Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav School of Management

Choice Based Credit System (CBCS) in Light of NEP-2020
BBA+MBA - II SEMESTER (2022-2026)

ML307 ENVIRONMENTAL MANAGEMENT AND SUSTAINABILITY

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML307	AECC	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **AECC**- Ability Enhancement Compulsory Course

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

Course Objective

1. To create awareness towards various environmental problems.
2. To create awareness among students towards issues of sustainable development.
3. To expose students towards environment friendly practices of organizations.
4. To sensitize students to act responsibly towards environment.

Examination Scheme

The internal assessment of the students' performance will be done out of 40 Marks. The semester Examination will be worth 60 Marks. The question paper and semester exam will consist of two sections A and B. Section A will carry 36 Marks and consist of five questions, out of which student will be required to attempt any three questions. Section B will comprise of one or more cases / problems worth 24 marks.

Course Outcomes

1. The course will give students an overview of various environmental concerns and practical challenges in environmental management and sustainability.
2. Emphasis is given to make students practice environment friendly behavior in day-to-day activities.

COURSE CONTENT

UNIT I: Introduction to Environment Pollution and Control

1. Pollution and its types (Air, Water, and Soil): Causes, Effects and Control measures
2. Municipal Solid Waste: Definition, Composition, Effects
3. Electronic Waste: Definition, Composition, Effects
4. Plastic Pollution: Causes, Effects and Control Measures

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Shri Vaishnav Vidyapeeth	Shri Vaishnav Vidyapeeth	Vishwavidyalaya, Indore	Vishwavidyalaya, Indore
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Choice Based Credit System (CBCS) in Light of NEP-2020
BBA+MBA - II SEMESTER (2022-2026)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML307	AECC	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical: C - Credit; AECC- Ability Enhancement Compulsory Course

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

UNIT II: Climate Change and Environmental Challenges

1. Global Warming and Green House Effect
2. Depletion of the Ozone Layer
3. Acid Rain
4. Nuclear Hazards

UNIT III: Environmental Management and Sustainable Development

1. Environmental Management and Sustainable Development: An overview
2. Sustainable Development Goals (17 SDGs)
3. Significance of Sustainable Development
4. Environment Friendly Practices At Workplace and Home (Three Rs' of Waste Management, Water Conservation, Energy Conservation)

UNIT IV: Environmental Acts

1. The Water (Prevention and Control of Pollution) Act, 1974: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
2. The Air (Prevention and Control of Pollution) Act, 1981: Objectives, Definition of Pollution under this act, Powers and Functions of Boards
3. The Environment (Protection) Act, 1986: Objectives, Definition of important terms used in this Act, Details about the act.
4. Environmental Impact Assessment: Concept and Benefits

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COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
ML307	AECC	Environmental Management and Sustainability	60	20	20	0	0	4	0	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical: **C** - Credit; **AECC**- Ability Enhancement Compulsory Course

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

UNIT V: Role of Individuals, Corporate and Society

1. Environmental Values
2. Positive and Adverse Impact of Technological Developments on Society and Environment
3. Role of an individual/ Corporate/ Society in environmental conservation
4. Case Studies: The Bhopal Gas Tragedy, New Delhi's Air Pollution, Arsenic Pollution in Ground Water (West Bengal), Narmada Valley Project, Cauvery Water Dispute, Fukushima Daiichi Disaster (Japan), Ozone Hole over Antarctica, Ganga Pollution, Deterioration of Taj Mahal, Uttarakhand flash floods

Suggested Readings:

1. Rogers, P.P., Jalal, K.F. , Boyd, J.A.(Latest Edition) . **An Introduction to Sustainable Development.** Earthscan
2. Kalam, A.P.J. (Latest Edition) . ***Target 3 Billon: Innovative Solutions Towards Sustainable Development.*** Penguin Books
3. Kaushik , A. and Kaushik (Latest Edition). ***Perspectives in Environmental Studies***. New Delhi:
   New Age International Publishers.
4. Dhameja, S.K. (Latest Edition). ***Environmental Studies***. S.K. Kataria and Sons.New Delhi
5. Bharucha, E. (Latest Edition). ***Environmental Studies for Undergraduate Courses.*** New Delhi: University Grants Commission.
6. Wright, R. T. (Latest Edition). ***Environmental Science: towards a sustainable future*** .New Delhi: PHL Learning Private Ltd.
7. Rajagopalan, R. (Latest Edition). ***Environmental Studies***. New York: Oxford University Press.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSCMT 201	DC	Integral Calculus	60	20	20	-	-	3	0	-	3

Course Objective

To introduce the students with the Fundamentals of the Integral Calculus and its applications

Course Outcomes

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

1. *Apply the techniques of Integration.*
2. *Find the solution of the problems based on revolution of curve.*
3. *Learn about the basic concepts of Beta Gamma function.*
4. *Construct the solution of problems based on length, area and volume.*

Course Content:

UNIT – I

Integration of the form: $\int \frac{1}{a\cos x+b\sin x+c}dx$, $\int \frac{a\cos x+b\sin x+c}{p\cos x+q\sin x+r}dx$ and Integration of Rational functions, six important integral, Reduction formulae of $\int \sin^m x\, dx, \int \cos^m x\, dx, \int \tan^m x\, dx, \int \sin^m x\, \cos^n x\, dx, \int \frac{\sin^m x}{\cos^n x}dx$ and associated problems (m and n are non-negative integers)

UNIT – II

Reduction formulae for $\int \cot^m x\, dx, \int \mathrm{cosec}^m x\, dx, \int \sec^m x\, dx$, Properties of definite integrals, Integration as the limit of a sum.

UNIT – III

Quadrature, Rectification, Surface, and volume formed by revolution of plane curves.

UNIT – IV

Double and triple integrals, application of double and triple integrals and change of order of integration.

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

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSCMT 201	DC	**Integral Calculus**	60	20	20	-	-	3	0	-	3

UNIT – V

Beta function, Gamma functions, relation between beta and gamma functions, Evaluation of integrals with the help of beta and gamma functions.

Reference Books:

1. Integral Calculus: Gorakh Prasad, Pothishala Pvt. Ltd. Allahabad.
2. Integral Calculus: Shantinarayan and P. K. Mittal, S. Chand & Co. Ltd.
3. Integral Calculus: H. S. Bhami , New Age International
4. Advanced Calculus – David V. Widder (Prentice Hall)
5. Differential & Integral Calculus (Vols. I & II) – Courant & John.
6. Differential & Integral Calculus (Vol. I) – N. Piskunov (CBS Publishers &Distributors).
7. Calculus, Vol. I-II, T.M. Apostol, Wiley.

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

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSCMT 202	DC	Abstract Algebra	60	20	20	-	-	3	0	-	3

Course Objective

To introduce the students with the fundamentals of the Abstract Algebra.

Course Outcomes

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

1. *Understand the basics of the Group theory*
2. *Apply the concept of decomposition to the group structure.*
3. *Apply the concepts of the homomorphism and isomorphism theorems.*
4. *Justify the role of Group theory.*

Course Content:

UNIT – I
Definition and Basic Properties of Groups, Subgroups.

UNIT – II
Order of groups and its elements, Subgroups Generated by an Element and Subset. Cyclic Groups and Simple Properties, Coset Decomposition, Lagrange's Theorem.

UNIT – III
Fermat's Theorem, Normal Subgroups, Quotient Groups, Groups of Permutations, Orbits, Cycles and Alternating Group, Even and odd Permutation.

UNIT – IV
Cayley's Theorem. Homomorphism and Isomorphism of Groups, Fundamental Theorem of Groups, Fundamental Theorem of Homomorphism, Kernel of Homomorphism, Isomorphism Theorem.

UNIT – V
Group Automorphism, Inner Automorphism, Group of Automorphisms, Conjugacy relation and Centralizer, Normalizer.

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

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSCMT 202	DC	Abstract Algebra	60	20	20	-	-	3	0	-	3

Reference Book:

1. John B. Fraleigh, A First Course in Abstract Algebra Narosa Publication.
2. Joseph A. Gallian, Contemporary Abstract Algebra, Cengage Learning.
3. M. Artin: Algebra, Pearson.
4. S. D. Dummit and M. R. Foote: Abstract Algebra, John Wiley
5. I. N. Herstein: Topics in Algebra, Wiley.
6. N.S. Gopalkrishnan, University Algebra, John Wiley & Sons.

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Shri Vaishnav Institute of Science

Name of Program: B.Sc. (Major : Chemistry)

(2022-2025)

COURSECODE	CATEGORY	COURSENAME	L	T	P	CREDITS	TEACHING& EVALUATIONSCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *
BSCCH201	**Major**	**Physical Chemistry I**	4	0	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 Educational Objectives (CEOs):

The subject aims to provide the student with:

1. To develop basic concepts regarding three states of matters.
2. To acquire required knowledge about concept of electromotive force and its applications.
3. To study the concept of ionization in aqueous solution, pH, Buffer, and application of ionization.
4. To understand phase, co-existence of Phases, Phase diagram.
5. To acquaint the students with practical knowledge of the concepts of Physical chemistry.

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. Derive mathematical expressions for different properties of gas, liquid, solids and understand their physical significance.

CO2. Became aware of the importance of Electrochemistry and its applications.

CO3. Explain the concept of ionization of electrolytes with emphasis on weak acid and base and hydrolysis of salt. Understand and explain the types of Phases, components, Gibb's phase Rule, Phase diagrams and applications.

CO4. Demonstrate a fundamental/systematic understanding of the practical field of Chemistry

SYLLABUS:

UNIT I

Gaseous state:

Gas Laws, Kinetic molecular model of a gas: postulates and derivation of the kinetic gas equation. Ideal and real gas, Deviations from ideal gas behavior, Causes of deviation from

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Name of Program: B.Sc. Chemistry

(2022-2025)

COURSECODE	CATEGORY	COURSENAME	L	T	P	CREDITS	TEACHING& EVALUATIONSCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *
BSCCH201	**Major**	**Physical Chemistry I**	4	0	4	6	60	20	20	30	20

ideal behavior. Van derWaal'sequationofstate.Maxwelldistributionanditsuseinevaluating molecular velocities (average, root mean square and most probable) and average kinetic energy. Collision frequency; Collision diameter; Mean free path.

UNITII

Liquid state:

Introduction, Qualitative treatment of the structure of the liquid state; Physical properties of liquids; vapor pressure, surface tension and coefficient of viscosity, and their determination. Effect of addition of various solutes on surface tension and viscosity.

Solid state:

Nature of the solid state, law of constancy of inter facial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, qualitativeideaofpointandspacegroups,sevencrystalsystemsandfourteenBravaislattices;X-raydiffraction, Bragg'slaw, a simple account of rotating crystal method and powder pattern method.

UNIT III

Electrochemistry

Quantitative aspects of Faraday's laws of electrolysis, rules of oxidation/reduction of ions based on half- cell potentials, applications of electrolysis in metallurgy and industry. Chemical cells, reversible and irreversible cells with examples. Electromotive force of a cell and its measurement, Nernst equation; Standard electrode (reduction) potential and its application to different kinds of half-cells. Qualitative discussion of potentiometric titrations (acid-base, redox, precipitation).

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). Salthydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts.

COURSECODE	CATEGORY	COURSENAME	L	T	P	CREDITS	TEACHING& EVALUATIONSCHEME				
							THEORY		PRACTICAL		
							END SEM University Exam	Two Term Exam	Teachers Assessment *	END SEM University Exam	Teachers Assessment *
BSCCH201		**Physical Chemistry I**	4	0	4	6	60	20	20	30	20

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. Eutecticmixture.

List of Practical:
Practical: (Credits: 2, Laboratory periods: 04)
Surface tension measurements using Stalagmometer.

1. Determine the surface tension of aqueous solutions by (i) drop number (ii) drop weight method.
2. Study the variation of surface tension with different concentration of detergent solutions. Determine CMC.

Viscosity measurement using Ostwald's viscometer.

3 Determination of co-efficient of viscosity of an unknown aqueous solution.
4 Estimation of iron by potentiometry.
5 To purify a given sample of phthalic acid by sublimation.
6. Conductometric titration -determination of strength of an acid.
7. To verify Lambert-Beer's law for K2Cr2 O7 by Colorimetrically.

pH-metry:

8. Determination of the strength of a given hydrochloric acid solution against a standard sodium hydroxide solution. (pH metric titration)
9. Preparation of buffer solutions of different pH values (a) Sodium acetate-acetic acid (b) Ammonium chloride-ammonium hydroxide
10. Study of Phase diagram of Phenol-Water system

Reference Books:

1. Atkins, P.W.&Paula,J.deAtkin'sPhysicalChemistry8thEd.,OxfordUniversityPress(2006).
2. Ball, D. W. Physical Chemistry Thomson Press, India (2007).3.Castellan,G. W.PhysicalChemistry4thEd.Narosa(2004).
4. Mortimer,R.G.PhysicalChemistry3rdEd.Elsevier:NOIDA,UP(2009).

Practical:

1. Khosla, B.D.; Garg, V.C.; Gulati, A. (2015),Senior Practical Physical Chemistry, R. Chand & Co, New Delhi.
2. Kapoor, K.L. (2019),A Textbook of Physical Chemistry, Vol.7, 1st Edition, McGraw Hill Education.
3. Garland, C. W.; Nibler, J. W.; Shoemaker, D. P.(2003),Experiments in Physical Chemistry, 8th Edition, McGraw-Hill, New York

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Physical Sciences	**Science**		

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Choice Based Credit System (CBCS) in Light of NEP

Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assesment	End Sem University Exam	Teachers Assessment				
BSCPH201	DC	Electrostatics, Magnetostatics and Electrodynamics	60	20	20	30	20	4	0	0	4

Course Objectives	1. To develop theoretical basis of Electrostatic and Magnetostatics. 2. To brief the basic concepts of Electrodynamics. 3. To prominence the understanding of current electricity using basic principles continuity equation and Kirchhoff's laws 4. To solve Numerical problems based on the course.
Course Outcomes	1. Students will have theoretical understanding of Electrostatic and Magnetostatics. 2. The student will acquire the knowledge of Electrodynamics. 3. Students can apply the continuity equation and Kirchhoff's laws principles to understand the concept of current electricity. 4. Students will be able to solve Numerical problems based on the course.

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	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).
P	Practical	

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Choice Based Credit System (CBCS) in Light of NEP

Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

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				
BSCPH201	DC	Electrostatics, Magnetostatics and Electrodynamics	60	20	20	30	20	4	0	0	4

UNIT I: Electrostatics

Coulombs law, Electric field E of charge at rest, dipole and quadruple. Gauss's law and its application, Capacitors, conducting sphere in a uniform electric field, point charge in front of a grounded infinite conductor. Dielectrics, parallel plate capacitor with a dielectric. Dielectric constant, Polarization and polarization vector P, relation between displacement vector D, E and P.

UNIT II: Magnetostatics

Force on a moving charge. Lorentz force equation and definition of B, Magnetic dipole moment, Angular momentum and gyromagnetic ratio. Calculation of H for simple geometrical situations such as Solenoid, Anchor ring. Ampere's Law, $\nabla \times B = \mu_0 J$, $\nabla . B = 0$. Field due to a magnetic dipole, free and bound currents, magnetization vector (M), relationship between B, H and M.

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Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

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			Theory			Practical		Th	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment	End Sem University Exam	Teachers Assessment				
BSCPH201	DC	Electrostatics, Magnetostatics and Electrodynamics	60	20	20	30	20	4	0	0	4

UNIT III: Current Electricity

Steady current, current density J, non-steady currents and continuity equation. Kirchhoff's laws and analysis of multiloop circuits. growth and decay of current in LR and CR circuits, decay constants. LCR circuits. AC circuits. complex numbers and their applications in solving AC circuits problems. complex impedance and reactance, series and parallel resonance. Q-factor, power consumed by an A.C. circuit, power factor, Y and ∇ network and transmission of electric power.

UNIT IV: Motion of Charged Particles

E as an accelerating field, electron gun, discharge tube, linear accelerator, E as deflecting field, Principle and working of cyclotron, CRO, Sensitivity of CRO, Transverse B field, Mass spectrograph (Bainbridge Mass spectrograph), curvatures of tracks for energy determination for nuclear particles, mutually parallel E & B fields; Discovery of isotopes, principle of magnetic focusing (lenses).

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Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

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				
BSCPH201	DC	Electrostatics, Magnetostatics and Electrodynamics	60	20	20	30	20	4	0	0	4

UNIT V: Electrodynamics

Electromagnetic induction, Faraday's Laws, Electromotive force, integral and differential forms of Faraday's laws. Self and mutual inductance. Transformers. Energy in a static magnetic field, Maxwell's displacement current. Derivations of Maxwell's equations, Electromagnetic field energy density. Poynting vector. Electromagnetic wave equation. Plane electromagnetic waves in vacuum and dielectric media, Reflection at a plane boundary of dielectrics.

REFERENCES

1. Berkley Physics Course. Electricity and Magnetism Ed. E. M. Purcell Megraw Hill
2. Physics Volume 2, D. Halliday and R. Resnick
3. Introduction to Electrodynamics: D. J. Griffiths, 4" Edition, Printice Hall.
4. Electricity and Magnetism: S. S$. Atwood Dover.
5. Electrodynamics: Emi Cossor and Bassin Lorraine. Asahi Shimbunsha Publishing Ltd.

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Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

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				
BSCPH201 (P)	DC	Physics Laboratory	-	-	-	30	20	0	0	4	2

Course Objectives

1. To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.
2. To learn the usage of basic principles of electricity for various measurements.
3. To apply and experimentally verify the various theorems of current electricity.
4. Apply the analytical techniques and graphical analysis to the experimental data.
5. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.

Course Outcomes

1. To gain practical knowledge by applying the experimental methods to correlate with the Physics theory.
2. To learn the usage of basic principles of electricity for various measurements.
3. To apply and experimentally verify the various theorems of current electricity.
4. Apply the analytical techniques and graphical analysis to the experimental data.
5. To develop intellectual communication skills and discuss the basic principles of scientific concepts in a group.

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

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Shri Vaishnav Institute of Science

Choice Based Credit System (CBCS) in Light of NEP

Department of Physics

B.Sc. Phys. II Sem

Major/ Minor

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 Assesment				
BSCPH201 (P)	DC	Physics Laboratory	-	-	-	30	20	0	0	4	2

List of Experiments

1. To study Series and Parallel resonance circuit.
2. Charging and discharging of capacitor through resistance.
3. Measurement of frequency of AC mains by electrically maintained vibrating rod.
4. Growth and decay of current in LR.
5. Verification of thevenin theorem.
6. Verification of Norton theorem.
7. Verfication of superposition theorem.
8. Verfication of maximum power transfer theorem.
9. To study of Lissaju figure using CRO.
10. Sensitivity of Cathod Ray Oscilloscope.

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BSCS203	Major/Minor	Object Oriented Programming with C++	60	20	20	0	0	4	0	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 Educational Objectives(CEOs):

- To familiarize the students with programming and to encourage them to develop their logic.
- To make students well versed with C++ language to solve problems efficiently.
- Using simple and well drawn illustrations develop their programming skills using modular programming.

Course Outcomes (COs): Student will be able to:

- Develop algorithms for problems.
- To understand the object Oriented paradigm
- Apply the programming concepts to solve the given problems.
- Write the programs using modular programming.
- Understand and write programs using various data structures very efficiently.
- Write the programs using pointers and to manage memory.
- To apply the knowledge of Object Oriented Methodology to write reusable code.
- Implement programs of file handling.

UNIT I

Object-Oriented Programming Concepts: Introduction, comparison between procedural programming paradigm and object-oriented programming paradigm, basic concepts of object-

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oriented programming — concepts of an object and a class, interface and implementation of a class, operations on objects, relationship among objects, abstraction, encapsulation, data hiding, inheritance, overloading, polymorphism, messaging.

UNIT II

Standard Input/output: Concept of streams, hierarchy of console stream classes, input/output using overloaded operators >> and << and member functions of i/o stream classes, formatting output, formatting using ios class functions and flags, formatting using manipulators.

UNIT III

Classes and Objects: Specifying a class, creating class objects, accessing class members, access specifiers, and static members, use of const keyword, friends of a class, empty classes, nested classes, local classes, abstract classes, container classes, bit fields and classes.

UNIT IV

Pointers and Dynamic Memory Management: Declaring and initializing pointers, accessing data through pointers, pointer arithmetic, memory allocation (static and dynamic), dynamic memory management using new and delete operators, pointer to an object, this pointer, pointer related problems - dangling/wild pointers, null pointer assignment, memory leak and allocation failures.

UNIT V

Constructors and Destructors: Need for constructors and destructors, copy constructor, dynamic constructors, explicit constructors, destructors, constructors and destructors with static members, Overloading operators, rules for overloading operators, overloading of various operators, type conversion - basic type to class type, class type to basic type, class type to another class type

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BSCS203	Major/Minor	Object Oriented Programming with C++	60	20	20	0	0	4	0	0	4

Text Books

- Lafore R. "Object Oriented Programming in C++", Galgotia Pub.
- Lee "UML & C++ a practical guide to Object Oriented Development 2 ed, Pearson.
- Scheildt "C++ the complete reference 4ed, 2003.
- Hans Erit Eriksson, "UML 2 toolkit" Wiley.
- Balagurusawmy , "Object Orienter Programming with C++".

References

- B.G., Boach "Object Oriented Analysis & Design with Applications", Addision Wesly.
- S. Parate "C++ Programming", BPB. 8. Boggs "Mastering UML" BPB Publications.
- Mastering C++ by Venugopal TMH

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
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			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BSCL207	Major/Minor	Programming Lab in C++	0	0	0	30	20	0	0	4	2

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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BSCL207	Major/Minor	Programming Lab in C++	0	0	0	30	20	0	0	4	2

Practical's List

1. Write a program in C++ using (i) if-then-else (ii) loops
2. Write a program illustrate Function in C++
3. Write a program for Operator overloading in C++
4. Write a program for nested function call.
5. Write a program of call by value using C++
6. Write a program of call by reference using C++
7. Write a program for Inline Function.
8. Write a program for Friend Function.
9. Write a program of dynamic memory management using new and delete.
10. Write a program on file handling using C++
11. Write a program to demonstrate the use of zero argument and parameterized constructors.
12. Write a program to demonstrate the use of dynamic constructor.
13. Write a program to demonstrate the use of explicit constructor.
14. Write a program to demonstrate the overloading of increment and decrement operators.
15. Write a program to demonstrate the overloading of binary arithmetic operators.

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BSCL207	Major/Minor	Programming Lab in C++	0	0	0	30	20	0	0	4	2

16. Write a program to demonstrate the typecasting of basic type to class type.
17. Write a program to demonstrate the typecasting of class type to basic type.
18. Write a program to demonstrate the multilevel inheritance.
19. Write a program to demonstrate the multiple inheritance.
20. Write a program to demonstrate the virtual derivation of a class.
21. Write a program to demonstrate the runtime polymorphism.

Text Books

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Fundamentals of Computers : V Rajaraman, PHI

3. Yashavant P. Kanetkar. “Let Us C”, BPB Publications, 2011.
4. Robert Lafore, “Object Oriented Programming in C++”, SAMS Publication.

References

1. Fundamentals of Computers : E Balagurusamy, TMH
2. Basic Computer Engineering: Silakari and Shukla, Wiley India
3. Fundamentals of Computers : V Rajaraman, PHI
4. Information Technology Principles and Application: Ajoy Kumar Ray & Tinku Acharya PHI.