Shri VaishnavVidyapeethVishwavidyalaya, Indore

B.A. Honors Economics

BATCH2018-2021

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*				
HU201	SOC. SC., ARTS& HUM	**Foundation English II**	60	20	20	0	20	3	0	2	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher's Assessment** shall be based upon 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:**

- Participate in seminars, group discussions, paper presentation and general personal interactions at the professional level.
- Have adequate mastery over communicative english, reading and writing skills, secondarily listening and speaking skills.

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

- Improve their language skills, oral communication skills, group discussion skills, personal skills and confidence level.
- express his /her ideas and thoughts in speech or writing,
- Bridge the language gap vital to their success.
- Communicate effectively.

COURSE CONTENTS

UNIT I

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

UNIT II

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

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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

Suggested Readings
- Ashraf Rizvi.(200**5**).*Effective Technical Communication*. New Delhi:Tata Mc Graw Hill
- Prasad, H. M.(2001*) How to Prepare for Group Discussion and Interview*. New Delhi: Tata McGraw-Hill.
- Pease, Allan. (1998).*Body Language*. Delhi: Sudha Publications.
- Morgan, Dana (1998).*10 Minute Guide to Job Interviews*. New York: Macmillan.

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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 presure in a plane progressive wave, Energy, Energy density of a progressive wave and intenisty 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 distructive 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, pathdifference , phase difference due to reflection from denser medium: Stokes law, localised fringes, Newton's rings and applications. Haidinger fringes (Fringes of equal inclination), Michelson interferometer and its application.
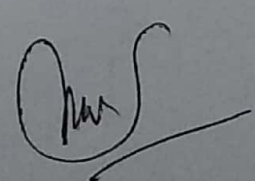
UNIT III: Diffraction

Fraunhoffer'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.
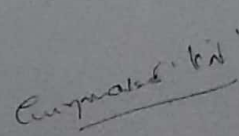
UNIT IV: Polarisation

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 eliptically polarized light, analysis of polarized light, rotation of plane of polarizaton, polarimeter, laurent'z half shade device.

Registrar
aishnav Vidyapeeth Vishwavidyalaya
Indore

Dr. UTTAM SHARMA
Professor & Head
Department of Physics
Shri Vaishnav Institute of Science

Chairperson
Board of Studies
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

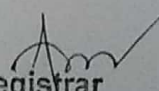# Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

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, CO_2 Lasers.
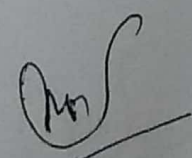
References

1. Fundamentals of Optics: F.A. Jenkins and H. E. White, 1976, McGraw-Hill.
2. Principles of Optics: B. K. Mathur, 1995, Gopal Printing. . University Physics: F.W. Sears, M.W. Zemansky and H.D. Young, 13/e, 1986.
3. Optics: A. K. Ghatak, McGraw Hill Publications. . Principles of Optics: Max Born and Wolf. Pregmon Press. . Optics and Atomic Physics, D. P. Khandelwal. Himalaya Publication.
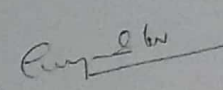4. Lasers: Theory and Applications: K. Thyagrajan and A. K. Ghatak.

List of experiment

1. To determine the refractive index of the material of the prism using Na light.
2. To determine the dispersive power of the material of the prism.
3. Measurement of radius of curvature R of convex lens by Newton's ring experiment.
4. Measurement of resolving power of telescope.
5. Measurement of wavelength of Na light source using diffraction grating.
6. To determine the mass of cane sugar dissolved in water using half shade polarimeter.
7. Heating efficiency of electrical Kettle with varying voltages.
8. Measurement of resolving power of prism.
9. Measurement of resolving power of grating.
10. Measurement of frequency of AC mains by electrically maintained vibrating rod.

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Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Name of the Program: B. Sc. (Mathematics Honours)

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME					Th	T	P	CREDITS
			THEORY			PRACTICAL					
			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 Group and Ring.

Course Outcomes

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

1. *understand and apply the basics of the Group theorems.*
2. *know the fundamentals of the Ring, Integral Domain and Field theorems.*
3. *apply the concepts of the homomorphisms and isomorphism theorems for rings.*

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.

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.

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
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 203	DC	**Analysis-II**	60	20	20	-	-	4	1	-	5

Course Objective

To introduce the students with the Fundamentals of the Mathematical Analysis.

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. *apply the concepts of the Convergence of the Series.*
3. *understand the Power Series and its convergence.*
4. *understand 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: 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

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*
BSHCH 205	HONS	Chemistry - II (Chemical Energetic, Equilibria & Functional Organic Chemistry)	3	1	2	5	60	20	20	30	20

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 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. 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.

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^o, Le Chatelier's principle. Relationships between K_p, K_c and K_x for reactions involving ideal gases.

UNIT 3:
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). Side chain oxidation of alkyl benzenes (upto 4 carbons on benzene).

UNIT 4: Alcohols (Upto 5 Carbons)

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. $KMnO_4$, acidic dichromate, conc. HNO_3). 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. & Dnyder, 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.