



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Physics for BCA

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment *	End Sem University Exam	Teachers Assessment **				
BCCA203	Compulsory	Physics	60	20	20	0	0	3	1	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit;

Q/A - Quiz/Assignment/Attendance, MST Mid Sem Test.


*Teacher Assessment shall be based on following components: Quiz/Assignment/ Project/Participation in class (Given that no component shall be exceed 10 Marks)


Course Objectives:-

1. To develop the comprehensive understanding of laws of physics.
2. To develop ability to apply laws of physics for various applications.
3. To develop the experimental skills, ability to analyze the data obtained experimentally to reach substantiated conclusions.


Course Outcomes:-

1. Student will be able to comprehend laws of physics.
2. Student will be able to apply laws of physics for various applications.
3. Student will be able to determine physical parameter experimentally and will be able to analyze the data obtained experimentally to draw substantiate conclusions.


19/11/2018
Dr. UTTAM SHARMA
Professor & Head
Department of Physics
Shri Vaishnav Institute of Science


22/11/18

Director,
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Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya,
INDORE (M.P.)


Vice Chancellor
Shri Vaishnav Vidyapeeth
Vishwavidyalaya, Indore



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SYLLABUS-BCCA203

Unit-I: Properties of matter

Elasticity: Deformation, restoring force, stress, strain, Hooke's law, stress-strain diagram for some materials, breaking stress. Viscosity: Newton's law of viscosity, coefficient of viscosity, streamline and turbulent flow, critical velocity, Reynold's number, Stokes' law, determination of viscosity, factors affecting viscosity. Surface tension: Cohesive and adhesive forces, angle of contact, surface tension, capillary action

Unit-II: Electricity and Electromagnetism

Electricity and Electromagnetism: Coulomb's Law, Electric Field, Intensity of Electric field and Electric Potential, Capacitance, capacitors in series and parallel. Ohm's law, Resistance, Conductance, Resistivity, Conductivity, Electromagnetism: , magnetic field, magnetic flux, magnetic flux density, Biot-Savart law, magnetic field near straight conductor and at the centre of current carrying coil, problems.

Unit-III: Solid State & Nuclear Physics

Free electron model, Fermi level for Intrinsic and Extrinsic semiconductors, P-N junction diode, Zener diode, Tunnel diode, Solar-cells, Hall Effect, Nuclear Structure & Properties Nuclear models: Liquid drop with semi-empirical mass formula & shell model. Nuclear Fission and Fusion, Particle accelerators: Cyclotron, Betatron.

Unit-IV: Laser & Fibre Optics


Stimulated and Spontaneous Emission, Einstein's A&B Coefficients, Population Inversion, Pumping, Techniques of Pumping, Optical Resonator, Properties and Applications of Laser, Ruby, Nd:YAG, He-Ne lasers. Introduction to Optical fibre, Acceptance angle and cone, Numerical Aperture, V- Number

Unit-V: Wave Optics


Introduction to Interference, Fresnel's Bi-prism, Interference in Thin films, Newton's rings experiment, Michelson's interferometer and its application, Introduction to Diffraction and its Types, Diffraction at single slit, double slit, resolving power, Rayleigh criterion, Resolving power of grating

References:

1. *Fundamentals of Physics Extended* by D. Halliday, R. Resnik and Walker, Wiley, India, New Delhi, Eighth Edition
2. *Physics for scientists and Engineers* by R. A. Serway and Jr. J. W Jewett, Thomson Learning (Indian reprint)
3. *Engineering Physics* by H. J. Sawant, Technical Publications, Pune, Maharashtra.
4. *Engg Physics* by M.N. Avdhanulu & P.G. Kshirsagar, S.Chand & Co.Edition (2010).
5. *Fundamentals of Physics* by Halliday, Wiley, India.
6. *Concepts of Modern Physics* by Beiser, TMH, New Delhi.
7. *Solid State Physics* by Kittel, Wiley India.
8. *Atomic and Nuclear physics* by Brijlal and Subraminiyan.
9. *LASERSs and Electro Optics* by Christopher C. Davis, Cambridge Univ. Press (1996).
10. *Optoelectronics an Introduction* by J. Wilson & J.F.B.Hawkes, "" Prentice-Hall II Edition.
11. *LASER theory and applications* by A. K. Ghatak & Tyagarajan, TMH (1984).
12. *Optics* by Ghatak, TMH.


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