



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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*				
HU101	1	Foundation English I	60	20	20	0	20	3	0	2	4

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

***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

.Course Educational Objectives (CEOs): The students will be able to:

- Develop the second language learners' ability to enhance and demonstrate LSRW Skills.
- Enable students to acquire English Language Skills to further their studies at advanced levels.
- prepare students to become more confident and active participants in all aspects of their undergraduate programs


Course Outcomes (COs): The students should be able to:

- Enhance confidence in their ability to read, comprehend, organize, and retain written information.
- Write grammatically correct sentences for various forms of written communication to express oneself.

COURSE CONTENTS:

UNIT I

Communication: Nature, Meaning, Definition, Process, Functions and importance, Characteristics of Business Communication Verbal and Non Verbal Communication Barriers to Communication.


Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore


Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore



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UNIT II

Listening: Process, Types, Difference between Hearing and Listening, Benefits of Effective Listening Barriers to Effective Listening, Overcoming Listening Barriers, and How to Become an Effective Listener

UNIT III

Basic Language Skills: Grammar and usage- Parts of Speech, Tenses, S-V Agreement, Preposition, Article, Types of Sentence, Direct - Indirect, Active - Passive voice, Phrases & Clauses.

UNIT IV

Business Correspondence : Business Letters, Parts & Layouts of Business Letter, Resume and Job application , Application Calling/ Sending Quotations/ Orders/ Complaints. E-mail writing

UNIT V

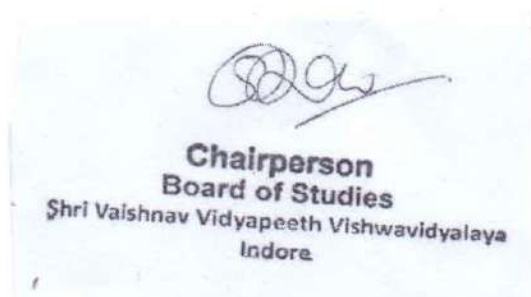
Précis Writing, Noting: The Purpose of Notes, Methods of Note-Taking, General Principles of Good Notes. Drafting: Notice, Agenda and Minutes. Advertisement: Importance, Types, Various Media of Advertising. Slogan Writing.

Practical:

- Self Introduction
- Reading Skills and Listening Skills
- Linguistics and Phonetics
- Role play
- Oral Presentation – Preparation & Delivery using Audio – Visual Aids with stress on body language and voice modulations.

Suggested Readings

- Ashraf Rizvi.(2005).*Effective Technical Communication*. New Delhi:Tata Mc Graw Hill
- A.J. Thomson and A.V. Martinet(1991).*A Practical English Grammar*(4th ed). Newyork: Ox- ford IBH Pub.
- Kratz, Abby Robinson (1995). *Effective Listening Skills*. Toronto: ON: Irwin Professional Publishing.
- Adair, John (2003). *Effective Communication*. London: Pan Macmillan Ltd.





Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

B. Sc. Physics Hons

I Sem

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment *	End Sem University Exam	Teachers Assessment *				
BSPH102	DC	General Properties of Matter	60	20	20	30	20	3	1	0	4

Course Objectives	<ol style="list-style-type: none"> To develop the comprehensive understanding of laws of physics related to General Properties of Matter and ability to apply them for laying the foundation for research and development. To work ethically as member as well as leader in a diverse team.
Course Ourcomes	<ol style="list-style-type: none"> Student will be able to understand and solve the problems related to General Properties of Matter. Student will be able to determine physical parameter experimentally with optimal usage of resources and complete the assignments in time.

Abbreviation		Teacher Assessment (Theory) shall be based on following components: Quiz / Assignment/ Project / Participation in class (Given that no component shall be exceed 10 Marks).
Th	Theory	
T	Tutorial	
P	Practical	Teacher Assessment (Practical) shall be based on following components: Viva / File / Participation in Lab work (Given that no component shall be exceed 50% of Marks).



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BSPH 102: General Properties of Matter

UNIT I: System of Many Particles

System of particles and equation of motion, Centre of mass for a system of particles, motion of the centre of mass, law of conservation of linear momentum for a system of one, two, n particles, law of conservation of angular momentum for a single particle, system of n particles and examples, recoil velocity on firing a bullet from a gun, motion of a boat or propulsion of an aeroplane, jet propulsion, motion of rocket. Keplers law of Planetary motion.

UNIT II: Rotational Dynamics

Motion of rigid body, rotatory motion, equations of rotationary motion of a particle under a constant angular acceleration, angular momentum and concept of moment of inertia in rotational motion, Newtons law of motion in rotational motion, Moment of inertia and its examples, radius of gyration, rotatinal kinetic energy, relation between Torque and moment of inertia, Kinetic energy of rotation, Theorem of parallel axis, theorem of perpendicular axis.

UNIT III: Elasticity

Elasticity, Effect of temperature and impurities on elasticity of a substance; small deformation, Stress and Strain; Hook's law, elasticity constants for an isotropic solid, Young's modulus, Bulk Modulus, Modulus of rigidity, Poission's ratio, Relationship between the various elastic moduli. Bending of beam and bending moment, Cantilever, transverse oscilations of a cantilever, torsion of cylinder.

UNIT IV: Oscillations

SHM: Simple Harmonic Oscillations, Differential equation of SHM and its solution. Kinetic energy, potential energy, total energy and their time-average values. Damped oscillation. Forced oscillations: Transient and steady states; Resonance, sharpness of resonance; power dissipation and Quality Factor, motion of simple pendulum, motion of compound pendulum, motion of mass connected with spring, motion of torsional pendulum,

UNIT V: Fluid Mechanics

Ideal and Viscous fluid, Stream line and Turbulent flow, Reynold's number, Rotational and irrotatinal flow, Equation of continuity, Bernoulli's theorem and its application, Stokes law, viscous flow of fluids,



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Effect of pressure and temperature on the coefficient of viscosity, Poiseuille's formula, Intermolecular forces-cohesive and adhesive forces, Surface tension, Surface energy, Effect of temperature and impurities on the surface tension, Angle of contact; expression for pressure on a curved surface,

REFERENCES

1. Mathur, D.S. : Mechanics (S. Chand)
2. Mechanics, Berkeley Physics, vol.1, C.Kittel, W.Knight, et.al. 2007, Tata McGraw-Hill.
3. Berkley Physics Course vol. I (Mechanics)
4. Halliday and Resnic; Physics, vol. I
5. Keppler and Kolenkow; Classical Mechanics
6. Halliday and Resnick; Physics, vol. I
7. Klepper and Kolenkow; Classical Mechanics.

List of experiments

1. To verify laws of Perpendicular axes for moment of inertia.
2. To determine Acceleration due to gravity using compound pendulum.
3. To determine Coefficient of Viscosity of fluid using Stoke's law.
4. To determine Young's Modulus using Cantilever method.
5. To determine Surface Tension by Jaeger's method.
6. To determine Coefficient of Viscosity of fluid using Poiseuille's method.
7. To determine Modulus of rigidity by Torsional pendulum.
8. To determine Young's Modulus of long wire by Searl's method.
9. To determine Poisson's ratio of rubber tube.
10. To determine the force constant of the given spring and to verify that the force constant of a parallel combination of spring.



Shri Vaishnav Vidyapeeth Vishwavidyalaya

Bachelor of Science (PCM, LS, BT)

SEMESTER I

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BSCH103	DC	Physical Chemistry I	3	1	4	6	60	20	20	30	20

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

***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:

1. To give basic knowledge of state of matter.
2. To understand and apply the knowledge of equilibria.

Course Outcomes:

After completion of this course the students are expected to be able to demonstrate following knowledge, skills and attitudes. The student will demonstrate capability of

CO1. Theoretical understanding of various state of matter.

CO2. Became aware of the importance of equilibria and its laws in the field of chemistry and dealing with its numerical approach.

Syllabus:

UNIT I

Gaseous state:

Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation; collision frequency; collision diameter; mean free path and viscosity of gases, including their temperature and pressure dependence, relation between mean free path and coefficient of viscosity, calculation of σ from η ; variation of viscosity with temperature and pressure.

Maxwell distribution and its use in evaluating molecular velocities (average, root mean square and most probable) and average kinetic energy, law of equipartition of energy, degrees of freedom and molecular basis of heat capacities.

Behavior of real gases : Deviations from ideal gas behavior, compressibility factor, Z, and its variation with pressure for different gases. Causes of deviation from ideal behaviour. vander Waals equation of state, its derivation and application in explaining real gas behaviour.

UNIT II

Liquid state:

Qualitative treatment of the structure of the liquid state; Radial distribution function; physical properties of liquids; vapour pressure, surface tension and coefficient of viscosity, and their



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Bachelor of Science (PCM/LS/BT)

SEMESTER I

determination. Effect of addition of various solutes on surface tension and viscosity. Explanation of cleansing action of detergents. Temperature variation of viscosity of liquids and comparison with that of gases. Qualitative discussion of structure of water.

UNIT III

Solid state:

Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitative idea of point and space groups, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, a simple account of rotating crystal method and powder pattern method.

Analysis of powder diffraction patterns of NaCl, CsCl and KCl. Defects in crystals. Glasses and liquid crystals.

UNIT IV

Ionic equilibria:

Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect; dissociation constants of mono-, di- and tri-protic acids (exact treatment). Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions; derivation of Henderson equation and its applications; buffer capacity, buffer range, buffer action and applications of buffers in analytical chemistry and biochemical processes in the human body. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle.

UNIT V

Phase equilibria:

Definitions of phase, component and degrees of freedom. Phase rule and its derivations. Definition of phase diagram. Phase equilibria for one component system – water, CO₂. First order phase transition and Clapeyron equation; Clausius-Clapeyron equation - derivation and use. Solid-liquid phase diagram. Eutectic mixture.

Reference Books:

1. Atkins, P. W. & Paula, J. de Atkin's Physical Chemistry 8th Ed., Oxford University Press (2006).
2. Ball, D. W. Physical Chemistry Thomson Press, India (2007).
3. Castellan, G. W. Physical Chemistry 4th Ed. Narosa (2004).
4. Mortimer, R. G. Physical Chemistry 3rd Ed. Elsevier: NOIDA, UP (2009).



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Name of the Program: B. Sc. (Plain)

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMA104	DC	Classical Algebra	60	20	20	-	-	3	1	-	4

Course Objective

To introduce the students with the Fundamentals of the Classical Algebra.

Course Outcomes

After the successful completion of this course students will be able to

- 1. understand and apply the basics of the complex numbers.*
- 2. find the roots of the polynomial equations.*
- 3. apply the techniques of the algebra of the determinants.*
- 4. solve the problems of the Matrices.*

Course Content:

UNIT – I

Complex Numbers: De Moivre's theorem and its application, Exponential function, Cosine and sine function, Logarithms of a complex number, Definition of a_z ($a \neq 0$), Inverse circular function, hyperbolic function.

UNIT – II

Polynomials: Fundamental Theorem of Classical Algebra (Statement only). Polynomials with real co-efficients: The n th degree polynomial equation has exactly n roots. Nature of roots of an equation (Surd or Complex roots occur in pairs). Statement of Descartes's Rule of signs and its applications. Statements of (i) If the polynomial $f(x)$ has opposite signs for two real values of x , e.g. a and b , the equation $f(x) = 0$ has an odd number of real roots between a and b ; if $f(a)$ and $f(b)$ are of same sign, either no real root or an even number of roots lies between a and b . (ii) Rolle's Theorem and its direct



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applications. Relation between roots and coefficients. Symmetric functions of roots
Transformations of equations. Cardan's method of solution of a cubic.

UNIT – III

Determination up to third order: Properties, co-factor & minors, product of two determinants, Adjoint, Symmetric and Skew-symmetric determinants. Determinants solution of linear equations not more than three variables by Cramer's rule.

UNIT – IV

Matrices of real numbers: Equality of two matrices, Addition of matrices, Multiplication of matrices by a scalar, Associative properties, Transpose of matrix and its properties: Inverse of non-singular square matrix, Symmetric and Skew-symmetric matrices, Scalar matrix, Orthogonal matrix, Elementary operation on matrices.

UNIT – V

Rank of matrix: Determination of rank either by considering minors or sweep out method, Consistency and solution of a system of linear equations with not more than three variables by matrix method.

Texts:

1. The Theory of Equations (Vol. I) – Burnside and Panton.
2. Higher Algebra – Barnard and Child.
3. Higher Algebra – Kurosh (Mir).
4. Modern Algebra – Surjeet Singh & Zameruddin.
5. First Course in Abstract Algebra – Fraleigh.
6. Topics in Algebra – Herstein.
7. Test book of algebra – Leadership Project Committee (University of Bombay).
8. Elements of Abstract Algebra – Sharma, Gokhroo, Saini (Jaipur Publishing House, S.M.S. Highway, Jaipur - 3).
9. Abstract Algebra – N. P. Chaudhuri (Tata Mc.Graw Hill).
10. Linear Algebra – Hadley
11. Test Book of Matrix – B. S. Vaatsa



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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMA105	DC	Analytical geometry of two dimensions.	60	20	20	-	-	3	1	-	4

Course Objective

To introduce the students with the Fundamentals of the Analytical geometry of two dimension.

. Course Outcomes

After the successful completion of this course students will be able to

- 1. understand and apply the basics of the Transformations of Rectangular Axes.*
- 2. know the fundamental principles of the classification & tracing of conics and apply them.*
- 3. solve the problems of the pair of straight lines.*
- 4. know the general properties of the conics.*
- 5. find the Polar Equation of conics.*

Course Content:

UNIT – I

Transformations of Rectangular Axes: Translation, Rotation and their Combinations, Invariants.

. UNIT – II

General Equation of second degree in x & y: Reduction to canonical forms: Classification of conics.



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UNIT – III

Pairs of Straight Line: Condition that the general equation of second degree in x and y may represent two straight lines, Point of intersection of two intersecting straight lines, Angle between two lines given by $ax^2 + 2hxy + by^2 = 0$. Equation of bisectors. Equation of two lines joining the origin to the points in which a line meets a conic.

UNIT – IV

Equation of pair of tangents from an external point, chord of contact, poles & polars in case of general conic: Particular cases for parabola, Ellipse, Circle, Hyperbola.

UNIT – V

Polar Equation of conics: Polar equation of straight line. Polar equation of circle. Polar equation of a conic referred to a focus as a pole. Equation of chord joining two points: Equation of Tangent and normal.

Texts:

1. Co-ordinate Geometry – S. L. Loney.
2. Co-ordinate Geometry of Three Dimensions – Robert J. T. Bell.
3. Elementary Treatise on Conic sections – C. Smith.
4. Solid Analytic Geometry – C. Smith.
5. Higher Geometry – Efimov.