marks (4 Questions of 15 marks) Internal Assessment 40 marks: (Test 15 marks, Project/ Assignment 15 marks Class Participation: 10 marks)
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

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Programme: FYBSc	Semester: I
Course : Modern Physics	Course Code : FPHT102

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	3		15	15	10		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Prerequisite	1. Basic knowledge atoms, molecules & nuclei 2. Basic idea of Photoelectric effect & electromagnetic waves.

Course Objectives	
1.	Understand nuclear structure, properties and nuclear behavior.
2.	Understand the type isotopes and their applications.
3.	Demonstrate and understand the quantum mechanical concepts.
4.	Demonstrate quantitative problem solving skills in all the topics covered.

Course Content			
Unit No.	Module No.	Content	Lectures
1	I	**Chapter 1: Structure of Nuclei** 1.1 Basic properties of nuclei(Composition, Charge, Size) 1.2 Rutherford's expt. for estimation of nuclear size Density of nucleus 1.3 Mass defect and Binding energy, Packing fraction BE/A vs A plot 1.4 Stability of nuclei (N Vs Z plot) –Segre Chart. 1.5 Problems based on nuclear size, density, B.E and BE/A., Packing fraction, mass defect. **Chapter 2: Radioactivity** 2.1 Radioactive disintegration 2.2 Concept of natural and artificial radioactivity, 2.3 Properties of α, β, γ-rays, laws of radioactive decay, 2.4Half-life, mean life (derivation not required), units of radioactivity, 2.5 successive disintegration and equilibriums, 2.6 Radioisotopes.	15

		2.7 Numerical Problems	
2	II	**Chapter 3: Carbon Dating** 3.1 Introduction to Carbon dating 3.2 Applications of carbon dating to radioactive isotopes (Agricultural, Medical, Industrial, Archaeological -information from net **Chapter 4: Nuclear Reaction** 4.1 Types of Reactions Conservation Laws 4.2 Concept of Compound and Direct 4.3 Reaction Q- value equation 4.4 Nuclear Fusion -Definition and qualitative discussion with examples. 4.5 Nuclear fission-Definition and qualitative discussion with examples. 4.6 Problems based on Q-value and nuclear reactions	15
3	III	**Chapter 5 : Introduction to Quantum Mechanics** 5.1 Matter waves, wave particle duality, 5.2 Photoelectric effect 5.3 Heisenberg's uncertainty Principle. 5.4 Application of H.U.P (non-existence of electron in nucleus) 5.5 Davisson-Germer experiment, G. P. Thompson experiment. 5.6 Compton Effect 5.7 Pair production 5.8 Photons and Gravity 5.9 Gravitational Red Shift. **Chapter 6: X-rays** 6.1 X-Rays production and properties. 6.2 Continuous and characteristic X-Ray spectra, 6.3 X-Ray Diffraction, 6.4 Bragg's Law 6.5 Applications of X-Rays.	15
		Total No. of Lectures	45

Semester I: Modern Physics – Paper II (Paper Pattern)	
Duration: 2 hours	**Marks: 60**
Q.1 (Unit 1)	15 marks
Q.2 (Unit 2)	15 marks
Q.3 (Unit 3)	15 Marks
Q.4 Based on all module	15 Marks

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Course Outcomes Students should be able to...	
CO1	Understand nuclear structure, properties and nuclear behaviour.
CO2	Understand what are isotopes and their applications.
CO3	Understand the quantum mechanical concepts.
CO4	To solve problem in all the topics covered.

Recommended Resources	
Reference Books	**Main References:** 1. Kaplan: Nuclear Physics, Irving Kaplan, 2nd Ed. Narosa Publishing House 2. SBP: Dr. S. B. Patel, Nuclear Physics Reprint 2009, New Age International 3. BSS: N Subrahmanyam, Brijlal and Seshan, Atomic and Nuclear Physics Revised Ed. Reprint 2012, S. Chand 4. Arthur Beiser: Perspectives of Modern Physics : Tata McGraw Hill **Additional References:** 1 S N Ghosal, Atomic Physics S Chand 2 S N Ghosal, Nuclear Physics 2nd ed. S Chand

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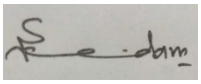
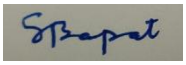
8. Mr. Ashitosh Trigune : Faculty Member
9. Mr. Mahesh Kedare : Faculty Member



Dr.S N Kadam

Chairmen BOS Physics



Prof S.G Bapat

Vice-Chancellor Nominee

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 1

Course: Practical course –I (Practical's based on two courses)

Course Code	Paper Title	Credit
FPHP01	Practical course –I (Practical's based on two courses)	2

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V G Vaze College of Arts, Science and Commerce

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1.Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHP01
iii) Course Title	:	Practical's based on two courses
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	-
viii) No. of lectures per week	:	06
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:100 marks Experiment 1: 40 Marks Experiment 2: 40 Marks Journal : 10 Marks Viva : 10 Marks
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

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List of Experiments	
Sr. No.	**Description: Experiment from group A**
1	J by Electrical Method: To determine mechanical equivalent of heat (Radiation correction by graph method).
2	To determine modulus of rigidity η of a material of wire by tensional oscillations.
3	Bifilar Pendulum.
4	Spectrometer: To determine of angle of Prism.
5	To determine rigidity modulus (η) of material by method of vibrations- Flat spiral Spring.
6	To determine Coefficient of Viscosity (η) of a given liquid by Poisseuli's method.
7	Surface Tension of water using capillary rise method.
8	Combination of Lenses To determine equivalent focal length of a lens system by magnification method.
9	Spectrometer: To determine refractive index μ of the material of prism
10	Newton's Rings To determine radius of curvature of a given convex lens using Newton's rings.
11	Wedge Shaped Film
12	Y By Vibration
	Skill Experiments B
1	Use of Vernier calipers, Micrometer Screw Gauge, Travelling Microscope
2	Graph Plotting : Experimental, Straight Line with intercept, Resonance Curve etc.
3	Spectrometer: Schuster's Method
4	Use of DMM
5	Absolute and relative errors calculation.

C) Any one out of following is equivalent to two experiments from section A or B

1. Students should collect the information of at least five Physicists with their work. Report that in journal.
2. Students should carry out mini-project up to the satisfaction of professor In-charge of practical.
3. Study tour: students participated in study tour must submit a study tour report.

Note: Minimum 8 experiments from the list should be completed in the first semester. Any 5 skill experiments are to be reported in journal. Certified journal is must to be eligible to appear for the semester end practical

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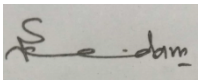

Dr.S N Kadam

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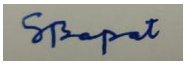

Prof S.G Bapat

Vice-Chancellor Nominee

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 2

Course: Mathematical Physics (Physics Paper-I)

Course Code	Paper Title	Credit
FPHT201	Mathematical Physics	2

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V G Vaze College of Arts, Science and Commerce

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1.Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHT201
iii) Course Title	:	Mathematical Physics
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	15
viii) No. of lectures per week	:	03
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:60 marks (4 Questions of 15 marks) Internal Assessment 40 marks: (Test 15 marks, Project/ Assignment 15 marks Class Participation: 10 marks)
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

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V G Vaze College of Arts, Science and Commerce

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Programme: FYBSc	Semester: II
Course : Mathematical Physics	Course Code : FPHT201

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	3		15	15	10		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Prerequisite	1. Basic knowledge Scalar, vector , dot & cross product 2. Basic formulas of derivative & integration

Course Objectives	
1.	Understand the basic mathematical concepts and applications of them in physical situations.
2.	Demonstrate quantitative problem solving skills in all the topics covered.

Course Content			
Unit No.	Module No.	Content	Lectures
1	I	**Chapter 1: Vector algebra** 1.1 Vectors, Scalars 1.2 Laws of Vector algebra, Unit vector, Rectangular unit vectors 1.3 Components of a vector, Scalar fields, Vector fields, Problems based on Vector algebra. 1.4 Dot or Scalar product Cross or Vector product, 1.5 Commutative and Distributive Laws Scalar Triple product Vector Triple product (Omit proofs) 1.6 Problems and applications based on Dot, Cross and Triple products. **Chapter 2: Gradient, divergence and curl** 2.1 Gradient, divergence and curl: 2.2 The operator, Definitions and physical significance of Gradient, Divergence and Curl; 2.3 Distributive Laws for Gradient Divergence and Curl (Omit proofs)	15

		2.4 Problems based on Gradient, Divergence and Curl.	
2	II	**Chapter 3: Differential Equation** 3.1 Introduction, Ordinary differential equations 3.2 First order homogeneous and non- homogeneous equations with variable coefficients 3.3 Exact differentials, General first order Linear Differential Equation 3.4 Second-order homogeneous equations with constant coefficients. **Chapter 4: Applications of Differential Equation** 4.1 Problems depicting physical situations like LC and LR circuits, 4.2 Simple Harmonic motion (spring mass system).	15
3	III	**Chapter 5: Superposition of Collinear Harmonic oscillations** 5.1 Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). 5.2 Superposition of two perpendicular Harmonic Oscillations Graphical and Analytical Methods. Lissajous Figures with equal and unequal frequency and their uses **Chapter 6: Wave Motion** 6.1 Transverse waves on string 6.2 Travelling and standing waves on a string & Normal modes of a string 6.3 Group velocity and Phase velocity 6.4 Plane waves & Spherical waves 6.5 Wave intensity General relations from the first law Indicator diagrams 6.6 Worked examples, Problems	15

Semester II: Mathematical Physics – Paper I (Paper Pattern)	
Duration: 2 hours	**Marks: 60**
Q.1 (Unit 1)	15 marks
Q.2 (Unit 2)	15 marks
Q.3 (Unit 3)	15 Marks
Q.4 Based on all module	15 Marks

Course Outcomes **Students should be able to...**	
CO1	To apply basic mathematical concepts in physical situations.
CO2	To solve first order & second order D.E

Recommended Resources	
Reference Books	**Main References:** 1. MS: Murray R Spiegel, Schaum's outline of Theory and problems of Vector Analysis, Asian Student Edition 2. CH**:** Charlie Harper, Introduction to Mathematical Physics, 2009 (EEE) PHI Learning Pvt. Ltd. 3. CR: D. Chattopadhyay, P C Rakshit , Electricity and Magnetism 7th Ed. New Central Book agency. 4. Waves: Berkeley Physics Course, vol. 3, Francis Crawford, 2007, Tata McGraw-Hill. 5. The Physics of Vibrations and Waves, H. J. Pain, 2013, John Wiley and Sons. 6. The Physics of Waves and Oscillations, N.K. Bajaj, 1998, Tata McGraw Hill. **Additional References:** 1. BrijLal**,N.** Subrahmanyam **,** JivanSeshan, Mechanics and Electrodynamics, , (S. Chand) (Revised & Enlarged ED. 2005) 2. A K Ghatak, Chua, Mathematical Physics, 1995, Macmillan India Ltd. 3. Ken Riley**, Michael** Hobson **and Stephen** Bence, Mathematical Methods for Physics and Engineering, Cambridge (Indian edition). 4. H. K. Dass, Mathematical Physics, S. Chand & Co. 5. Jon Mathews & R. L. Walker, Mathematical Methods of Physics: W A Benjamin Inc.

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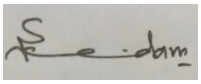
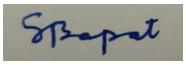


Dr.S N Kadam

Chairmen BOS Physics



Prof S.G Bapat

Vice-Chancellor Nominee

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 2

Course: Electricity and Electronics(Physics Paper-II)

Course Code	Paper Title	Credit
FPHT202	**Electricity and Electronics**	2

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V G Vaze College of Arts, Science and Commerce
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1. Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHT202
iii) Course Title	:	Electricity and Electronics
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	15
viii) No. of lectures per week	:	03
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:60 marks (4 Questions of 15 marks) Internal Assessment 40 marks: (Test 15 marks, Project/ Assignment 15 marks Class Participation: 10 marks)
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

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Programme: FYBSc	Semester: II
Course : Electricity and Electronics	Course Code : FPHT202

Teaching Scheme (Hrs/Week)				Continuous Internal Assessment (CIA) 40 marks					End Semester Examination	Total
L	T	P	C	CIA-1	CIA-2	CIA-3	CIA-4	Lab	Written	
3	-	3		15	15	10		-	60	100
Max. Time, End Semester Exam (Theory) -2Hrs.										

Prerequisite	1. Basic knowledge resistor, capacitor & Ohm's lwa 2. Basic idea of logic gates

Course Objectives	
1.	Enable students to apply principles of electricity.
2.	Students should understand the basic concept of electronics.
3.	Students should understand how the electronics component can work.
4.	To inculcate problem solving ability

Course Content			
Unit No.	Module No.	Content	Lectures
1	I	**Chapter 1: Alternating current theory** 1.1 AC circuit containing pure R, pure L and pure C, **1.2** Representation of sinusoids by complex numbers, **1.3** Series L-R, C-R and LCR circuits. **1.4** Resonance in LCR circuit (both series and parallel), **1.5** Power in ac circuit. **1.6** Q-factor **Chapter 2: A. C Bridges** 2.1 AC-bridges: General AC bridge, 2.2 Maxwell,de-Sauty, 2.3 Wien Bridge , 2.4 Hay Bridge.	15
2	II	**Chapter 3: Circuit Theorem** 3.1 Ideal voltage sources and ideal current sources and voltage	15

		sources 3.2 Superposition Theorem, 3.3 Thevenin's Theorem, 3.4 Norton's Theorem, Reciprocity Theorem, 3.5Maximum Power Transfer Theorem. 3.6 Numericals related to circuit analysis using the above theorems. **Chapter 4: DC power supply** 4.1 Half wave rectifier & Full wave rectifier, 4.2 Bridge rectifier 4.3 Line and load regulation 4.4 PIV and Ripple factor of full wave rectifier 4.5 Clipper and Clampers(Basic circuits only) 4.6 Capacitor Filter. 4.6 Zener diode as voltage stabilizer (or Regulator).	
3	III	**Chapter 5: Bipolar Junction Transistors** 5.1 Introduction to BJT: symbols and operation 5.2 BJT Circuit configurations 5.3 Current gain of BJT in CB, CE and CC configuration 5.4 Input and output characteristics in CB, CE configuration **Chapter 6: Digital Electronics** 6.1 Logic gates (Review), NAND and NOR as universal building blocks. 6.2 EXOR gate: logic expression, logic symbol, truth table 6.3 Implementation using basic gates and its applications, 6.4 Boolean algebra, Boolean theorems. 6.5 De-Morgan theorems, Half adder and Full adder	15
		Total No. of Lectures	45

Semester II: Electricity & Electronics – Paper II (Paper Pattern)	
Duration: 2 hours	**Marks: 60**
Q.1 (Unit 1)	15 marks
Q.2 (Unit 2)	15 marks
Q.3 (Unit 3)	15 Marks
Q.4 Based on all module	15 Marks

Course Outcomes **Students should be able to...**	
CO1	Apply principles of electricity in day to day life.
CO2	Use of electronic components for making various electronics gadgets.
CO3	Understand NAND & NOR as basic building blocks
CO4	Understand various bipolar transistor configurations.

Recommended Resources	
Reference Books	**Main References :** 1. CR: D. Chattopadhyay, P C Rakshit, Electricity and Magnetism 7th Ed. New Central Book agency. 2. TT : B.L. Theraja and A.K. Theraja, A Textbook of Electrical Technology Vol. I , S. Chand Publication 3. BN : Boylestad and Nashelsky, Electronic devices and Circuit Theory: 7th edition, Prentice Hall of India. 4. VKM: V K Mehta and R Mehta, Electronics Principals, Multicoloured Revised 11th Ed. reprint in 2012, S Chand. 5. A P Malvino, Digital Principles and Applications: Tata McGraw Hill 6. Tokhiem, Digital electronics, 4thed, McGraw Hill International Edition

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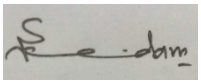
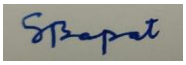
1. Dr. Suresh Kadam : Head Department of Physics
2. Prof S Bapat (Vice-Chancellor Nominee)
3. Dr. Sunil Patange : Subject expert from other university (DRBAMU)
4. Dr. Ravi Kawale: Subject expert from other university (DRBAMU)
5. Mr Gangadhar Nair : Industry sector
6. Dr. K.G.Bhole (Faculty Member Ex HOD)
7. Dr. Manoj P. Mahajan: Faculty Member
8. Mr. Ashitosh Trigune : Faculty Member
9. Mr. Mahesh Kedare : Faculty Member



Dr.S N Kadam

Chairmen BOS Physics



Prof S.G Bapat

Vice-Chancellor Nominee

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Syllabus for FY B.Sc

(June 2020 Onwards)

Program: B.Sc

Semester 2

Course: Practical course –II (Practical's based on two courses)

Course Code	Paper Title	Credit
FPHP02	Practical course –II (Practical's based on two courses)	2

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1.Syllabus as per Choice Based Credit System

i) Name of the Programme	:	F.Y.B.Sc
ii) Course Code	:	FPHP02
iii) Course Title	:	Practical's based on two courses Practical course –II
iv) Semester wise Course Contents	:	Copy of the syllabus Enclosed
v) References and additional references	:	Enclosed in the Syllabus
vi) Credit structure	:	
No. of Credits per Semester	:	02
vii) No. of lectures per Unit	:	-
viii) No. of lectures per week	:	06
ix) No. of Tutorial per week	:	---
2 Scheme of Examination	:	Semester End Exam:100 marks Experiment 1: 40 Marks Experiment 2: 40 Marks Journal : 10 Marks Viva : 10 Marks
3 Special notes, if any	:	No
4 Eligibility, if any	:	As laid down in the College Admission brochure / website
5 Fee Structure	:	As per College Fee Structure specifications
6 Special Ordinances / Resolutions, if any	:	No

List of Experiments	
Sr. No.	**Description: Experiment from group A**
1	Flywheel
2	To study unregulated supply and Zener diode as voltage Regulator
3	To study load regulation of a Bridge Rectifier with and without capacitor
4	LR Circuit: To determine the value of given inductance and phase angle
5	CR Circuit: To determine value of given capacitor and Phase angle
6	Frequency of AC Mains: To determine frequency of AC mains.
7	LCR series Resonance: To determine resonance frequency of LCR series circuit.
8	To study NAND and NOR gates as Universal Building Blocks
9	To verify De Morgan's Theorems
10	Thevenin's Theorem: To verify Thevenin's theorem for DC circuits
11	Norton's Theorem: To verify Norton's Theorem for DC circuits
12	LDR Characteristics: To study the dependence of LDR resistance on intensity of light.
	Skill Experiments B
1	Use of Bread board (Transistor as switch)
2	Light dependent switch
3	Laser beam divergence, Intensity
4	Use of Oscilloscope
5	Charging and discharging of a capacitor
6	Use of PC for graph plotting
7	Clipper and Clamper circuits.

C) Any one out of following is equivalent to two experiments from section A or B

1. Students should collect the information of at least five Physicists with their work. Report that in journal.
2. Students should carry out mini-project up to the satisfaction of professor In-charge of practical.
3. Study tour, students participated in study tour must submit a study tour report.

Note: Minimum 8 experiments from the list should be completed in the first semester. Any 4 skill-experiments are to be reported in journal. Certified journal is must to be eligible to appear for the semester end practical.

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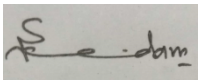

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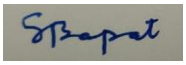

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