



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Social Sciences, Humanities and Arts
Choice Based Credit System (CBCS) in Light of NEP-2020
Humanities (Common Course)
Semester II (Batch 2021-24)

COURSE CODE	CATE-GORY	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*				
HU201	AECC	Foundation English II	60	20	20	-	50	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

- CEO1 Understand the role and types of workplace communication
- CEO2 Read their texts for understanding for pleasure and business purpose.
- CEO3 Understand language, word relationships and nuances in word meanings.
- CEO4 Recall key elements of structure and style in drafting technical reports
- CEO5 Develop competency in professional communication.

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

- CO1 Discuss the role and types of workplace communication
- CO2 Practice reading based on comprehension of a text.
- CO3 Use resources to increase vocabulary and gain deeper understanding by using context of words and sentences.
- CO4 Write according to standard principles of structure, style, and English-language mechanics.
- CO5 Demonstrate different strategies for using professional communication skills.

Paper I
HU201
Foundation English II

COURSE CONTENTS

UNIT I

Communication: Objectives of Communication, Formal and Informal Channels of Communication, Advantages and Disadvantages, Extra personal communication, Interpersonal communication, Intrapersonal communication, Principles of communication.



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Semester II (Batch 2021-24)											
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			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
HU201	AECC	Foundation English II	60	20	20	-	50	3	0	2	4

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

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UNIT II

Developing Reading Skills: Reading Comprehension, Process, Active & Passive reading, Reading speed Strategies, Benefits of effective reading, SQ3R Reading technique.

UNIT III

Vocabulary Building: Using Dictionaries and Thesaurus, Synonyms, Antonyms, Homophones, One Word Substitution, Affixation: Prefixes & Suffixes, Derivation from root words, Jargon, Scientific Jargon, Word Formation.

UNIT IV

Developing Writing Skills: Planning, Drafting and Editing, Developing Logical Paragraphs, Report Writing: Importance of Report, Characteristics of Good Report, Types of Report, Various Structures of a Report.

UNIT V

Professional Skills: Negotiation Skills, Telephonic Skills, Interview Skills: Team building Skills and Time management

Practical:

- Listening
- Linguistics and Phonetics
- Telephonic Conversation
- Mock Interviews
- Group discussions
- Extempore
- Debate
- Role Plays



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Semester II (Batch 2021-24)											
COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Rank	Two-Term Rank	Teachers Assessment ^a	END SEM University Rank	Teachers Assessment ^a				
HU201	AECC	Foundation English II	60	20	20	-	20	3	0	2	4

Legends: L - Lecture, T - Tutor, P - Teacher Guided Student Activity, F - 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.

Suggested Readings

- Allen, R. (2005). *Effective Technical Communication*. New Delhi: McGraw Hill.
- Price, L. M. (2001) *How to Prepare for Group Discussion and Interview*. New Delhi: McGraw-Hill.
- Pease, A. (1977). *Body Language*. Delhi: Sadha Publications.
- Morgan, Dana (1998) *10 Minute Guide to Job Interviews*. New York: Macmillan.

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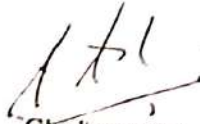
Choice Based Credit System (CBCS)


B. Sc. II Sem

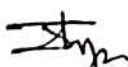
Subject Code	Category	Subject Name	Teaching and Evaluation Scheme								
			Theory			Practical		Th	T	P	CREDITS
			End Sem Univer sity Exam	Two Term Exnm	Teac hers Asses sment	End Sem Unive rsity Exam	Tea cher s Asses sment				
BSPH202	DC	Waves and Optics	60	20	20	30	20	4	0	0	4

Course Objectives	<ol style="list-style-type: none"> To develop the comprehensive understanding of laws of physics related to Waves and Optics 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 Outcomes	<ol style="list-style-type: none"> Student will be able to understand and solve the problems related to Waves and Optics. 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	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).
T	Tutorial	
P	Practical	


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BSPH 202: Waves and Optics

UNIT I: Waves

Wave motion, one dimensional wave equation and solution, speed of transverse waves in a uniform stretched string, speed of longitudinal waves in a fluid and gases, speed of longitudinal waves in a solid, variation in velocity and pressure in a plane progressive wave, Energy, Energy density of a progressive wave and intensity of a wave, waves on liquid surface, gravity waves and ripples, phase velocity and group velocity.

UNIT II: Interference of light

Condition of constructive and destructive interference, necessary condition of interference, Interference of light by division of wave front: Fresnel's Bi-Prism, shape of biprism fringes, Interference by division of amplitude, interference in thin films, path difference, phase difference due to reflection from denser medium: Stokes law, localized fringes, Newton's rings and applications, Haidinger fringes (Fringes of equal inclination), Michelson interferometer and its application.

UNIT III: Diffraction

Fraunhofer's diffraction at a single slit, double slit, plane transmission grating, n-slit diffraction, formation of spectra by the grating, determination of wavelength of light by with a grating, resolving power of an optical instruments, Rayleigh criterion of resolution of images. Resolving power of plane transmission grating.

UNIT IV: Polarization

Polarization of light, production of plane polarized light by reflection; Brewster law, Production of plane polarized light by double refraction: double refraction in uniaxial crystal, Huygens explanation of double refraction, calcite crystal, Nicol prism, quarter and half wave plates, circularly and elliptically polarized light, analysis of polarized light, rotation of plane of polarization, polarimeter, Laurent's half shade device.

UNIT V: Laser

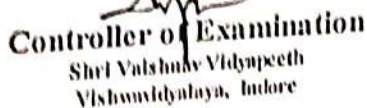
Stimulated and Spontaneous Emission, Einstein's A & B Coefficients, Population Inversion, Pumping, Techniques of Pumping, Two three and four level lasers. Optical Resonator, Properties and Applications of Laser, Ruby Laser, Nd:YAG Laser, He-Ne Laser, CO₂ Lasers.

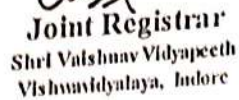

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BSPH 202: Waves and Optics

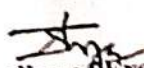
References:

1. F. A. Jenkins and H. E. White, *Fundamentals of Optics*, 4th Edition, McGraw-Hill Higher Education, 2001.
2. F. S. Crawford Jr., *Waves, Berkeley Physics Course*, Vol. 3, Mc-Graw Hill Education, 1968.
3. M. Born and E. Wolf, *Principles of Optics*, 7th Edition, Cambridge University Press, 2003.
4. K. Thyagarajan and A. Ghatak, *Lasers: Fundamentals and Applications*, 2nd Edition, Springer Science + Business Media, 2010.
5. B. K. Mathur, *Principles of Optics*, 2nd Edition, Gopal Printing Press, 1970.
6. H. D. young, R. A. Freedman, R. Bhathal and A. L. ford, *Sears and Zemansky's University Physics with Modern Physics*, 1st Australian SI Edition, Pearson Education Inc, 2011.
7. D. P. Khandelwal, *Textbook of Optics and Atomic Physics*, Himalaya Publishing House, 1989.
8. A. K. Ghatak, *Optics*, 6th Edition, McGraw Hill Education (India), 2017.


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

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMHMA 202	DC	Algebra II (Groups and Rings)	60	20	20	-	-	4	1	-	5

Course Objective

To introduce the students with the Fundamentals of the Groups and Rings.

Course Outcomes

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

- 1. understand the basics of the Group theory*
- 2. know the fundamentals of the Ring, Integral Domain and Field theory.*
- 3. apply the concepts of the homomorphism and isomorphism theorems for rings.*
- 4. justify the role of Group theory.*

Course Content:

Unit I

Groups of Permutations, Orbits, Cycles and alternating group. Even Odd Permutations.

Unit II


Homomorphism, Kernel of Homomorphism, Isomorphism theorems; Cayley's theorem; Properties of Isomorphism.


Unit III


Definition and examples of rings, Properties of rings, Subrings, Integral Domains and Fields, Characteristic of a Ring.

Unit IV

Ideals; Ideal generated by a subset of a Ring; Factor Rings, Operations on Ideals, Prime and maximal ideals.


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			END SEM	MST	Q/A	END SEM	Q/A				
BSMHMA 202	DC	Algebra II (Groups and Rings)	60	20	20	-	-	4	1	-	5


Unit V:


Ring Homomorphism, Properties of Ring Homomorphism, Isomorphism, Field of Quotients.

Reference Books:

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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SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMHMA 203	DC	Analysis II	60	20	20	-	-	4	1	-	5

Course Objective

To introduce the students with the Fundamentals of the Integral Calculus and Convergence.

Course Outcomes

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

- 1. understand and apply the basics of the Integral Calculus*
- 2. analyse and apply the concepts of the Convergence of the Series*
- 3. understand and apply the Power Series and its convergence*
- 4. understand and apply the principles of the Approximation Theorem*

Course Content:


Unit I:

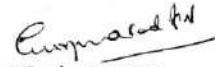
Riemann sum and definition of Riemann integral through Riemann sums, Riemann integration; inequalities of upper and lower sums; Riemann conditions of integrability.

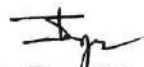
Unit II:

Riemann integrability of monotone and continuous functions, Properties of the Riemann integral; definition and integrability of piecewise continuous and monotone functions.

Unit III:


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			THEORY			PRACTICAL		Th	T	P	CREDITS
			END SEM	MST	Q/A	END SEM	Q/A				
BSMHMA 203	DC	Analysis II	60	20	20	-	-	4	1	-	5

Intermediate Value Theorem for Integrals; Fundamental Theorem of Calculus, Convergence of Improper Integrals and Beta, Gamma functions.

Unit IV:

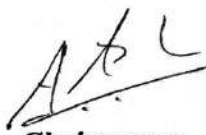
Sequences and series of functions; Point-wise and uniform convergence; Term-by-term differentiation and integration.

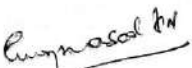
Unit V:


Power series; radius of convergence, Cauchy Hadamard Theorem, Differentiation and integration of power series; Abel's Theorem; Weierstrass Approximation Theorem.

Reference Books:

1. W. Rudin: Principles of Mathematical Analysis, Mac Graw Hill Education.
2. Tom Apostol: Mathematical Analysis, Pearson.
3. Tom Apostol: Calculus I and II, Pearson.
4. Terence Tao : Analysis I, Hindustan Book Agency.
5. W. Rudin: Real and Complex Analysis, Mac Graw Hill Education.
6. Gorakh Prasad, Differential Calculus, Pothishala pvt. Ltd. Allahabad


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B.Sc. (Hons)

Choice Based Credit System (CBCS)(Batch 2021-2024)

Semester-II (B.Sc. - Honours)

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*
BSHCH205	Hons	Chemistry -II (Chemical Energetic, Equilibria & Functional Organic Chemistry)	4	0	2	5	60	20	20	0	0

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: -

To give basic knowledge of state of matter.

To understand and apply the knowledge of equilibria.

Course Outcomes: -

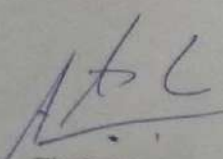
After completion of this course the students are expected to be able to demonstrate following knowledge, skills, and attitudes. The student will demonstrate capability of

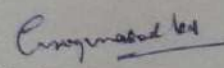
CO1. Understanding the concept of system, variables, heat, work, and laws of thermodynamics. Became aware of the importance of Dilute solution and its properties.

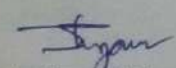
CO2. Theoretical understanding of Chemical Equilibrium. Learning scientific theory atoms, concept of Functional group.

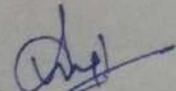
CO3. Basic of organic molecules, structure, bonding, reactivity, and reaction mechanisms. Stereochemistry of organic molecules – conformation and configuration, asymmetric molecules, and nomenclature

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


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B.Sc. (Hons)

Choice Based Credit System (CBCS)(Batch 2021-2024)

Semester-II (B.Sc. - Honours)

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							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BSHCH205	Hons	Chemistry -II (Chemical Energetic, Equilibria & Functional Organic Chemistry)	4	0	2	5	60	20	20	0	0

UNIT 1: Physical Chemistry

Chemical Energetic

Review of thermodynamics and the Laws of Thermodynamics.

Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation.

UNIT 2: Chemical Equilibrium:

Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between G and G° , Le Chatelier's principle. Relationships between K_p , K_c and K_x for reactions involving ideal gases.

UNIT 3: Functional group:

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure. Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonic acid

Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (upto 4 carbons on benzene).

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B.Sc. (Hons)

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							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
BSHCH205	Hons	Chemistry -II (Chemical Energetic, Equilibria & Functional Organic Chemistry)	4	0	2	5	60	20	20	0	0

UNIT 4:

Alcohols: Preparation: Preparation of 1°, 2° and 3° alcohols: using Grignard reagent, Ester hydrolysis, Reduction of aldehydes, ketones, carboxylic acid and esters.

Reactions: With sodium, HX (Lucas test), esterification, oxidation (with PCC, alk. KMnO₄, acidic dichromate, conc. HNO₃). Oppeneauer oxidation **Diols:** (Upto 6 Carbons) oxidation of diols. Pinacol-Pinacolone rearrangement.

UNIT 5: Phenols and Ethers

Phenols: (Phenol case) Preparation: Cumene hydroperoxide method, from diazonium salts. Reactions: Electrophilic substitution: Nitration, halogenation and sulphonation. Reimer-Tiemann Reaction, Gattermann-Koch Reaction, Houben-Hoesch Condensation, Schotten-Baumann Reaction.

Ethers (aliphatic and aromatic): Cleavage of ethers with HI.

Reference Books:

1. Graham Solomon, T.W., Fryhle, C.B. & Snyder, S.A. *Organic Chemistry*, John Wiley & Sons (2014).
2. McMurry, J.E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013.
3. Sykes, P. *A Guidebook to Mechanism in Organic Chemistry*, Orient Longman, New Delhi (1988).
4. Finar, I.L. *Organic Chemistry* (Vol. I & II), E.L.B.S.
5. Morrison, R.T. & Boyd, R.N. *Organic Chemistry*, Pearson, 2010.

List of Practical's: (If Practical Credit Shown in Syllabus)

Guidelines for Practical:

One credit lab is to be conducted by covering the most relevant and useful topics from mentioned syllabus

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