

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF CHEMISTRY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Science (Certificate / Diploma / Degree/Honors)		Semester - I	Session: 2024-2025
1	Course Code	CHSC-01T	
2	Course Title	FUNDAMENTAL CHEMISTRY-I	
3	Course Type	DSC	
4	Pre-requisite (if, any)	As per Program	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> ➤ To know the contributions of ancient Indian scientists, study atomic structure, and periodic properties. ➤ To explore the concept of chemical bonding, including ionic and covalent bonding, hybridization, molecular orbital theory and intermolecular interactions. ➤ To learn about reaction mechanisms of inorganic reactions and their stoichiometry. ➤ To understand basics principles of organic chemistry. 	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<p>A. Chemistry in Ancient India: (a) Chemical techniques in ancient India: General Introduction (b) Contribution of ancient Indian scientists in chemistry, e.g., metallurgy, dyes, pigments, cosmetics, Ayurveda, Charak Sanhita.</p> <p>Ancient Indian Chemist- Their Contribution and Books- Rishi Kanad, Acharya Nagarjuna, Vagbhatta, Govindacharya, Yashodhar, Ramchandra, Somadava, Gopalbhatta etc. Indian Chemist of 19th century- Acharya Prafulla Chandra Ray- His Contribution and work for Indian Chemistry.</p> <p>B. Atomic Structure and Periodic Properties: (i) Review of Bohr's theory and its limitations. Dual nature of particles and waves, de Broglie's equation, Heisenberg's Uncertainty principle and its significance. (ii) Quantum numbers and their significance. Rules for filling electrons in various orbitals, Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau principle and its limitations, Electronic configurations of the atoms. Stability of half-filled and completely filled orbitals, concept of exchange energy. Relative energies of atomic orbitals. Anomalous electronic configurations. (iii) Effective nuclear charge (ENC), shielding or screening effect, Slater rules, Atomic and Ionic radii. Ionization energy and factors affecting ionization energy. Electron affinity, Electronegativity—Pauling's/Mulliken's electronegativity scales. Relation of electronegativity with hybridization.</p>		11
II	<p>Chemical Bonding – I A) Ionic Bonding: General characteristics of ionic bonding. Ionic Bonding & Energy: Lattice and solvation energies and their importance in the context of stability and solubility of ionic compounds.</p> <p>Born-Haber Cycle and its Applications: Covalent character in ionic compounds, polarizing power and polarizability. Fajan's rules.</p> <p>B) Covalent Bonding: Lewis structures, Valence Bond theory, Hybridization (concept and types with suitable examples), dipole moment and percentage ionic character. Valence shell electron pair repulsion theory (VSEPR) and structure of NH₃, H₂O, SF₄, ClF₃, PCl₅, SF₆, XeF₂, XeF₆, XeO₃, XeOF₄, XeF₄.</p>		12

	<p>Chemical Bonding - II</p> <p>A) MO theory: LCAO method-criteria of orbital overlapping, types of molecular orbitals-σ-, π- and, δ-MOs; formation of σ- and π-MOs and their, schematic illustration; qualitative MO energy level diagram of homo- (N_2 & O_2(including peroxide, superoxide)) and hetero-diatomic molecules (NO, CO), magnetic properties, bond order and stability of molecules and ions.</p> <p>B) Weak Chemical Forces: van der Waals forces, ion-dipole forces, dipole-dipole interactions, ion-induced dipole interactions, dipole-induced dipole interactions. Repulsive forces, Hydrogen bonding (theories of hydrogen bonding, valence bond treatment).</p>	
III	<p>A. Chemical properties of s-block metals Reaction with water, air, and nitrogen, Anomalous behavior of Li and Be, Compounds of s-block metals: Oxides, hydroxides, peroxides, and superoxides (preparation and properties) Complexes of s-block metals, Complexes with crown ethers</p> <p>B. Chemistry of p-Block Elements Boron group: Hydrides (classification of boranes), Diborane (preparation, properties, and structure elucidation), Borazine (preparation and structure) Carbon group: Carbides (salt-like carbides, interstitial carbides, covalent carbides), Silicates (classification, three-dimensional silicates - properties and structures) Nitrogen group: Hydrides of Nitrogen (hydrazine, hydroxylamine, hydrazoic acid) Structure of oxides of nitrogen (N_2O, NO, NO_2, N_2O_4, and N_2O_5), Structure of oxyacids of nitrogen (HNO_2, HNO_3, $H_2N_2O_7$), Nitrides (classification, preparation, properties, and uses) Structure of Oxides and oxoacids of phosphorus: (P_2O_3, P_2O_5) H_3PO_2, H_3PO_3, H_3PO_4, $H_4P_2O_7$ Halogen: Hydrides, Oxides and oxyacids of halogens (structure only) – Inter halogen compounds and pseudo halogens</p>	11
IV	<p>Electronic Effects in Organic Compounds Bond Cleavage: Homolytic and heterolytic cleavages, bond energy, bond length, and bond angle. Electron Displacement Effects: Inductive, inductomeric, electromeric, mesomeric (resonance), hyperconjugation, and steric effects. Tautomerism (keto-enol, amido-imidol, and nitro-acinitro forms). Reaction Intermediates: Formation and stability of carbocations, carbanions, free radicals, carbenes, nitrene and benzyne.</p> <p>B. Stereochemistry of Organic Compounds i) Optical Isomerism Elements of symmetry, chirality, enantiomers, and optical activity, Chiral and achiral molecules with two stereogenic centers (Tartaric acid as an example), Erythro & Threo, Diastereomers and meso compounds, Inversion, retention, and racemization, Relative configuration (D/L), and absolute configuration (R/S nomenclature: sequence rules).</p> <p>ii) Geometrical Isomerism Geometric isomerism (cis-trans isomerism) in alkenes with examples (maleic acid, fumaric acid, and 2-butene), E/Z system of nomenclature.</p>	11
Keywords	<i>Ancient Indian Chemistry, Atomic Structure, Periodic Properties, Chemical Bonding, s- & p-block elements, Electronic effects, Stereochemistry</i>	

Signature of Convener & Members (CBoS) :

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended – Text Books

1. Puri, B. R., Sharma, L. R., & Kalia, K. C. (2018). *Principles of Inorganic Chemistry*. Nagin Chand and Co., New Delhi.
2. Satyaprakash, G., Tuli, S. K., Basu, S. K., & Madan, R. D. (2017). *Advanced Inorganic Chemistry* (Vol. 1, 5th Ed.). S. Chand & Company.
3. Lee, J. D. (2010). *Concise Inorganic Chemistry* (5th Ed.). Blackwell Science.
4. Housecroft, C. E., & Sharpe, A. G. (2012). *Inorganic Chemistry* (4th Ed.). Pearson Education Limited.
5. Ray, Acharya Prafulla Charndra, *History of Chemistry in Ancient And Medieval India*, Chowkhamba Krishnadas Academy (Reprint 2004).

Reference Books

1. Cotton, F. A., Wilkinson, G., & Gaus, P. L. (2002). *Basic Inorganic Chemistry* (3rd Ed.). John Wiley & Sons.
2. Douglas, B. E., McDaniel, D. T., & Alexander, J. J. (1994). *Concepts and Models Of Inorganic Chemistry* (3rd Ed.). John Wiley & Sons.
3. Huheey, J. E., Keiter, E. A., & Keiter, R. L. (1993). *Inorganic Chemistry* (4th Ed.). Harpercollins College Publishers.
4. Shriver, D. F., Atkins, P. W., & Langford, C. H. (2010). *Inorganic Chemistry* (5th Ed.). W. H. Freeman And Company.
5. Moeller, T. (1990). *Inorganic Chemistry: A Modern Introduction*. Wiley.

Online Resources–

- <https://bit.ly/3AyV3mZ>
- <https://nptel.ac.in/courses/104/104/104104101/>
- <https://nptel.ac.in/courses/104/103/104103019/>
- <https://nptel.ac.in/courses/104/101/104101090/>
- <https://nptel.ac.in/courses/104/105/104105103/>

Online Resources–

- e-Resources / e-books and e-learning portals

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

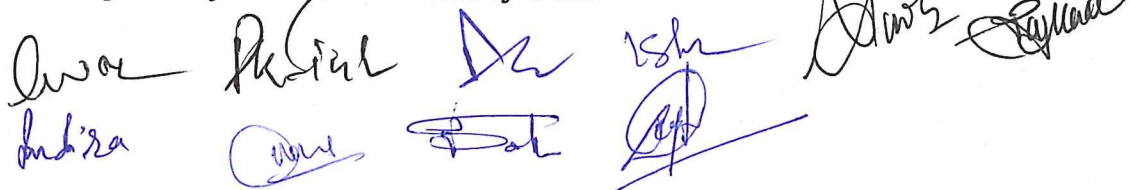
Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 / 20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:



FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF CHEMISTRY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Science (Certificate / Diploma / Degree/Honors)		Semester-I	Session: 2024-2025
1	Course Code	CHSC-01P	
2	Course Title	CHEMISTRY LAB. COURSE-I	
3	Course Type	DSC	
4	Pre-requisite (if, any)	As per Program	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> ➤ Analyze mixtures for cations (NH_4^+, Pb^{2+}, etc.) & anions (CO_3^{2-}, S^{2-}, etc.) using H_2S or other methods. ➤ Perform titrimetric analysis (standardization, unknown conc. determination). ➤ Estimate the concentration of acetic acid in vinegar (using NaOH), alkali content in antacids (using HCl), and free alkali in soaps/detergents. ➤ Utilize complexometric titrations for calcium (Ca^{2+}), water hardness, $\text{Fe}^{2+}/\text{Fe}^{3+}$, and Cu^{2+}. 	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	QUALITATIVE INORGANIC MIXTURE ANALYSIS: Inorganic mixture analysis containing up to four ionic species (two cations and two anions) using H_2S (hydrogen sulfide) or other appropriate methods (Excluded are interfering and insoluble salts) Cations and anions that may be encountered include: Cations: NH_4^+ , Pb^{2+} , Bi^{3+} , Cu^{2+} , Cd^{2+} , $\text{Fe}^{2+}/\text{Fe}^{3+}$, Al^{3+} , Co^{2+} , Ni^{2+} , Mn^{2+} , Zn^{2+} , Ba^{2+} , Sr^{2+} , Ca^{2+} , Na^+ Anions: CO_3^{2-} , S^{2-} , SO_4^{2-} , NO_3^- , CH_3COO^- , Cl^- , Br^- , I^- , NO_2^- , SO_3^{2-} (Spot tests may be used wherever feasible.) TITRIMETRIC ANALYSIS Standardize sodium hydroxide solution using a standard oxalic acid solution. Determine the concentration of hydrochloric acid (HCl) solution using standardized sodium hydroxide solution as an intermediate.		30
Keywords	Qualitative Analysis (H_2S method, Cations (NH_4^+ , Pb^{2+} , etc.), Anions (CO_3^{2-} , S^{2-} , etc.), Titrimetric Analysis, Standardization (NaOH solution), Concentration Determination (HCl solution)		

Signature of Convener & Members (CBoS) :

PART-C: Learning Resources

Text Books, Reference Books and Others

Textbooks Recommended:

1. Gurtu, J. N., & Kapoor, R. (1987). *Experimental Chemistry*. S. Chand & Co.
2. Bajpai, D. N., Pandey, O. P., & Giri, S. (2013). *Practical Chemistry*. S. Chand & Co.
3. Ahluwalia, V. K., Dhingra, S., & Dhingra, S. (2005). *College Practical Chemistry*. Universities Press.
4. Kamboj, P. C. (2014). *Advanced University Practical Chemistry (Part I)*. Vishal Publishing Co.
5. Fultariya, C., & Harsora, J. (2017). *Volumetric Analysis: Concepts and Experiments*.

Reference Books Recommended:

1. Mcpherson, P. A. (2015). *Practical Volumetric Analysis*. Royal Society Of Chemistry.
2. Shobha, R., & Banani, M. (2017). *Essentials of Analytical Chemistry*. Pearson.
3. Venkateswaran, V., Veeraswamy, R., & Kulandaivelu, A. R. (2004). *Basic Principles Of Practical Chemistry (2nd Ed.)*. S. Chand Publications.
4. Sundaram, S., & Raghavan, K. (1996). *Practical Chemistry*. S. Viswanathan Co. Pvt.
5. Svehla, G. (2011). *Vogel's Textbook of Inorganic Qualitative Analysis (7th Ed.)*. Pearson Education

Online Resources–

- <https://bit.ly/3B7tOOV>
- <https://bit.ly/30V85ze>
- <https://bit.ly/3B5WOIQ>
- <https://bit.ly/3C9PXPS>
- <https://bit.ly/30Ip9rZ>
- <https://bit.ly/3BPnwqc>

Online Resources–

- e-Resources / e-books and e-learning portals

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

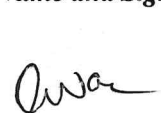
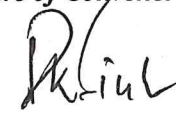
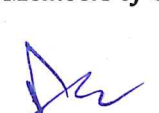
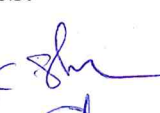






Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance - 05 Total Marks - 15	
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment	Managed by Course teacher as per lab. status
	A. Performed the Task based on lab. work - 20 Marks	
	B. Spotting based on tools & technology (written) – 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks	

Name and Signature of Confener & Members of CBoS:

Signature of Confener: 
Signature of Members:     
Signature of Members:    

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

DEPARTMENT OF BOTANY COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences <i>(Certificate / Diploma / Degree/Honors)</i>		Semester - I	Session: 2024-2025
1	Course Code	BOSC -01 T	
2	Course Title	Elementary Botany	
3	Course Type	Discipline Specific course (DSC)	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to > Understand the Basics of Botany and its branches. > Get acquainted with complex interrelationship between organisms and environment. > Develop a comprehensive understanding of the identification, cultivation, and processing of medicinal plants, and their chemical constituents. > Utilize plants resources for livelihood.	
6	Credit Value	3 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	Basics of Plant Science: Differences and resemblances between; living and nonliving plants and animals, plant and animal cell. Concept of prokaryotes and eukaryotes. Important features of thallophyta, Bryophyta, Pteridophyta, Gymnosperm and Angiosperm. Structure and function of a typical flowering plant.		12
II	Branches of botany: General idea, features, and significance; Anatomy, Cytology, Economic Botany, Ethnobotany, Forestry, Genetics, Histology, Microbiology, Paleobotany, Phytochemistry, Phytopathology, Plant biotechnology, Plant breeding, Plant ecology, Plant morphology, Plant physiology, Plant Taxonomy, etc,		11
III	Plants for human welfare: Plant Resources for Rural livelihood – Mahua, Tendu patta, Bamboo and Firewood. Ethnobotany in India: Methods to study Ethnobotany, Applications of Ethnobotany, ethnomedicinal plants and ethnoecology. Application of plant products for certain diseases- Cough and cold, Jaundice, Infertility, Diabetes, Blood pressure and Skin diseases.		11
IV	Ancient Indian Botany: Indigenous Medicinal Sciences; Definition and Scope-Ayurveda: History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rasayana, plants used in ayurvedic treatments, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plants used in Siddha medicine. Unani: History, concept. Charaksamhita. Ancient and modern Botanists and their contributions.-Charak, Jagdish Chandra Bose, B.P.Pal, Desikachary, K.C. Mehta M.S. Swaminathan etc.		11
Keywords	Prokaryotes, Ethnobotany, Taxonomy, Ayurveda		
Signature of Convener & Members (CRoS) :			

① Biswas

② Renuka

③ [Signature]

④ [Signature]

⑤ [Signature]

⑥ [Signature]

⑦ [Signature]

⑧ [Signature]

⑨ [Signature]

⑩ [Signature]

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. College Botany Ganguli Kar and dutta , HIMALAYA Publishers
2. "Handbook of Medicinal Plants" by L.D. Kapoor
3. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare
4. "Medicinal Plants in India: Conservation and Sustainable Utilization in the Emerging Global Scenario" edited by V.K. Gupta
5. "A Compendium of Medicinal Plants in India: An Introduction to Ayurveda" by S.L. Kochhar
6. A handbook of forest utilization by T. Mehta
7. Plants and human welfare by O.P.Sharma

Reference Books Recommended –

1. Charak Samhita
2. Medicinal Plants of India" by C.P. Khare

Online Resources–

- e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egvankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources–

e-Resources / e-books and e-learning portals

- <https://extension.oregonstate.edu/collection/botany-basics>
- <https://www.pbs.org/video/botany-basics-iuu2bl/>
- <https://efaidnbmnnnibpcajpcglclefindmkaj/https://www2.ca.uky.edu/agcomm/pubs/ho/ho96/ho96.pdf>
- <https://www.botanytoday.com/branches-of-botany/>
- <https://efaidnbmnnnibpcajpcglclefindmkaj/https://www.unanijournal.com/articles/94/3-1-11-206.pdf>
- https://efaidnbmnnnibpcajpcglclefindmkaj/https://wgbis.ces.iisc.ac.in/biodiversity/sahyadri/documents/botany_history.pdf
- <https://vedpuran.files.wordpress.com/2016/07/charaksamhitaatrivedajigupt-vol-1.pdf>
- <https://egvankosh.ac.in/handle/123456789/89429>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): 30 (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10 Total Marks - 30	
End Semester Exam (ESE): 70	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Name and Signature of Convener & Members of CBoS:

① R. Sivas
② Anuradha
③ Anandini
④ M. S.
⑤ Anis
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF BOTANY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences (Certificate / Diploma / Degree/ Honors)		Semester - I	Session: 2024-2025
1	Course Code	BOSC -01	
2	Course Title	Lab. Course -01 (Elementary Botany)	
3	Course Type	Laboratory course	
4	Pre-requisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to > Understand structure of plant cell, prokaryotic cell and eukaryotic cell. > Identify pteridophytes of college campus. > Learn about the different types of plant tissues. > Learn about Ayurvedic system of medicine.	
6	Credit Value	1 Credits	Credit =30 Hours Laboratory or Field learning/Training
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	1. Microscopic study of plant cell. 2. Microscopic study of prokaryotic (Bacteria) and eukaryotic cell (algae and fungi). 3. Study of thallus structure of <i>Riccia</i> and <i>Marchantia</i> . 4. Identification of different plants growing in college campus. 5. Study of a typical flowering plant and its parts. 6. Study of internal structure of root and stem. 7. Study of parenchyma, collenchyma and sclerenchyma. 8. Study of medicinal plants of college campus. 9. Study of plants used to cure cough and cold, jaundice and skin diseases. 10. Visit to any local ayurvedic hospital / practitioner to understand Ayurveda.		30
Keywords	<i>Prokaryotic, Parenchyma, Jaundice, Ayurveda.</i>		

Signature of Convener & Members (CBoS) :

- Handwritten signatures and initials for the Convener and Members (CBoS):
- ① R. Sivan
 - ② danda
 - ③ Anshu
 - ④ As
 - ⑤ d. siva
 - ⑥ H
 - ⑦ a
 - ⑧ b. siva
 - ⑨ B. siva
 - ⑩ U. siva

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

Text Books Recommended –

1. College Botany Ganguli Kar and dutta , HIMALAYA Publishers
2. "Handbook of Medicinal Plants" by L.D. Kapoor
3. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare
4. "Medicinal Plants in India: Conservation and Sustainable Utilization in the Emerging Global Scenario" edited by V.K. Gupta
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6. A handbook of forest utilization by T. Mehta
7. Plants and human welfare by O.P.Sharma

Reference Books Recommended –

1. Charak Samhita
2. Medicinal Plants of India" by C.P. Khare

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources–

- e-Resources / e-books and e-learning portals
- <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5871155/>
- <https://cms.botany.org/home/careers-jobs/careers-in-botany/areas-of-specialization-in-botany.html>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): 15 (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks	
	Assignment/Seminar +Attendance - 05 Total Marks - 15		
End Semester Exam (ESE): 35	Laboratory / Field Skill Performance: On spot Assessment		Managed by Course teacher as per lab. status
	A. Performed the Task based on lab. work - 20 Marks		
	B. Spotting based on tools & technology (written) – 10 Marks C. Viva-voce (based on principle/technology) - 05 Marks		

Name and Signature of Convener & Members of CBoS:

① R. Sivan
② Kundu
③ Sudhin.
④ M.
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FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF ZOOLOGY
Course Curriculum

PART- A: Introduction			
Program: Bachelor in Life Science (Certificate / Diploma / Degree/Honors)		Semester - I	Session: 2024-2025
1	Course Code	ZOSC-01T	
2	Course Title	Life on Earth and Unique Attributes of Animal Kingdom	
3	Course Type	Discipline Specific Course	
4	Pre-requisite (if, any)	<i>As per program</i>	
5	Course Learning Outcomes (CLO)	<p>After successfully completing this course, the students will be able to-</p> <ul style="list-style-type: none"> ➤ Develop an understanding of concepts, mechanisms, evolutionary significance and relevance of Origin of life. ➤ Understand General Idea about Invertebrate and Vertebrate animals with special reference and their specific qualities. ➤ Understand and appreciate diversity of life forms. ➤ Apply the knowledge about animals Sciences in daily life. 	
6	Credit Value	3 Credits	<i>Credit = 15 Hours - learning & Observation</i>
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods (01 Hr. per period) - 45 Periods (45 Hours)			
Unit	Topics (Course contents)		No. of Period
I	<p>Origin of life: Theories of Origin of life: Ancient Theory Theory of Special Creation (Mythological approach), Theory of Panspermia or Cosmozoic Theory, Theory of Directed Panspermia, Theory of Catastrophism, Theory of Spontaneous Generation (Abiogenesis or Autogenesis), Theory of Biogenesis: Redi's Experiment and Pasteur's Experiment. Modern Theory: Origin of Universe: Big Bang Hypothesis in Brief, Origin of Solar System and The Earth: Nebular hypothesis, Atmosphere and Energy Sources on Primitive Earth, Biochemical Origin of Life: Oparin and Haldane Theory, Chemogeny: Formation of simple and complex organic compounds (Stanely Miller and Ure's Experiment), Formation of Coacervates, Nucleic Acids. Biogeny: Origin of primitive prokaryotic cell. Evolution of modes of Nutrition: Chemoheterotrophs, Anaerobic and Aerobic Photoautotrophs. Evolution of Eukaryotes.</p>		12
II	<p>Systematics & Unique attributes of Invertebrate and Vertebrate animals with special reference to Coelentrata, Mollusca and Pisces: Definition and difference between Invertebrate and Vertebrate. Nomenclature: Binomial and Trinomial Nomenclature and International code of Nomenclature Corals: Meaning of Coral, Structure of Coral polyp, Coral Skeleton, Types of corals: Hydrozoan Coral, Example- Millipora, Octocorallian Coral, Example- Alcyonium, Hexacorallian Corals, Example- Gorgonia. Torsion in Mollusca: Definition, Mechanism of Torsion, Effects of Torsion, Significance of Torsion. Pisces: Migration in fishes: Catadromous: Eel fish and Anadromous: Salmon fish and Parental care in fishes: By nest formation, Coiling round eggs, Attachment to body, Integumentary cups, Shelter in mouth, Brood pouch, Mermaids purses, Viviparity.</p>		11
III	<p>Unique attributes of Vertebrate animals with special reference to Amphibia & Reptilia: Parental care in Amphibia: by Nest, by Nursery or Shelter and by Parents Neoteny in Amphibia: Definition, Partial and Total Neotony, Factors Affecting Neotony, Examples- Axolotal larva, Necturus and Siren. Reptilia: Venomous & Non-venomous Snakes: Identification, Poison apparatus: Poison Glands, Poison ducts and Fangs, Biting Mechanism.</p>		11
IV	<p>Unique attributes of Vertebrate animals with special reference to Aves and Mammals: Birds: Flight Adaptation, Migration and Perching Mechanism, Flightless Birds (Morphology and Special Characters of Emu, Ostrich and Penguins), Discuss-Birds are glorified reptiles: Archaeopteryx. Monotremes or Egg laying mammals: Morphology and Special Characters of Echidna and Duck bill platypus. Aquatic Mammals: Morphology and Special Characters of Whale and Dolphin. Mammals: Flying Mammals: Morphology and Special Characters of Bat.</p>		11
Keywords	<i>Origin of life, Invertebrate, Vertebrate, Corals, Torsion, parental care, Neotony, Fangs, Aves, Mammals</i>		
Signature of Convener & Members (CBoS) :			

PART-C: Learning Resources

Text Books Recommended

- E. J. W. Barrington , Invertebrate structure and function, English Language Book Society UK
- Robert Barnes, Invertebrate Zoology, Robert Barnes IVth edition Holt Saunders International Edition Japan
- Park Haswell, Marshall and Williams, A textbook on Zoology Invertebrate, AITBS Publishing and Distributers, Delhi
- Park Haswell, Marshall and Williams, A textbook on Zoology Vertebrate, AITBS Publishing and Distributers, Delhi

Reference Books Recommended

- Prof R. L. Kotpal, Protozoa to Echinodermata, Rastogi Publication Meerut
- E.L. Jordan, Dr. P. S. Verma, Invertebrate Zoology , S. Chand Publications, New Delhi
- N. Arumugam, N. C. Nair S. - Invertebrate Zoology, Saras Publication.
- N. Arumugam, N. C. Nair S. - vertebrate Zoology, Saras Publication.
- Barrington E. J. W., Invertebrate Structure and Function, Nelson London
- Barnes, R. D., Invertebrate Zoology –Saunders Philadelphia
- R. L. Kotpal, Invertebrate, Rastogi Publications
- R. L. Kotpal, Vertebrate, Rastogi Publications
- H. S. Bhampah, Kavita Juneja, Recent trends in vertebrates vol 1 – 9, Anmol Publication
- S. N. Prasad, Life of invertebrates, Vikash Publication House Pvt Ltd New Delhi
- G. S. Sandhu, Harshwardhan Bhagskar – Advanced invertebrate zoology –Campus books international

Online Resources–

- <https://www.coursera.org/lecture/emergence-of-life/4-5-invertebrates-successes-of-life-without-a-backbone-WQHqS>
- <https://www.shiksha.com/online-courses/introduction-to-biology-biodiversity-course-cour15385>
- <https://www.youtube.com/watch?v=k121Qv6loBA>
- https://www.youtube.com/watch?v=uK-Xx_OCYcI
- <https://www.youtube.com/watch?v=vybbBil5Elk>
- <https://www.youtube.com/watch?v=WxMSckEeio4>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 +20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks .
	Assignment / Seminar - 10	
	Total Marks - 30	
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit-4x10=40 Marks	

Signature of Convener & Members (CBoS) :















FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF ZOOLOGY
COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Science <i>(Certificate / Diploma / Degree / Honors)</i>		Semester - I	Session: 2024-2025
1	Course Code	ZOSC-01P	
2	Course Title	Life on Earth and Unique Attributes of Animal Kingdom	
3	Course Type	Discipline Specific Lab Course	
4	Pre-requisite (if, any)	<i>As per Program</i>	
5	Course Learning Outcomes (CLO)	<p>After successfully completing this course, the students will be able to-</p> <ul style="list-style-type: none"> ➤ To demonstrate comprehensive understanding of the current theories and hypotheses regarding the origin of life on Earth, ➤ Understand diversity of life forms ➤ Identify some distinctive invertebrate and vertebrate animals ➤ Apply this Understanding to broader context of life 	
6	Credit Value	1 Credits	<i>Credit =30 Hours Laboratory or Field learning/Training</i>
7	Total Marks	Max. Marks: 50	Min Passing Marks: 20
PART -B: Content of the Course			
Total No. of learning-Training / performance Periods: 30 Periods (30 Hours)			
Module	Topics (Course Contents)		No. of Period
Lab./Field Training/ Experiment Contents of Course	<ul style="list-style-type: none"> ➤ Study of origin of life through chart and models ➤ Study of different Invertebrates and Vertebrates animals through models and museum specimens in the laboratory with details of biogeography and diagnostic features: Millipora, Alcyonium, Gorgonia, Hippocampus, Ichthyophis (Female), Alytes (Male), Axolotal larva, Necturus, Siren, Cobra, Viper (pit & Pitless), Sea Snake, Rattle Snake, Archaeopteryx, Emu, Ostrich and Penguins, Echidna and Duck bill platypus, Whale, Dolphin, Bat. ➤ Preparation and Demonstration of Key for Identification of Venomous and Non-venomous snakes. ➤ Study of Coral Reefs through Models, Photographs ➤ Study of Fossils through chart/ Models ➤ An “Animal album or Practical Record” containing sketches, photographs, cut outs, with appropriate write up about the above mentioned taxa. ➤ Study of some videos to develop understanding and acquired knowledge on the animals salient features as mentioned above. ➤ Group discussion/Viva or Seminar presentation on related topics mentioned in Theory paper. 		30
Keywords	<i>Museum specimens, Invertebrates, Vertebrates, Venomous and Non-venomous, Seminar</i>		
Name and Signature of Convener & Members of CBoS:			

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

- S.S. Lal, Practical Zoology, Invertebrate. 12th Edition Rastogi Publications, Meerut,
o New Delhi.
- A manual of practical Zoology. Dr. P.S Verma, S. Chand Publication, New Delhi

Reference Books Recommended –

- Park Haswell, Marshall and Williams, A textbook on Zoology Invertebrate, AITBS Publishing and Distributers, Delhi
- Park Haswell, Marshall and Williams, A textbook on Zoology Vertebrate, AITBS Publishing and Distributers, Delhi

Online Resources–

- http://ndl.iitkgp.ac.in/he_document/swayamprabha/swayam_prabha/gc5ua6m873i?e=3|*||
- <https://www.youtube.com/watch?v=JUdp3U6A1EA>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance - 05	
	Total Marks - 15	
End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment	
	A. Performed the Task based on lab. work - 20 Marks	Managed by Course teacher as per lab. status
	B. Spotting based on tools & technology (written) - 10 Marks	
C. Viva-voce (based on principle/technology) - 05 Marks		

Name and Signature of Convener & Members of CBoS:

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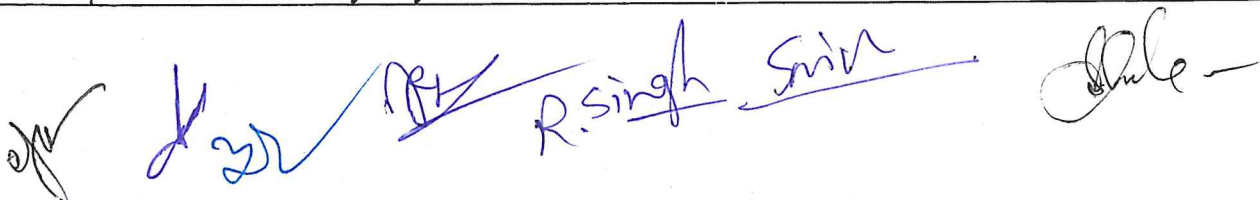
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FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)
DEPARTMENT OF HISTORY

PART-A: Introduction			
Program: Bachelor in Arts <i>(Certificate / Diploma / Degree/Hons)</i>		Semester - I	
		Session: 2024-2025	
1	Course Code	HIGE 01	
2	Course Title	<i>Ancient Indian History (From the beginning to Satvahan Dynasty)</i>	
3	Course Type	GE	
4	Pre-requisite(if, any)	<i>As per Program</i>	
5	Course Learning Outcomes (CLO)	<ul style="list-style-type: none"> ➤ Student will acquire knowledge about ancient period, Life style ➤ They can gather knowledge about the society culture & religion. ➤ Political condition of ancient period and the role of different social class. ➤ Student will learn about the Historiographical trends as well as sources of ancient Indian History ➤ Student will be familiar vedic period, Jainism, Buddhism and all ruling dynasties of Ancient India. 	
6	Credit Value	04	<i>(Credit = 15 Hours - learning & Observation and 30 Hrs for Practices/ Field work)</i>
7	Total Marks	Max. Marks: 70+30=100	Min Passing Marks: 40
PART -B: Content of the Course			
Total No. of Teaching-learning Periods 60 (01 Hr. per period)			
Module / Unit	Topics (Course contents)		No. of Period
I	1. Geographical Features of India. 2. Sources of Ancient Indian History. 3. Pre Stone age and the New Stone age. 4. Harappan civilization & Founder, Extension, Town Planning, Political, Social, Economic - Religious Condition.		15
II	1. Rigvedic age. 2. Later Vedic age. 3. Mahajanpad age. 4. Jainism. 5. Buddhism		15
III	1. Invasion of Alexander and its effects. 2. Causes for the rise of Magadha empire. 3. Chandragupta Maurya & his conquests 4. Mauryan Administration.		15
IV	1. Ashoka and his Dhamma. 2. Sunga Dynasty. 3. The Kushanas. 4. Satvahan Dynasty		15



 R. Singh

	3. The Kushanas. 4. Satvahan Dynasty	
Keywords	

Signature of Convener & Members:

PART-C

Learning Resources: Text Books, Reference Books and Others

Text Books Recommended –

12. K. L. Khurana – History of India from earliest time to 1526 A. D.
13. K. L. Khurana – Ancient India from earliest time to 1206 A. D.
14. Vincent smith – oxford history of India.
15. L. Prasad – Ancient India –Indus velley civilization to 1200 A. D.
16. रतिभान सिंह नाहर – प्राचीन भारतीय इतिहास एवं संस्कृति
17. बी. एन. लुनिया – प्राचीन भारतीय संस्कृति
18. भार्गव – प्राचीन भारत
19. एस. आर. शर्मा – प्राचीन भारत
20. शांता शुक्ला – भारत का राजनीतिक इतिहास
21. ए. के. मित्तल – भारत का इतिहास प्रारम्भ से 1206 ई.
22. ए. के. मित्तल एवं डॉ. आर अग्रवाल – विश्व का इतिहास 1453 से 1890 ई.

Online Resources–

- e-Resources / e-books and e-learning portals

Online Resources–

- e-Resources / e-books and e-learning portals

PART -D: Assessment and Evaluation

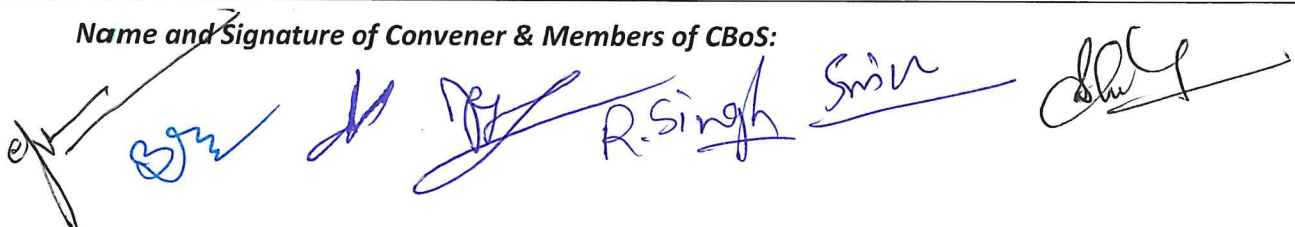
Suggested Continuous Evaluation Methods:

Maximum Marks:	100 Marks
Continuous Internal Assessment (CIA):	30 Marks
End Semester Exam (ESE):	70 Marks

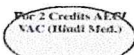
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 & 20	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
	Assignment/Seminar +Attendance - 10 Total Marks - 30	

End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x10 =40 Marks
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Name and Signature of Convener & Members of CBoS:



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Four-year undergraduate course; 2024 - 28
Department of Political Science Course Curriculum

PART A INTRODUCTION			
PROGRAM Bachelor in social science Certificate/Diploma/Degree/Honors		Semester - I	Session: 2024-2025
1	Course Code	PSGE 01	
2	Course Title	Introduction to Political Theory	
3	Course Type	GE : Generic Elective Course	
4	Prerequisite (if, any)	As per program	
5	Course Learning Outcomes (CLO)	<p>After completion of the course, the student shall be able to..</p> <ul style="list-style-type: none"> • Create the understanding of the concept of political science, and methodology • Evaluate the concept of state, Its theories of origin, functions and relation with individuals . • Analyse the basic concepts of Political Science like liberty, right, sovereignty and . • Apply the knowledge of democracy and democratic norms, the functional machinery of electoral democracy like political party system and pressure groups. Role of State as welfare agency , and as an agency of social change . 	
6	Credit Value	4 Credits	Credit = 15 Hours - learning & Observation
7	Total Marks	Max. Marks: 100	Min Passing Marks: 40
PART B CONTENT OF THE COURSE			
Total No. of Teaching - Learning Periods (01 Hr. Per period) - 60 Periods (60 Hours)			
UNIT	Topics (Course Content)		No. of Periods
I	<p align="center">Political Science - Initial</p> <p>Political science : Concept, nature, Scope. Power, Authority - meaning, characteristics, types . Legitimacy - concept, relationship of power, authority and legitimacy. Study methods of political science, Behaviouralism and post-behaviouralism.</p>		15
II	<p align="center">STATE</p> <p>State: Concept, Development of State, Essential Elements. Theories of origin state - Divine, power theory, social contract and evolutionary theory, Theories of functions of state - Marxist, liberal, neo-liberal, pluralist, theory. Law: Definition: Source, Classification Public welfare state. Nationalism : Concept , types.</p>		15
III	<p align="center">Concepts</p> <p>Sovereignty: concept, types, Characteristics, Principles of Sovereignty: Legal or Monistic and Pluralist. Rights : Meaning, types major Theories, Duties. Freedom: Meaning Types, Positive and Negative Theory of Freedom. Equality : Meaning type and relation to freedom. Political Obligation, Justice : Concept, types. Democracy : Concept, types, Merits and demerits, Principles of democracy. Necessary conditions for the success of Democracy.</p>		15
IV	<p align="center">State in Function</p> <p>Forms of Government :Unitary and Federal, Parliamentary and Presidential. Totalitarianism : Concept, types. Organs of Government : Legislature, Executive and Judiciary. Theory of Separation of Powers and Checks and Balances. Constitution : meaning and kinds. Political Party : meaning, kinds, major theories, merits and demerits. Pressure Groups: meaning, kinds and technique. Public Opinion, Social Justice, Theories of Representation.</p>		15
Keywords : Political theory, state, sovereignty, right, liberty, democracy, constitution, party.			

Name and Signature of Convener & Members of CBoS:

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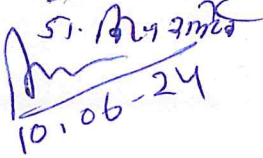
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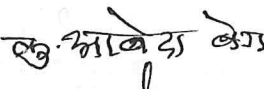
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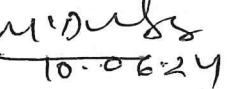
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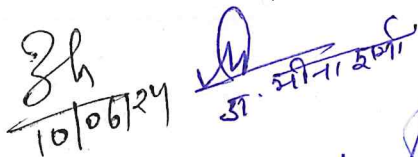
PART C		Learning Resources: Text Books, Reference Books and Others	
Text Books Recommended			
1- अंबादत्त पंत हरिमोहन जैन मदन गोपाल (1985) : राजनीति शास्त्र के मूल आधार ।सेन्ट्रल पब्लिशिंग हाउस। इलाहाबाद । उ.प्र.			
2- संधु ज्ञान सिंह (1986) : राजनीतिक सिद्धांत हिन्दी माध्यम कार्यान्वयन निदेशालय , दिल्ली विश्व विद्यालय,नई दिल्ली			
3- जौहरी जे सी (1986) : राजनीति शास्त्र के मूल सिद्धांत, साहित्य भवन आगरा ।			
4- भागवत राजीव. और अशोक आचार्य (एड.), राजनीतिक सिद्धांत: एक परिचय, दिल्ली,पिएर्सन, 2008.			
5- कुमार, संजीव (एड.), राजनीतिक सिद्धांत की समझ, दिल्ली: ओरिएण्ट ब्लैक स्वान, 2019.			
6- हुसैन शकील (2018) : राजनीतिक सिद्धांत : अवधारणात्मक परिचय । छ.ग. राज्य हिन्दी ग्रन्थ अकादमी . रायपुर, छ. ग			
7- Eddy Asirvatham & K.K. Mishra (2010) Political Theory, S. Chand Publishing Delhi (pdf available)			
8- O.P. Gauba (2014) An Introduction to Political Theory, MacMillan Publishers, Delhi.			
Online resource : e- books / pdf			
आशीर्वादम (1985) : राजनीतिक सिद्धांत - एस चन्द एण्ड कम्पनी नई दिल्ली । (ई पुस्तकालय पर pdf उपलब्ध) https://epustakalay.com/book/27958-rajniti-shastra-by-adi-ashirvadam-ganga-ratna-pandey/			
वर्मा एस पी (1985) : विकास प्रकाशन दिल्ली ई पुस्तकालय पर pdf उपलब्ध) https://epustakalay.com/book/45890-adhunik-rajaneetik-siddhant-by-s-p-varma/			
पुखराज जैन (1988) : राजनीति विज्ञान के सिद्धान्त , साहित्य भवन आगरा https://epustakalay.com/book/60211-rajniti-vigyan-ke-sidhant-by-dr-pukhraj-jain/			
Introduction to Political Science by Mark Carl Rom, Georgetown University https://open.umn.edu/opentextbooks/textbooks/1179			
Online resource : e-learning portals			CEC
NPTEL https://youtu.be/fdTNlx52Weg?si=1mzAJsSfwtPVckKq .			
https://youtu.be/o05gcwF3_Mk (in Hindi)			
PART -D: Assessment and Evaluation			
Suggested Continuous Evaluation Methods			
Maximum Marks: 100	Continuous Internal Assessment(CIA) : 30	End Semester Exam (ESE): 70	
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test/Quiz-(2):20 & 20 Assignment / Seminar - 10 Total Marks - 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks	
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks Section B: Descriptive answer type qts. 1 out of 2 from each unit- 4x10=40 Marks		

Name and Signature of Convener & Members of CBoS:

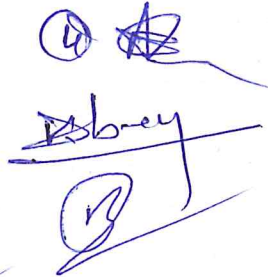
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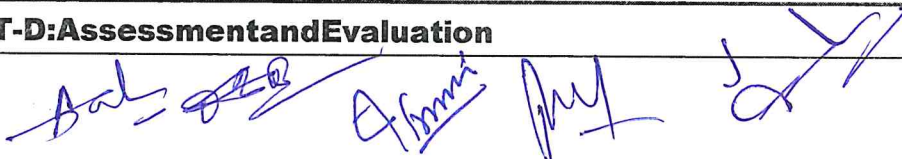
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FOUR YEAR UNDERGRADUATE PROGRAM(2024–28)
Department of Commerce and Management

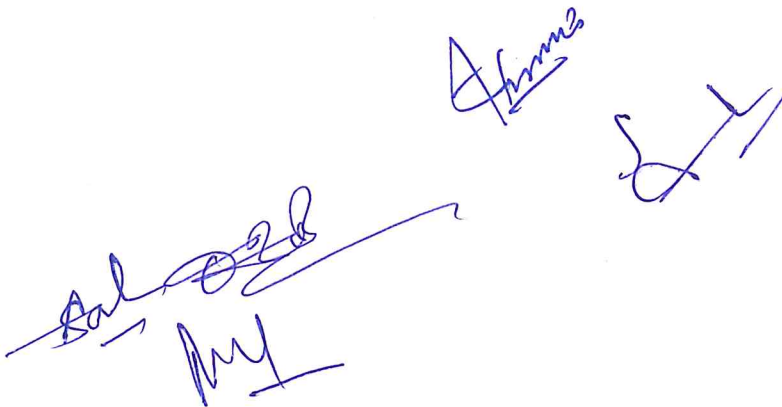
C O U R S E C U R R I C U L U M

PART-A: Introduction			
Program: Bachelor in Business Administration (Certificate / Diploma / Degree/Honors)		Semester-I	Session: 2024-2025
1	Course Code	BBSC-02	
2	Course Title	Business Mathematics	
	Course Type	Discipline Specific Course (DSC)	
4	Pre-requisite(if,any)	As per requirement	
5	Course Learning Outcomes(CLO)	<ul style="list-style-type: none"> ➤ The aim of the course is to build knowledge and understanding of Business Mathematics among the student. ➤ The course seeks to give detailed knowledge about the subject matter by instilling in the basic ideas about Business Mathematics. ➤ To provide knowledge about Mathematics and its use in business. To enable the learner about Mathematical Calculations. 	
6	Credit Value	4 Credits	Credit=15Hours-learning&Observation
7	Total Marks	Max.Marks: 100	Min Passing Marks: 40
PART-B: Content of the Course			
Total No. of Teaching-learning Periods(01 Hr.per period)– 60 Periods(60 Hours)			
Unit	Topics(Course contents)		No. of Period
I	Matrices: Definition of a Matrix; Types of Matrices; Algebra of Matrices; Adjoint of a Matrix, Matrix Inverse elementary row & column operations. Determinants: Properties of determinants; Calculation of values of Determinants up to third order.		15
II	Types of Equations: Simple/ Linear Equations and Simultaneous Equations (only two variables), Elimination and Substitution Method only. Quadratic Equation - Factorization and Formula Method ($ax^2 + bx + c = 0$ form only). Simple problems. Indices and Logarithms: Meaning- Basic Laws of Indices and their application for simplification. Laws of Logarithms – Common Logarithm, Application of Log Table for Simplification		15
III	Average & Ratio: duplicate-triplicate and sub- duplicate of a ratio. Proportions: third, fourth and inverse. Proportion, problems. Speed, Distance and Time. Commission, Discount, Profit and Loss, Percentages.		15
IV	Simple Interest, Compound Interest including yearly and half yearly calculations, Annuities, Percentages, Bills Discounting,		15
Keywords: Matrices, Indices, Logarithms, Average, Ratio, Proportion, Simple Interest.			
PART-C: Learning Resources			
Text Books, Reference Books and Others			
<ol style="list-style-type: none"> 1. <i>Business Mathematics: Dr. S.M. Shukla, Sahitya Bhawan Publications.</i> 2. <i>“Practical Business Mathematics and Statistics” Suranjan Saha, Tata Mc. Graw – Hill Publishing Company Ltd. New Delhi.</i> 3. <i>“Business Mathematics” by Dr. B.N. Gupta & Dr. S.K. Agrawal, Sahitya Bhawan Agra.</i> 4. <i>M. Raghavachari : Mathematics for Management – An Introduction. Tata Mc Graw Hill Pub. Co., New Delhi.</i> 			
Online Resources– https://www.kopykitab.com/ https://www.hitbullseye.com/grad-			
PART-D: Assessment and Evaluation			



Suggested Continuous Evaluation Methods:		
Maximum Marks: 100Marks		
ContinuousInternalAssessment(CIA): 30Marks		
EndSemesterExam(ESE): 70 Marks		
ContinuousInternal Assessment (CIA): (ByCourseTeacher)	InternalTest/Quiz-(2): 20&20 Assignment/Seminar- 10 TotalMarks- 30	Bettermarks outofthetwoTest/ Quiz +obtainedmarksinAssignmentshallbe considered against 30 Marks
EndSemester Exam (ESE):	Twosection- A &B SectionA:Q1.Objective-10x1=10Mark;Q2.Short answertype-5x4=20Marks SectionB:Descriptiveanswertypeqts.,1outof2fromeachunit-4x10=40Marks	

Name and Signature of Convenor & Members (CBoS):



PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- P.K. Sinha, Computer Fundamentals, BPB Publication, Sixth Edition.
- V. Rajaraman, Fundamentals of Computers, PHI Sixth Edition.
- B. Ram, Computer Fundamentals Architecture and Organization, New Age International Publishers, Fifth Edition.
- Raja Raman V. Fundamental of Computers, Prentice Hall of India, New Delhi.
- Peter Baer Galvin, Greg Gagne, Operating System Concepts – Abraham Silberschatz, 8th edition, Wiley-India, 2009.

Reference Books Recommended:

- Chetan Shrivastava, Fundamentals of Information Technology, Kalyan Publishers.
- Dr. Santosh Kumar Miri, Computer Fundamentals and Office Automation, Iterative International Publisher IIP.
- Alexis Leon and Mathews Leon, Fundamentals of Information Technology, Vikash Publication.
- Leon and Leon, Fundamental of IT, Leon Tec world.
- Aksoy and Denardis, Introduction to Information Technology, Cengage learning.
- Suresh K. Basandra, Computers Today, Galgotia Publications.
- Dennis P.Curtin, Kim Foley, Kunai Sen and Cathleen Morin, Information Technology – The breaking wave, TMH.
- Kogent Solution Inc., OFFICE 2013 in Simple Steps, DremTech Press.
- Kogent Learning Solutions Inc., Access 2010 in Simple Steps
- Andrew S. Tanenbaum, Modern Operating Systems, 3rd Edition, PHI
- Elmasri, Carrick, Levine, Operating Systems: A Spiral Approach – TMH Edition
- Akshay Singh , Operating System, RGCSM Publications

Online Resources:

- Indian Knowledge System and computer Science from Swayam portal
https://onlinecourses.swyam2.ac.in/imb23_mg53/preview
- Fundamentals of Computer :
<https://www.w3schools.blog/computer-fundamentals-tutorial>
- Fundamentals of Computer, Memory:
https://www.tutorialspoint.com/computer_fundamentals/index.htm
- Fundamentals of Computer , Windows Operating System :
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- Fundamentals of Computer:
<https://nptel.ac.in/courses/106/103/106103068/>
- Introduction to Operating System:
<https://www.w3schools.in/operating-system/tutorials/>
- Introduction to Operating System:
<https://www.javatpoint.com/windows>.
- Peripheral Devices
<https://www.tutorialspoint.com/what-are-peripheral-devices>
- Windows :
<https://www.javatpoint.com/windows>
- Linux:
<https://www.javatpoint.com/what-is-linux>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 100 Marks

Continuous Internal Assessment (CIA): 30 Marks

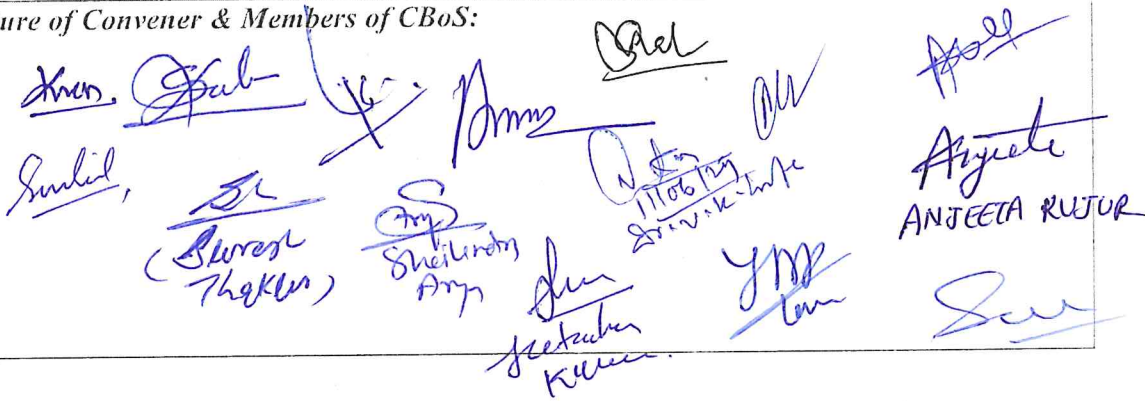
End Semester Exam (ESE): 70 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2): 20 & 20	Better marks out of the two Test / Quiz obtained marks in Assignment shall be considered against 30 Marks
	Assignment / Seminar - 10	
	Total Marks - 30	

End Semester Exam (ESE):	Two section – A & B
	Section A: Q1. Objective – 10 x1= 10 Mark; Q2. Short answer type- 5x4 =20 Marks
	Section B: Descriptive answer type qts., 1 out of 2 from each unit-4x10=40 Marks

Name and Signature of Convener & Members of CBoS:

~~Dr. H.S. Hada~~
Chairman



 A collection of handwritten signatures in blue ink. The signatures are arranged in a roughly rectangular pattern. Some signatures are accompanied by printed names or titles. For example, one signature is clearly 'ANJEETA RUTUR'. Other signatures are more stylized and difficult to read.

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)
DEPARTMENT OF COMPUTER SCIENCE
COURSE CURRICULUM

PART- A: Introduction		
Program: Bachelor in Science (CS) (Certificate / Diploma / Degree)		Semester - I
Session: 2024-2025		
1	Course Code	CSSC-01P
2	Course Title	Lab 1: Operating Systems (DOS, Windows, Linux)
3	Course Type	Practical
4	Prerequisite	As per program
5	Course Learning Outcomes (CLO)	At the end of this course, the students will be able to: <ul style="list-style-type: none"> • Understand the fundamental concepts of DOS, Windows and Linux Operating System. • Understand basics of DOS commands and its types. • Understand features of Windows Operating system. • Understand comparative features of DOS and Windows Operating systems. • Explore functionality of Linux.
6	Credit Value	1 Credits <i>Credit =30 Hours Laboratory or Field Learning/Training</i>
7	Total Marks	Max. Marks: 50 Min Passing Marks: 20

PART -B: Content of the Course

Total No. of learning-Training/performance Periods: 30 Periods (30 Hours)

Module	Topics (Course contents)	No. of Period
List of Practical Experiment	<ol style="list-style-type: none"> 1. Demonstrate different Directory naming listing structure with all options. 2. Create one file and rename file using DOS command 3. Demonstrate all Internal DOS Commands with Output. 4. Demonstrate all external DOS Commands with output. 5. Introduction to Windows and Familiarity with its controls. 6. Study and use of Desktop, my computer, recycle bin, Task bar. 7. Working with Files and Folder. 8. Use of various window applications: Calculator, notepad and MS-Paint. 9. Explaining control panel options. 10. Working with printers. 11. Create a file using Linux command. 12. Write a Linux command which lists all files and directories. 13. Demonstrate use of grep command. 14. Create Directory using Linux command and create 3 different files in this directory. 15. Delete above created files and directory using Linux command. 16. Explaining various flavors of Linux. <p>Note: Concerned teacher can add additional practical exercises as per requirement.</p>	30

Keywords DOS, Windows, Linux.

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]*
 Chairman *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]* ANJEETA KUMAR
[Signature] *[Signature]* *[Signature]* *[Signature]* *[Signature]* *[Signature]*

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended:

- Rusell A Stultz, MS DOS 6.22 BPB Publications
- Brain Underdahl, Teach yourself Windows 2000, Wiley Publications.

Reference Books Recommended:

- Peter Norton, Maximizing Windows, Teachmedia.
- Ray Duncan, Advances MS-DOS Programming, BPB
- Akshay Singh, Operating System, RGCSM Publications
- Ray Yao, Shell Scripting in 8 Hours

Online Resources:

- DOS: <https://www.javatpoint.com/ms-dos-operating-system>
- Windows: <https://www.javatpoint.com/windows>
- Linux: <https://www.javatpoint.com/what-is-linux>
- Fundamentals of Computer, Windows Operating System:
<https://vikaspedia.in/education/digital-literacy/it-literacy-courses-in-associating-with-msup/computer-fundamentals>
- DOS: <https://www.geeksforgeeks.org/ms-dos-operating-system/>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2):	10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar + Attendance -	05	
	Total Marks -	15	

End Semester Exam (ESE):	Laboratory / Field Skill Performance: On spot Assessment		Managed by Course teacher as per lab. status
	A. Performed the Task based on lab. work	- 20 Marks	
	B. Spotting based on tools & technology (written)	- 10 Marks	
	C. Viva-voce (Based on principle/technology)	- 05 Marks	

Name and Signature of Convener & Members of CBoS:

Dr. H.S. Hota
Chairman

[Signature]

[Signature]

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[Signature]
(Deemed holder)

[Signature]
Snehalata
Anand

[Signature]
Jyoti
Kumar

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Anand

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ANJEETA KUMAR

**FOUR YEAR UNDERGRADUATE PROGRAM(2024-28)
DEPARTMENT OF SOCIOLOGY COURSE CURRICULUM**




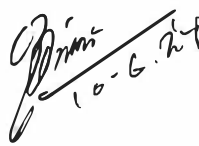




PART-A : INTRODUCTION		
PROGRAM: Bachelor in Arts (Certificate/ Diploma/Degree/Honors)		SEMESTER-II
SESSION:2024-25		
SUBJECT: SOCIOLOGY		
1	COURSE CODE:	SOSC-02
2	COURSE TITLE:	CHANGING SOCIAL INSTITUTIONS IN INDIA
3	COURSE TYPE:	DSC
4	Pre-requisite	As per Government norms
5	COURSE LEARNING OUTCOME (CLO):	<p>After completion of the course, the student will be able to achieve the following objectives-</p> <ul style="list-style-type: none"> • The students will learn and understand the classical background of Indian society. • Students will learn about the Indian social structure. • The course will enhance understanding about pre dominant issues of Indian society. • This course will enhance the understanding about rural structure, development and issues. • The students will learn about social problems of India.
6	CREDIT VALUE:	04(Credit= 15 Hour- Learning and observation)
7	TOTAL MARKS:	MAX MARKS:100
		MIN PASS MARKS:40

PART-B : CONTENT OF THE COURSE

Total Number of Teaching-Learning Periods(01 hr. Per Period)- 60 Period (60 Hours)

UNIT	TOPICS	No. of Periods
UNIT-I Classical Indian: Society and Changes	<ol style="list-style-type: none"> 1. Classical Indian Society and Changes 2. Ashram, Purusharth 3. Karma: Views on Past and Present 4. Caste Roles and Varna Formulations 	15
UNIT-II Indian Social Structure	<ol style="list-style-type: none"> 1. Family Roles and its Changing Nature 2. Marriage and its Challenges 3. Kinship: Principle and Pattern 4. Jajmani and Agrarian Relationship 	15
UNIT-III Rural Social System	<ol style="list-style-type: none"> 1. Rural Development and Change 2. Rural Migration and Urbanisation 3. Religiosity and superstition in rural society 4. Problem of Peasants 	15
UNIT-IV Social Issues in India	<ol style="list-style-type: none"> 1. Poverty and Unemployment : Causes and Remedies 2. Problem of Corruption: Causes and Remedies 3. Drugs Abuse: Types, Causes and Remedies 4. Cyber Crime: Types, Causes and Remedies 	15


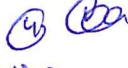





Signature of Convener & Members :

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PART-C : LEARNING RESOURCES ,REFERENCE BOOKS& OTHERS		
AUTHOR	TITLE	PUBLISHER
TEXTBOOK		
C.N.Shankar Rao	Indian Social Problems	S Chand
Ram Ahuja	Social Problems in India	Rawat Publication
C.N.Shankar Rao	Sociology of Indian Society	S Chand Publication
REFERENCES		
Rajendra Kumar Sharma	Indian Society: Institutions and Change	Atlantic Publication
B.R.Chauhan	Indian Villages	Rawat Publication
Indra Dewa	Society and Culture in India	Rawat Publucation
Online Resources		
1	https://epgp.inflibnet.ac.in	
2	https://vidyamidra.inflibnet.ac.in	
3	https://vidyamidra.inflibnet.ac.in/index.php/search	
4	https://www.swayamprabha.gov.in	

PART-D:ASSESSMENT AND EVALUATION		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks		
Continuous Internal Assessment (CIA): 30 Marks		
End Semester Exam (ESE): 70 Marks		
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test/Quiz-(2): 20 & 20 Assignment/Seminar- 10 Total Marks- 30	Better marks out of the two Test/Quiz +obtained marks in Assignments shall be considered against 30 Marks
End Semester Exam (ESE):	Two section - A & B Section A: Q1. Objective - 10 x 1 = 10 Marks; Q2. Short answer type - 5 x 4 = 20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit - 4 x 10 = 40 Marks	

Name and Signature of Convener & Members of CBoS

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 ③  ⑥ 
 ⑦  10.6.24

**FOUR YEAR UNDERGRADUATE PROGRAM(2024-28)
DEPARTMENT OF SOCIOLOGY COURSE CURRICULUM**

PART-A : INTRODUCTION		
PROGRAM: Bachelor in Arts (Diploma/Degree/Honors)		SEMESTER-III
SESSION:2024-25		
SUBJECT: SOCIOLOGY		
1	COURSE CODE:	SOSC- 03
2	COURSE TITLE:	TRIBAL CULTURE OF CHHATTISGARH
3	COURSE TYPE:	DSC
4	Pre-requisite	As per Government norms
5	COURSE LEARNING OUTCOME (CLO):	<p>After completion of the course, the student will be able to achieve the following objectives-</p> <ul style="list-style-type: none"> • The student will learn about the tribal and folk culture of India. • This course will provide students a deeper understanding about tribal and rural society and their problems. • This will help the students to understand the background of various tribal movements and what are the impact of different schemes on overall tribal development and inclusion. • This will make students to learn the local culture of Chhattisgarh.
6	CREDIT VALUE:	04(Credit= 15 Hour- Learning and observation)
7	TOTAL MARKS:	MAX MARKS:100 MIN PASS MARKS:40
PART-B : CONTENT OF THE COURSE		
Total Number of Teaching-Learning Periods(01 hr. Per Period) 60 Period (60 Hours)		
UNIT	TOPICS	No. of Periods
UNIT-I Tribal Profile in India	1. Tribe: Concept of Tribes, Difference between Caste and Tribe 2. Classification of Tribal People: Geographical, Nomads, Agriculturalists and Artisans 3. Socio Cultural Structure : Family, Kinship, Marriage, Religion 4. Present Status of Tribes in India	15
UNIT-II Tribes in Chhattisgarh	1. Demographic Profile: Geographical Classification, Ethnic Classification, Particularly Vulnerable Tribal Groups of Chhattisgarh 2. Tribal Culture: Economic Profile, Religion, Polity, Tradition 3. Changes Taking Place In Tribal Societies: Tribal Mobility 4. Schemes of Tribal Development	15
UNIT-III Tribal Revolt in Chhattisgarh	1. Halba Revolt 2. Muriya Revolt 3. Paralkot Revolt 4. Bhumkaal Revolt	15
UNIT-IV Tribal Culture of Chhattisgarh	1. Festival, Food and Fairs. 2. Music, Dance and Folk-art 3. Language, Dialect and Literature 4. Special Ritual and Traditions	15
Signature of Convener & Members :		


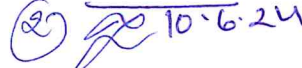


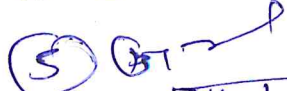


PART-C : LEARNING RESOURCES ,REFERENCE BOOKS& OTHERS

AUTHOR	TITLE	PUBLISHER
TEXTBOOK		
Dharamveer Mahajan	Janjati Samaj Ka Samaj Shastra	Vivek Prakashan
Dharamveer Mahajan	Gramin Tatha Nagariya Samajshastra	Vivek Prakashan
M.L. Doshi and P.C. Jain	Janjatiya Samajshastra	Rawat Publication
REFERENCES		
L.P.Vidyarthi and Binay Kumar Rai	The Tribal Culture of India	Concept Publishing Company
P.K.Mohanty	Encyclopedia of Sheduled Tribes in India	Gyan Books
Dr. V.K.Shiwastava	Sociology of Tribal Studies	Zorba Books
Online Resources		
1	https://www.swayamprabha.gov.in/index.php	
2	https://vidyayamitra.inflibnet.ac.in/index.php	
3	https://epgp.inflibnet.ac.in/Home/ViewSubject	
4	https://cgtrti.gov.in/hi/e_Library	
5	https://www.scert.cg.gov.in/pdf/mle/MLE-Book-5/7-Chhattisgarh%20%20ki%20Aadim%20Janjatiyan%20(Ek%20Paridrishya).pdf	

PART-D:ASSESSMENT AND EVALUATION

Suggested Continuous Evaluation Methods:		
Maximum Marks:		
	100 Marks	Continuous Internal Assessment (CIA):
	30 Marks	End Semester Exam (ESE):
	70 Marks	
Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test/Quiz-(2): 20 & 20 Assignment/Seminar- 10 Total Marks- 30	Better marks out of the two Test/Quiz + obtained marks in Assignments shall be considered against 30 Marks
End Semester Exam (ESE):	Two section - A & B Section A: Q1. Objective - 10 x 1 = 10 Marks; Q2. Short answer type - 5 x 4 = 20 Marks Section B: Descriptive answer type qts., 1 out of 2 from each unit - 4 x 10 = 40 Marks	

Name and Signature of Convener & Members of CBOS

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- ②  10.6.24
- ③ 
- ④ 
- ⑤ 
- ⑥  27/4/24
- ⑦  10.6.24

FOUR YEAR UNDERGRADUATE PROGRAM(2024-28)
DEPARTMENT OF SOCIOLOGY COURSE CURRICULUM




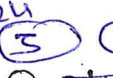


PART-A : INTRODUCTION		
PROGRAM: Bachelor in Arts (Diploma/Degree/Honors)		SEMESTER –IV
SESSION:2024-25		
SUBJECT: SOCIOLOGY		
1	COURSE CODE:	SOSC-04
2	COURSE TITLE:	SOCIAL PROBLEMS AND SOCIAL CHANGE
3	COURSE TYPE:	DSC
4	Pre-requisite	As per Government norms
5	COURSE LEARNING OUTCOME (CLO):	<p>After completion of the course, the student will be able to achieve the following objectives-</p> <ul style="list-style-type: none"> • Students will be able to understand the causes and background of social problems in India. • This course will enable students to search for solutions of current social problems in India. • This course will make students to learn about different theoretical perspectives of social change. • Students will develop a tendency to understand and accept the process of social change.
6	CREDIT VALUE:	04(Credit= 15 Hour- Learning and observation)
7	TOTAL MARKS:	MAX MARKS:100
		MIN PASS MARKS:40


PART-B : CONTENT OF THE COURSE

Total Number of Teaching-Learning Periods(01 hr. Per Period)- 60 Period (60 Hours)

UNIT	TOPICS	No. of Periods
UNIT-I Concept of Social Problems	1. Social Problems: Concept, Factors, and Types. 2. Social Problems - Reasons and Solutions . 3. Social conflict: Theories and Types 4. Juvenile delinquency: Types, Causes and Solutions	15
UNIT-II Social Problems in India	1. Structural Problems: Poverty, Regional Differences, Caste Inequality 2. Problems of Youth and Women: 3. Drug Abuse and Alcoholism- Causes and Solutions 4. Child Labour and Human Trafficking –Factors and Remedies	15
UNIT-III Social Change in India	1. Social change : Meaning and Major Factors 2. Theories of Social Change 3. Social change and Development 4. Barriers to the Development of Social Change in India	15
UNIT-IV Process of Social Change	1. Urbanisation: Nature, Causes and Problem 2. Modernisation: Impact, Causes, Characteristics, Modernisation of Indian tradition 3. Industrialisation: Economic and Ecological impact 4. Westernization: Causes and Impact	15

Signature of Convener & Members :

①  ④ 
 ②  10.6.24 ⑤ 
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 10.6.24

Four Year Undergraduate Program (2024-28)
Department of Biotechnology
Course Curriculum

Part A: Introduction		
Program: BSc in Life Sciences (Certificate/ Diploma/Degree/Honors)		Semester: I Sem
Session:2024-2025		
1	Course Code	BTVAC-01
2	Course Title	Plants-based Secondary Metabolites
3	Course Type	Value Addition Course (VAC)
4	Pre-requisite (if any)	As per requirement.
5	Course Learning Outcomes (CLO)	After completing this course, the students will be able to - <ul style="list-style-type: none"> • Understand the medicinal values applicable to the Indian knowledge system. • Identify the plants with medicinal viability. • Explore the scientific validation of our traditional knowledge. • Develop competency for exploration of secondary metabolites and their application.
6	Credit Value	02 credits (Credit = 15 Hours - learning & observation)
7	Total Marks	Max. Marks: 50 Min Passing Marks: 20
Part B: Content of Course (Theory)		
Total No. of Teaching-learning Periods (01 Hr. per period)- 30 Periods (30 Hours)		
Unit	Topic (Course content)	No. of Period
I	Medicinal plants and their viability <ol style="list-style-type: none"> 1. General account of medicinal plant. 2. Scope of medicinal plants in the Indian market and abroad. 3. Role of medicinal plants in human health, advantage and limitation. 4. The basic theory of instrumental mechanism e.g. Soxhlet, oven, lyophilizer, etc. 	08 (08 Hrs)
II	Significance of the Indian knowledge system <ol style="list-style-type: none"> 1. Extraction techniques used for secondary metabolite isolation. 2. Secondary metabolite storage. 3. Systems of Indian medicines: Ayurveda, Unani, Siddha, and Homeopathy. 4. Classification of crude drugs: Morphological, taxonomical, chemical, and pharmacological. 	07 (07 Hrs)
III	Methods for phytochemical screening <ol style="list-style-type: none"> 1. Preparation technique of herbal infusions, decoctions, lotions, etc. 2. Introduction to phytochemical screening-alkaloids, polyphenolic compounds. 3. Introduction to phytochemical screening- glycosides. 4. Introduction to biological testing of herbal drugs (analgesics, anti-inflammatory and antianxiety agents). 	08 (08 Hrs)
IV	Essential industrial regulations <ol style="list-style-type: none"> 1. Calibration and validation as per ICH and USFDA guidelines. 2. Production management, supply chain management & challenges 3. Government subsidy & industries, 	07 (07 Hrs)

	4. Types of diseases by controlled bioagent formulations.	
Keywords	Secondary metabolite, alkaloids, medicinal plants, phytochemicals.	

• Part C - Learning Resource	
Text Books, Reference Books, Other Resources -	
Text Book- Plants Secondary Metabolites- AK Sharma	
Plant Secondary Metabolites for Human Health- Dr. M M Abid Ali Khan	
<ul style="list-style-type: none"> • Ethnobiology – R.K.Sinha & Shweta Sinha – 2001. Surabhe Publications – Jaipur. • Tribal medicine – D.C. Pal & S.K. Jain 1998, Naya Prakash, 206, Bidhan Sarani, Calcutta – 700 006. • Contribution to Indian ethnobotany – S.K. Jain 1995, 3rd edition, Scientific publishers, P.B.No. 91, Jodhpur, India. • A Manual of Ethnobotany – S.K.Jain, 1995, 2nd edition. 	
Online resources- https://onlinecourses.nptel.ac.in/noc20_bt34/preview http://acl.digimat.in/nptel/courses/video/102106080/lec14.pdf	

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks:	50 Marks	
Continuous Internal Assessment (CIA):	15 Marks	
End Semester Exam (ESE):	35 Marks	
Continuous Internal Assessment (CIA) (By course teacher):	Internal Test / Quiz-(2): 10 +10 Assignment / Seminar - 05 Total Marks - 35	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., out of 2 from each unit-4x05=20 Marks	

Name and Signature of Convener and Members of CBoS:

Dr. YJ Wala
 Keshav Kant Sharma
 Ankit (Ankit Panda)
 Neha (Dr. Neha Behra)
 Dr. Sanjana Bheged
 Dr. Shubha Dwan
 Dr. Pramod Malsh
 Dr. Anshu Kashyap
 Dr. Shivani Sharma

FOUR YEAR UNDERGRADUATE PROGRAM (2024 – 28)

**DEPARTMENT OF BOTANY
COURSE CURRICULUM**

PART- A: Introduction		
Program: Bachelor in Life sciences <i>(Certificate / Diploma / Degree)</i>		Semester - I/III/V
Session: 2024-2025		
1	Course Code	BOVAC-01
2	Course Title	Herbal Plant & Human Health
3	Course Type	Value Addition Course (BOVAC-01)
4	Pre-requisite (if, any)	As per program
5	Course Learning Outcomes (CLO)	<p>After completion of this course, the students will be able to –</p> <ul style="list-style-type: none"> ➤ Understand the value of herbs, herbal medicine and use of herbal medicine. ➤ Know about botanical medicine professionals in the complementary and alternative medicine (CAM) ➤ Demonstrates the knowledge of the toxicity of plant and essential oil ingredients, ➤ Understand the possibility for allergic and unpleasant reactions to herbal products and the impact of herbal quality on potential toxicity. ➤ Use the herbal plants in their daily life ➤ Adopt the value of herbal medicine to save their health.
6	Credit Value	2 Credits <i>Credit = 15 Hours - learning & Observation</i>
7	Total Marks	Max. Marks: 50 Min Passing Marks: 20
PART -B: Content of the Course		
Total No. of Teaching-learning Periods (01 Hr. per period) - 30 Periods (30 Hours)		
Unit	Topics (Course contents)	No. of Period
I	<p>Introduction: Elementary knowledge of Herbal plant and Concept of Herb as medicine.</p> <p>Concept of ethno-medicine, folk medicines, ethno-ecology, ethnic communities of the India & the Chhattisgarh. Concept of Herbal garden. Collection of ethnic information.</p> <p>Observation/In Practices - Survey and familiarization with herbs & local herbal plants</p>	08
II	<p>Importance of medicinal plants: Importance of Herbal / Medicinal plant in human health care – health and balanced diet (Role of proteins, carbohydrates, lipids and vitamins). Common plants & plant parts providing metals and vitamins.</p> <p>Observation/In Practices - Survey and familiarization with local herbal medicinal plants</p>	07
III	<p>Tribal medicine and Traditional knowledge: Introduction, Concept of Tribal medicine, methods of disease diagnosis and treatment – common Plants in folk religion. Traditional knowledge and utility of some medicinal plants in Chhattisgarh.</p> <p>Collection /Identification of Herbal plants commonly used by villagers of the state –</p> <ul style="list-style-type: none"> • <i>Centella asiatica,</i> • <i>Aloe vera,</i> • <i>Solanum nigrum,</i> • <i>Achyranthus aspera,</i> • <i>Withania somnifera,</i> • <i>Papaver somniferum,</i> • <i>Strychnos nux- vomica,</i> • <i>Atropa belladonna;</i> 	08
IV	<p>Plants in day to day life: Nutritive and medicinal value of common herbal fruits and vegetables of daily use. Precautions during use of herbal medicinal products. Basic idea of contribution of national research laboratories like CDRI, CIMAP, NBRI, etc.</p> <p>Collection /Identification of Herbal plants commonly used in daily life - Tulsi, Garlic, Ginger, Turmeric, Ajwain, Methi, Flax, Tea and Coffee.</p>	08
Keywords	Herbal medicine, Folk medicine, Ethno-medicine, Tribal medicine	
Signature of Convener & Members (CBoS)		

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PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended –

1. Kumar, N.C. (1993). An Introduction to Medical botany and Pharmacognosy. Emkay Publications, New Delhi.
2. Rao, A.P. (1999). Herbs that heal. Diamond Pocket Books (P) Ltd., New Delhi.
3. Iris F. F. Benzie and Sissi Wachtel-Galor. Herbal Medicine, 2nd edition Biomolecular and Clinical Aspects, CRC Press/Taylor & Francis; 2011.
4. Fabrizio Donovan (2020) Medicinal Herbs: The Ultimate Guide to Natural Healing, Learn The Benefits of Herbs and Use the Nature's Most Powerful Medicinal Plants in Making Your Own AZ Remedies to Treat Diseases, Author's Republic.
5. Stargrove Mitchell Bebel ND, Herb, Nutrient, and Drug Interactions, Publisher: Elsevier – Health Sciences Division
6. Iris F. F. Benzie (Editor), Herbal Medicine (Oxidative Stress and Disease) 2nd Edition,

Online Resources–

- e-Resources / e-books and e-learning portals
- www.swayam.ac.in
- www.ignou.ac.in
- www.egyankosh.ac.in
- www.iitm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in
- www.internshala.com
- www.ndl.iitkgp.ac.in

Online Resources–

- <https://pubmed.ncbi.nlm.nih.gov/22593937/>
- <https://crimsonpublishers.com/acam/pdf/ACAM.000551.pdf>
- https://www.researchgate.net/publication/329823398_Medicinal_Plants_Used_in_the_Treatment_of_Mental_and_Neurological_Disorders_in_Ghana
- <https://www.sciencedirect.com/science/article/abs/pii/S0378874115003013>
- <https://core.ac.uk/download/pdf/143841457.pdf>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://practicalselfreliance.com/medicinal-plants/>
- <https://www.pdfdrive.com/medicinal-plants-books.html>

PART -D: Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks: 50 Marks

Continuous Internal Assessment (CIA): 15 Marks

End Semester Exam (ESE): 35 Marks

Continuous Internal Assessment (CIA): (By Course Teacher)	Internal Test / Quiz-(2):	10 & 10	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 15 Marks
	Assignment/Seminar +Attendance -	05	
	Total Marks -	15	

End Semester Exam (ESE):	Two section – A & B Section A: Q1. Objective – 05 x1= 05 Mark; Q2. Short answer type- 5x2 =10 Marks Section B: Descriptive answer type qts., 1out of 2 from each unit- 4x05 =20 Marks
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Name and Signature of Convener & Members of CBoS:

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