Syllabus-2023-2024

(SOS)(BSc_PCM)

Title of the Course	AEC3
Course Code	AEC0301[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					2	0	0	2

Course Type	Theory only

Course Category	Ability Enhancement Courses

Pre-Requisite/s	The students have a basic knowledge and understanding of the English language and communication.	Co-Requisite/s	Basic Understanding of English Language.

Course Outcomes & Bloom's Level	**CO1-** Determine interpersonal skills and be an effective goal-oriented team player.**(BL1-Remember)** **CO2-** Elaborate creativity and lateral thinking.**(BL2-Understand)** **CO3-** Examine attitudes, emotional intelligence and understand its influence on behavior.**(BL3-Apply)** **CO4-** Justify approaches to conflict resolution**(BL4-Analyze)** **CO5-** Evaluate goal setting, management, decision-making skills**(BL5-Evaluate)**

Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✓ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
Module 1	Communication : Definition, Process, Barriers in the Process of Communication Types, Principles of Effective Communication, Speech, , Debate, Telephonic Conversation, Extempore	Classroom Lecture, PPts, Videoes	6
Module 2	Language Know-how Common Errors Learning through examples Functional Grammar& Contemporary usage	Classroom Lecture, PPts, Videoeslassroom Lecture, PPts, Videoes	6
Module 3	Paragraph Development Techniques Principles &Methods Instruments for Cohesive Writing Creating Mind Maps/Info graphic	Classroom Lecture, PPts, Videoes	6
Module 4	Writing skills Introduction to writing skills. Tone ,Orientation, Attitude,Formal vs Informal,general writing,technical writing Letter/ Application/e-mail, Format, and content Indianian Email Writing Writing for the Web:Do's & Don'ts of Email Writing,Netiquette	Classroom Lecture, PPts, Videoes	8
Module 5	Resume Writing -Concept, types, and Application Curriculum Vitae:difference between Resume and CV Interview Skills Group Discussion and Debate	Classroom Lecture, PPts, Videoes	6

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
NA	NA	PBL		NA

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	22
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation

Part E

Books	Technical Communication – Principles and Practices by Meenakshi Raman & Sangeeta Sharma, Oxford Univ. Press, 2007, New Delhi.
Articles	Business Communication By Lesikar, Flatley, & Rentz (11th, Eleventh Edition), by Raymond Lesikar / Marie Flatley / Kathryn Rentz
References Books	C. Muralikrishna and S. Mishra (2011) Communication Skills for Engineers, Pearson education. ISBN: 9788131733844.
MOOC Courses	https://nptel.ac.in/courses/109103020
Videos	https://nptel.ac.in/courses/109103020

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2 - - - 2 2 - - - 2 - - 1 -	-	-	-	2	2	-	-	-	2	-	-	1	-	1
CO2	2	2	1	2	2	2	-	-	-	2	-	-	1	-	3
CO3	2	1	1	-	1	-	-	-	-	2	-	-	3	2	3
CO4	3	2	-	2	1	-	-	-	-	2	-	-	2	3	3
CO5	3	2	-	2	1	-	-	-	-	2	-	-	2	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_PCM)

Title of the Course	Inorganic Chemistry
Course Code	BSCH0301[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					3	0	1	4

Course Type	Embedded theory and lab
Course Category	Discipline Core

Pre-Requisite/s	knowledge of Coordination bonding in complexes Transition elements and their properties	Co-Requisite/s	

Course Outcomes & Bloom's Level	**CO1-** To remember Knowledge of Transition elements, Acids and Bases, Oxidation and reduction, Complexes , Lanthanides, Actinides**(BL1-Remember)** **CO2-** To understand Properties and uses of Transition elements, Coordination compounds, Acids and Bases , Non aqueous solvents Lanthanides, Actinides**(BL2-Understand)** **CO3-** To Apply the Transition elements, Complexes, Lanthanides, Actinides in the different application**(BL3-Apply)** **CO4-** To inspect the Structure , Bonding ,Magnetic Properties of Transition elements, Complexes**(BL4-Analyze)** **CO5-** To Assess the results analyzed**(BL5-Evaluate)**

Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
Module 1	Chemistry of Elements of First Transition Series: Characteristic properties of d-block elements Properties of the elements of the first transition series, their binary compounds such as Carbides, Oxides and Sulphides Complexes illustrating relative stability of their oxidation states, co-ordination number and geometry	Stoy telling activity Mnemonics Experienced examples, Quizzes Summarizing, PPT's Leaving Questions	8
Module 2	UNIT – II: Chemistry of Elements of second and Third Transition Series: General characteristics, Periodic Properties Atomic Radii Ionic Radii Ionization Energy comparative treatment with their 3d-analogues in respect of ionic radii, oxidation states, magnetic behavior, spectral properties and stereochemistry	Mnemonics , Experienced examples, , Videos , PPT's Quizes	8
Module 3	UNIT – III: A. Co-ordination Compounds Werner's co-ordination theory and its experimental verification, effective atomic number concept, chelates, nomenclature of co-ordination compounds, isomerism in co-ordination compounds, valance bond theory of transition metal complexes theory of transition metal complexes B. Oxidation and Reduction Use of redox potential data: analysis of redox cycle, redox stability in water: Frost, latimer and Pourbaix diagrams, Principles involved in the extraction of element	Demonstrations, Videos, PPT's Quizes, Virtual labs Group discussions	8
Module 4	UNIT – IV A. Chemistry of Lanthanide Elements Electronic structure, oxidation states, ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds. B. Chemistry of Actinides General features and chemistry of actinides, chemistry of separation of Np. Pu and Am from U, similarities between the later actinides and the later lanthanides	Interactive videos PPT's Experienced examples, Quizzes', Mnemonics	8
Module 5	UNIT – V A. Acids and Bases Arrhenius, Bronsted- Lowry, the Lux-Flood, solvent system and lewis concepts of acids and bases B. Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH_3 and liquid SO_2	Interactive videos , PPT's Experienced examples, Quizzes', Seminar	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
Module 3	Synthesis of Complex and Double salt	PBL	BL3-Apply	6
Module 5	Non Aqueous Titration	PBL		8
Experiment	Identify the Acid Radical in given inorganic mixture	Experiments	BL3-Apply	2
Experiment	Identify the Acid Radical (Sulphate)in the given inorganic sample	Experiments	BL3-Apply	2
Experiment	Identify the Acid Radical (Sulphite)in a given inorganic sample	Experiments	BL3-Apply	2
Experiment	Identify the Acid Radical (Nitrite)in the given inorganic sample	Experiments	BL3-Apply	2
Experiment	Identify the Basic Radical (Zero group) in the given sample	Experiments	BL3-Apply	2
Experiment	Identify the Basic Radical (First Group) in the given sample	Experiments	BL3-Apply	2

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	40	12	60	
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	50	40	20	60	

Part E

Books	M.N.N Tandon Unified Chemistry 2010
Articles	
References Books	J.D.Lee Concise Inorganic Chemistry Fifth Edition
MOOC Courses	https://nptel.ac.in/courses/104101121
Videos	https://nptel.ac.in/courses/104101121

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	-	-	-	-	-	-	-	-	-	2	2	1
CO2	3	3	1	-	-	-	-	-	-	-	-	-	3	2	2
CO3	3	3	1	-	-	-	-	-	-	-	-	-	2	2	1
CO4	2	3	1	-	-	-	-	-	-	-	-	-	1	2	2
CO5	3	2	-	-	-	-	-	-	-	-	-	-	1	1	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_PCM)

Title of the Course	Vector Analysis & Linear Algebra
Course Code	BSMA0301[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					4	0	0	4

Course Type	Theory only
Course Category	Disciplinary Minor

Pre-Requisite/s	Basic knowledge of Matrix & vectors	Co-Requisite/s	Basic knowledge of LI, LD, dot and cross product

Course Outcomes & Bloom's Level	**CO1-** CO1: To get insight of fundamental knowledge of matrix, group theory and transformations.and basic concept of vector analysis **(BL1-Remember)** **CO2-** CO2: To understand various techniques to solve real life problems through examples. **(BL2-Understand)** **CO3-** CO3: To apply the concepts of matrix, vector space, linear transformation and Gauss theorem , stock theorem , green theorem and other concept of vector analysis on many branches of Physics, Engineering, Social sciences and Mathematics **(BL3-Apply)** **CO4-** CO4To analyze the concept of Gauss theorem , stock theorem , green theorem and other concept of vector analysis .**(BL4-Analyze)** **CO5-** CO5: To evaluate gradient ,divergence ,curl andInverse, Eigen value and Eigen vector of matrix **(BL5-Evaluate)**

Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	SDG (Goals)	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
Unit 1	Rank and Nullity of matrix, Solution of simultaneous equation by elementary transformation, consistency of equations, Eigen value and Eigen vectors, Calley Hamilton theorem, Inverse matrix, Digonlization.	Audio/Video clips, group discussion, lecture with PPTs, quiz	8
Unit 2	Definition and examples of vector spaces, subspaces, sum and direct sum of subspaces, Linear span, Linear dependence, Independence and their basic properties, Basis, Existence Theorem for basis, Extension theorem, Invariance of the number of elements of a basis, Dimension, Finite dimensional vector spaces, Existence of complementary subspaces of a subspace of a finite dimensional vector space, Dimension of sum of subspaces, Quotient space and its dimension.	Audio/Video clips, group discussion, lecture with PPTs, quiz	8
Unit 3	Linear transformations, Properties of linear transformation, Range and Kernel, The rank and nullity of linear transformations, Rank-Nullity theorem and its consequence, The matrix representation of a linear transformation, change of basic, dual space, bi-dual space and natural isomorphism, adjoint of a linear transformation.	Audio/Video clips, group discussion, lecture with PPTs, classroom presentations, Analysis	8
Unit 4	Scalar and vector product of three vectors, product of four vectors, Reciprocal vectors, vector differentiation, Gradient, Divergence and curl	Audio/Video clips, group discussion, lecture with PPTs, Quiz	8
Unit 5	Vector Integration, Greens Theorem, Stokes Theorems and Gauss divergence Theorem and problems based on them	Audio/Video clips, group discussion, lecture with PPTs, Quiz	8

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	22
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
0	0	0	0	0	0

Part E

Books	1. K.B. Datta, Matrix and Linear Algebra, Pratice Hall of India Pvt. Ltd. New Delhi, 2000 2. K. Haffiman and R. Kunze, Linear Algebra, 2nd Edition. Prentice Hall Englewood Cliffs. New Jersey,1971 N. Saran and S. N. Nigam,Introduction to Vector Analysis,Pothishala Pvt. Ltd. Allahabad
Articles	
References Books	1. Marc Lipson and Seymour Lipschutz, Schaum'S Outline Of Linear Algebra, Key College Publishing (Springer – Verlag) 2001 2. S, Kumarsaran, Linear Algebra, A Bermetric Approach Prentice Hall of India, 2000 Shanti Narayan,A Text Book of Vector Calculus,S. Chand & Co. New Delhi
MOOC Courses	https://onlinecourses.nptel.ac.in/noc24_ma13/preview
Videos	https://onlinecourses.nptel.ac.in/noc24_ma04/preview https://onlinecourses.nptel.ac.in/noc24_ee48/preview https://onlinecourses.nptel.ac.in/noc24_ma11/preview

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	1	-	-	-	-	-	-	-
CO2	3	3	1	3	3	2	-	-	-	-	-	-	-	-	-
CO3	3	2	-	1	3	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	1	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_PCM)

Title of the Course	Optics
Course Code	BSPH0301[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					3	0	1	4

Course Type	Embedded theory and lab

Course Category	Disciplinary Major

Pre-Requisite/s	Knowledge of Physics upto BSc first Year(Second semester)	Co-Requisite/s	Knowledge of Mathematics upto BSc first Year(Second semester)

Course Outcomes & Bloom's Level	**CO1-** To remember the basic laws of Optics**(BL1-Remember)** **CO2-** Understand the basic concepts of Optics**(BL2-Understand)** **CO3-** To apply the concepts of Optics to different system. **(BL3-Apply)** **CO4-** To Analyze the laws of Optics**(BL4-Analyze)** **CO5-** To evaluate the laws of Optics**(BL5-Evaluate)**

Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
1	Unit-I Geometric Optics and its applications: Ray optics, Plane and spherical Mirrors, Lens, image formation, Lens formula, combination of thin lenses and equivalent focal length. Dispersion and dispersive power, chromatic and achromatic aberration, need of multiple lenses in eyepieces, Ramsdens and Huygens eye-piece	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
2	Unit-II Interference: Principle of Superposition, Conditions for sustained interference, Theory of interference, Lloyd's mirror, Achromatic fringes. Interference in parallel and wedge shaped films, Colour of thin films. Newton's rings and Michelson interferometer and their applications. Multiple beam interference in parallel film and Fabry-Perot interferometer.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
3	Unit-III Diffraction: Frenel's diffraction, Zone plate, diffraction due to straight edge. Fraunhoffer diffraction due to single and double slits, plane transmission grating, Resolving power of grating, telescope and Microscope Diffraction Grating: Diffraction at N-parallel slits Intensity distribution, Plane diffraction grating, Concave grating and its mountings. Resolving power of a grating and comparison with resolving power of prism and of a Fabry Parot etalon.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
4	Unit-IV Polarization: Transverse nature of light waves, Polarization of electromagnetic waves, Plane polarized light – production and analysis, Description of Linear, circular and elliptical polarization. Propagation of em waves in anisotropic media, uniaxial and biaxial crystals, symmetric nature of dielectric tensor, Double refraction, Hygen's principle, Ordinary and extraordinary refractive indices, Fresnel's formula, light propagation in uniaxial crystal, Nicol prism, Production of circularly and elliptically polarized light, Babinet compensator and applications, Optical rotation, Optical rotation in liquids and its measurement through Polari meter.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
5	Unit-V Lasers and Photo Sensors A brief history of lasers, characteristics of laser light, Einstein prediction, Relationship between Einstein's coefficients (qualitative discussion only), Pumping schemes, Resonators, Ruby laser, He-Ne laser, Applications of lasers, Principle of Holography	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8

Part C

Modules	Title	Indicative-ABCA/PBL/ Experiments/Field work/ Internships	Bloom's Level	Hours
1	To find out the Focal length of combination of lenses with Nodal slide experiments	Experiments	BL3-Apply	3
2	To determine the wavelength of Sodium light by using Newtons ring experiments	Experiments	BL4-Analyze	3
3	To determine the wavelength of Laser light by using diffraction grating	Experiments	BL3-Apply	3
4	To determine the specific rotation of Sugar solution by using polarimeter	Experiments	BL3-Apply	3
5	To find the numerical aperture of given fiber	Experiments	BL3-Apply	3

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	50	60	30	40	

Part E

Books	Fundamental of Optics by N Subramanyam and Brijlal.
Articles	
References Books	(i) Principles of Optics by BK Mathur, (ii) Optics by Ajay Ghatak
MOOC Courses	(i) https://nptel.ac.in/courses/115107131 (ii)https://nptel.ac.in/courses/115107131 (iii) https://nptel.ac.in/courses/115107095
Videos	(i) https://nptel.ac.in/courses/115107131 (ii)https://nptel.ac.in/courses/115107131 (iii) https://nptel.ac.in/courses/115107095

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	2	3	2	1	-	-	-	-	-	-	-	-	-	-
CO2	2	1	3	2	-	-	-	-	-	-	-	-	-	-	-
CO3	2	1	3	2	2	-	-	-	-	-	-	-	-	-	-
CO4	1	2	3	2	2	-	-	-	-	-	-	-	-	-	-
CO5	2	1	3	2	2	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Syllabus-2023-2024

(SOS)(BSc_PCM)

Title of the Course	Oscillations of Waves
Course Code	BSPH0302[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					3	0	0	3

Course Type	Theory only

Course Category	Disciplinary Major

Pre-Requisite/s	Knowledge of Physics upto BSc First Year(II Semester)	Co-Requisite/s	Knowledge of Mathematics upto BSc First Year(II Semester)

Course Outcomes & Bloom's Level	**CO1-** To remember the basic laws of Wave and Oscillations**(BL1-Remember)** **CO2-** Understand the basic concepts of Wave and Oscillations**(BL2-Understand)** **CO3-** To apply the concepts of Wave and Oscillations to different system. **(BL3-Apply)** **CO4-** To Analyze the laws of Wave and Oscillations**(BL4-Analyze)** **CO5-** To evaluate the laws of Wave and Oscillations**(BL5-Evaluate)**

Coures Elements	Skill Development ✗ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
1	Unit-I Superposition of Collinear Harmonic oscillations: Linearity and Superposition Principle. Superposition of two collinear oscillations having (1) equal frequencies and (2) different frequencies (Beats). Superposition of N collinear Harmonic Oscillations with (1) equal phase differences and (2) equal frequency differences. Superposition of two perpendicular Harmonic Oscillations: Graphical and Analytical Methods. Lissajous Figures (1:1 and 1:2) and their uses.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
2	Unit-II Wave Motion: Plane and Spherical Waves. Longitudinal and Transverse Waves. Plane Progressive (Travelling) Waves. Wave Equation. Particle and Wave Velocities. Differential Equation. Pressure of a Longitudinal Wave. Energy Transport. Intensity of Wave. Water Waves: Ripple and Gravity Waves.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
3	Unit-III Superposition of Two Harmonic Waves: Standing (Stationary) Waves in a String: Fixed and Free Ends. Analytical Treatment. Phase and Group Velocities. Changes with respect to Position and Time. Energy of Vibrating String. Transfer of Energy. Normal Modes of Stretched Strings. Plucked and Struck Strings. Longitudinal Standing Waves and Normal Modes. Open and Closed Pipes. Superposition of N Harmonic Waves	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
4	Unit-IV Damped Harmonic Oscillator: Differential equation of a damped oscillator and its solutions, heavy damping, critical damping, weak damping; characterizing weak damping: logarithmic decrement; relaxation time, quality factor.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8
5	Unit-V Forced Harmonic Oscillations and Resonance: differential equation of a weakly damped forced harmonic oscillator and its solutions, steady state solution, resonance. Examples of forced vibrations and resonance, power absorbed by a forced oscillator, quality factor.	Audio/Video clips, group discussion, lecture with ppt, on white board, quiz	8

Part D(Marks Distribution)

Theory					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**
100	40	60	18	40	
Practical					
Total Marks	**Minimum Passing Marks**	**External Evaluation**	**Min. External Evaluation**	**Internal Evaluation**	**Min. Internal Evaluation**

Part E

Books	Wave and oscillations by Brijlal and subrahmanyam
Articles	
References Books	The Physics of Waves and Oscillations by N.K.Bajaj
MOOC Courses	
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	2	3	2	-	-	-	-	-	-	-	-	-	-
CO2	3	3	2	1	1	-	-	-	-	-	-	-	-	-	-
CO3	3	2	1	2	2	-	-	-	-	-	-	-	-	-	-
CO4	2	2	3	2	1	-	-	-	-	-	-	-	-	-	-
CO5	1	1	3	1	1	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Title of the Course	SEC-III
Course Code	SEC0301[T]

Part A

Year	2nd	Semester	3rd	Credits	L	T	P	C
					2	0	0	2

Course Type	Theory only
Course Category	Skill Enhancement Courses

Pre-Requisite/s	Basic knowledge of mathematical operations.	**Co-Requisite/s**	Basic knowledge of logic, diagrams ans their interpretations.

Course Outcomes & Bloom's Level	**CO1-** To get insight the basic concepts of quantitative ability and logical reasoning Skills. **(BL1-Remember)** **CO2-** To understand various techniques to solve real life problems through concepts of logical reasoning**(BL2-Understand)** **CO3-** To analyze and solve campus placements aptitude papers covering Quantitative Ability and Logical Reasoning Ability.**(BL3-Apply)** **CO4-** To evaluate many short tricks for helping to compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc**(BL4-Analyze)** **CO5-** To evaluate many short tricks for helping to compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc.**(BL5-Evaluate)**

Coures Elements	Skill Development ✓ Entrepreneurship ✗ Employability ✓ Professional Ethics ✗ Gender ✗ Human Values ✗ Environment ✗	**SDG (Goals)**	SDG4(Quality education)

Part B

Modules	Contents	Pedagogy	Hours
Unit 1	Problems on Trains, Height and Distance, Calendar, Average, Numbers, Problems on H.C.F and L.C.M, Simplification.	Audio/Video clips, group discussion, lecture with PPTs, quiz	4
Unit 2	Surds and Indices, Chain Rule, Boats and Streams, Time and Distance, Time and Work, Problems on Ages.	Audio/Video clips, group discussion, lecture with PPTs, quiz	4
Unit 3	• Permutation and Combination, Problems on Numbers, Decimal Fraction, Square Root and Cube Root, Ratio and Proportion. • Data Interpretation: Table Charts, Pie Charts, Bar Charts, Line Charts.	Audio/Video clips, group discussion, lecture with PPTs, classroom presentations, Analysis	4
Unit 4	• Verbal Reasoning: Logical Sequence of Words, Syllogism, Cause and Effect, Venn Diagrams, Analogy, Character Puzzles, Classification, Arithmetic Reasoning, Blood Relation Test, Series Completion, Dice, Cube and Cuboids, • • Seating Arrangement, Direction Sense Test, Data Sufficiency, Verification of Truth	Audio/Video clips, group discussion, lecture with PPTs, Quiz	4
Unit 5	Puzzles: Sudoku, Number puzzles, Missing letters puzzles, Logical puzzles, Clock puzzles.	Audio/Video clips, group discussion, lecture with PPTs, Quiz	4

Part D(Marks Distribution)

Theory					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
100	40	60	18	40	22
Practical					
Total Marks	Minimum Passing Marks	External Evaluation	Min. External Evaluation	Internal Evaluation	Min. Internal Evaluation
0	0	0	0	0	0

Part E

Books	1. Dr. R. S. Aggarwal, Quantitative Aptitude, S. Chand Publication. 2. Abhijit Guha, Quantitative Aptitude for Competitive Examinations, McGraw Hill Publications.
Articles	
References Books	
MOOC Courses	
Videos	

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	-	-	-	2	2	-	1	-	-	-	-	-	-	-
CO2	3	3	1	3	3	2	-	-	-	-	-	-	-	-	-
CO3	3	2	-	1	3	-	-	-	-	-	-	-	-	-	-
CO4	3	2	-	2	-	-	-	-	-	-	-	-	-	-	-
CO5	2	2	-	1	-	-	-	-	-	-	-	-	-	-	-
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-