SHRI DAVARA UNIVERSITY

NAYA RAIPUR (C.G.)

PROGRAMME CURRICULUM

FOR

BECHELOR IN LIFE SCIENCES

(MICROBIOLOGY)

SEMESTER-I

AS PER NEW EDUCATION POLICY-2020

AND

NATIONAL EDUCATION POLICT-2025

FOUR YEAR UNDERGRADUATE PROGRAMME2024-25

(EFFECTIVE FROM THE SESSION-2024-2025

INTRODUCTION OF THE DEPARTMENT:-

Department of Chemistry

Introduction

The Department of Chemistry is a vibrant community of scholars, researchers, and students dedicated to advancing our understanding of the chemical sciences. Our department offers undergraduate and postgraduate programs in chemistry, providing students with a comprehensive education in the principles and applications of chemistry.

Mission

Our mission is to provide students with a rigorous and well-rounded education in chemistry, preparing them for careers in research, industry, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Chemistry engage in cutting-edge research in various areas, including:

1. Organic Chemistry: Synthesis and characterization of organic compounds.
2. Inorganic Chemistry: Study of inorganic compounds and their applications.
3. Physical Chemistry: Investigation of the physical principles underlying chemical phenomena.
4. Analytical Chemistry: Development and application of analytical techniques.

Department of Botany

Introduction

The Department of Botany is a dynamic community of plant biologists, researchers, and students dedicated to exploring the fascinating world of plants. Our department offers undergraduate and postgraduate programs in botany, providing students with a comprehensive education in plant biology.

Mission

Our mission is to provide students with a rigorous and well-rounded education in botany, preparing them for careers in research, conservation, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Botany engage in cutting-edge research in various areas, including:

1. Plant Systematics: Study of plant classification, evolution, and diversity.
2. Plant Physiology: Investigation of plant growth, development, and responses to environmental stimuli.
3. Plant Ecology: Study of plant interactions with their environment and other organisms.
4. Plant Biotechnology: Application of biotechnology to improve plant breeding, genetics, and agriculture.

Department of Microbiology

Introduction

The Department of Microbiology is a vibrant community of animal biologists, researchers, and students dedicated to exploring the fascinating world of animals. Our department offers undergraduate and postgraduate programs in Microbiology, providing students with a comprehensive education in animal biology.

Mission

Our mission is to provide students with a rigorous and well-rounded education in Microbiology, preparing them for careers in research, conservation, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Microbiology engage in cutting-edge research in various areas, including:

1. Microorganisms Systematics: Study of animal classification, evolution, and diversity.
2. Microorganisms Physiology: Investigation of animal growth, development, and responses to environmental stimuli.
3. Microorganisms Ecology: Study of animal interactions with their environment and other organisms.
4. Microorganisms Behavior: Study of animal behavior, including social behavior, communication, and learning.

VISION OF DEPARTMENT: -

Department of Chemistry

Vision

To be a leading department of chemistry, recognized for its academic excellence, innovative research, and commitment to fostering a community of scholars who can address the complex chemical challenges of the 21st century.

Objectives

1. To provide students with a world-class education in chemistry, emphasizing both theoretical foundations and practical applications.
2. To conduct cutting-edge research in chemistry, focusing on areas of

national and global importance.

3. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

4. To develop and maintain state-of-the-art research facilities and instrumentation.

Department of Botany

Vision

To be a premier department of botany, dedicated to advancing our understanding of plant biology and addressing the critical challenges facing our planet, including climate change, food security, and conservation.

Objectives

1. To provide students with a comprehensive education in botany, emphasizing both theoretical foundations and practical applications.

2. To conduct innovative research in plant biology, focusing on areas of national and global importance.

3. To develop and maintain a diverse collection of plant specimens and living collections.

4. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

Department of Microbiology

Vision

To be a leading department of Microbiology, recognized for its academic excellence, innovative research, and commitment to fostering a community of scholars who can address the complex challenges facing Microorganisms populations and ecosystems.

Objectives

1. To provide students with a world-class education in Microbiology, emphasizing both theoretical foundations and practical applications.

2. To conduct cutting-edge research in Microorganisms biology, focusing on areas of national and global importance.

3. To develop and maintain state-of-the-art research facilities and instrumentation.

4. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

SCOPE OF DEPARTMENT: -

Department of Chemistry

Scope

1. Research and Development: Opportunities exist in various fields like medicinal chemistry, materials science, environmental chemistry, and analytical chemistry.

2. Industry and Manufacturing: Chemistry graduates can work in various industries like pharmaceuticals, petrochemicals, and materials manufacturing.

3. Environmental Conservation: Chemists can work in environmental monitoring, conservation, and sustainability.

4. Education and Academia: Chemistry graduates can pursue teaching and research careers in academic institutions.

5. Government and Policy: Chemists can work in government agencies, regulatory bodies, and policy-making institutions.

Department of Botany

Scope

1. Research and Development: Opportunities exist in various fields like plant breeding, genetic engineering, plant physiology, and plant ecology.

2. Agriculture and Horticulture: Botany graduates can work in agriculture, horticulture, and plant biotechnology industries.

3. Conservation and Environmental Science: Botanists can work in plant conservation, environmental monitoring, and sustainability.

4. Education and Academia: Botany graduates can pursue teaching and

research careers in academic institutions.

5. Government and Policy: Botanists can work in government agencies, regulatory bodies, and policy-making institutions.

Department of Microbiology

Scope

1. Research and Development: Opportunities exist in various fields like Microorganisms physiology, ecology, evolution, and conservation biology.

2. Microorganisms Conservation and Management: microbiology graduates can work in wildlife conservation, management, and research institutions.

3. Microorganisms Health and Veterinary Science: Microbiologists can work in Microorganisms health, veterinary science, and Microorganisms biotechnology industries.

4. Education and Academia: Microbiology graduates can pursue teaching and research careers in academic institutions.

5. Government and Policy: Microbiologists can work in government agencies, regulatory bodies, and policy-making institutions.

PROGRAMME OUTCOME:-

1**. Knowledge and Understanding:** Demonstrate advanced knowledge and understanding of scientific principles, theories, and concepts in their chosen field.

2. **Critical Thinking and Analysis:** Apply critical thinking and analytical skills to evaluate scientific data, theories, and methodologies.

3. **Research and Problem-Solving:** Design, conduct, and analyze research experiments, and apply scientific principles to solve complex problems.

4. **Communication and Collaboration:** Communicate complex scientific ideas effectively to various audiences, and collaborate with others in a research or professional setting.

5. **Scientific Literacy and Critical Evaluation:** Evaluate the scientific literature, identify gaps in knowledge, and propose new research directions.

6. **Professional Development and Leadership:** Demonstrate leadership skills, manage projects, and develop a professional network in their chosen field.

7. **Knowledge and Understanding:** Demonstrate a solid understanding of scientific principles, theories, and concepts in their chosen field.

8. **Critical Thinking and Analysis:** Apply critical thinking and analytical skills to evaluate scientific data and theories.

9. **Scientific Literacy and Communication:** Communicate scientific ideas effectively to various audiences, and demonstrate an understanding of the scientific method.

10. **Problem-Solving and Laboratory Skills:** Apply scientific principles to solve problems, and demonstrate laboratory skills and safety protocols.

11. **Teamwork and Collaboration:** Collaborate with others in a laboratory or project setting, and demonstrate an understanding of the importance of teamwork in science.

12. **Preparation for Further Study or Employment:** Demonstrate preparation for further study or employment in a scientific field, and exhibit a commitment to lifelong learning.

COURSE OUTCOME: -

Department of Chemistry

Course Outcomes

1**. Knowledge of Chemical Principles:** Understand and apply fundamental chemical principles, theories, and concepts.

2. **Laboratory Skills:** Develop laboratory skills, including experimentation, data analysis, and safety protocols.

3. **Analytical and Problem-Solving Skills:** Apply analytical and problem-solving skills to solve chemical problems and analyze data.

4. **Communication Skills:** Communicate chemical concepts and research findings effectively through written and oral presentations.

5. Critical Thinking and Scientific Literacy: Evaluate scientific literature, identify gaps in knowledge, and propose new research directions.

Department of Botany

Course Outcomes

1. **Knowledge of Plant Biology:** Understand and apply fundamental principles of plant biology, including morphology, anatomy, physiology, and ecology.

2. **Plant Identification and Classification:** Identify and classify plants using morphological, anatomical, and molecular characteristics.

3. **Laboratory and Field Skills:** Develop laboratory and field skills, including plant collection, preservation, and experimentation.

4. Ecological and Environmental Awareness: Understand the importance of plants in ecosystems and the impact of human activities on plant diversity and ecology.

5. **Communication and Critical Thinking:** Communicate botanical concepts and research findings effectively and critically evaluate scientific literature.

Department of Microbiology

Course Outcomes

1. **Knowledge of Microorganisms Biology:** Understand and apply fundamental principles of Microorganisms biology, including morphology, anatomy, physiology, and ecology.

2. **Microorganisms Identification and Classification:** Identify and classify Microorganisms using morphological, anatomical, and molecular characteristics.

3. **Laboratory and Field Skills:** Develop laboratory and field skills, including animal collection, preservation, and experimentation.

4. **Ecological and Environmental Awareness:** Understand the importance of animals in ecosystems and the impact of human activities on animal diversity and ecology.

5. **Communication and Critical Thinking:** Communicate Microbiological concepts and research findings effectively and critically evaluate scientific literature.

UNIT OUTCOME: -

Department of Chemistry

Unit 1: Atomic Structure and Chemical Bonding

1. Explain the structure of atoms and molecules.
2. Describe the types of chemical bonds and their properties.
3. Apply knowledge of atomic structure and chemical bonding to predict chemical behavior.

Unit 2: Thermodynamics and Kinetics

1. Understand the laws of thermodynamics and their applications.
2. Explain the principles of chemical kinetics and reaction mechanisms.
3. Apply thermodynamic and kinetic principles to solve chemical problems.

Unit 3: Organic Chemistry

1. Identify and classify organic compounds.
2. Explain the mechanisms of organic reactions.
3. Apply knowledge of organic chemistry to synthesize and analyze organic compounds.

Unit 4: Analytical Chemistry

1. Understand the principles of analytical chemistry techniques.
2. Apply analytical techniques to analyze and identify chemical substances.
3. Interpret analytical data to solve chemical problems.

Department of Botany

Unit 1: Plant Morphology and Anatomy

1. Identify and describe plant morphological and anatomical features.
2. Explain the functions of plant tissues and organs.
3. Apply knowledge of plant morphology and anatomy to understand plant development and evolution.

Unit 2: Plant Physiology

1. Understand the principles of plant physiology, including photosynthesis and respiration.

2. Explain the mechanisms of plant growth and development.

3. Apply knowledge of plant physiology to solve problems in agriculture and horticulture.

Unit 3: Plant Ecology

1. Understand the principles of plant ecology, including community structure and ecosystem function.

2. Explain the interactions between plants and their environment.

3. Apply knowledge of plant ecology to understand and manage ecosystems.

Unit 4: Plant Genetics and Evolution

1. Understand the principles of plant genetics and evolution.

2. Explain the mechanisms of plant genetic variation and evolution.

3. Apply knowledge of plant genetics and evolution to understand plant diversity and adaptation.

Department of Microbiology

Unit 1: Microorganisms Morphology and Anatomy

1. Identify and describe animal morphological and anatomical features.

2. Explain the functions of animal tissues and organs.

3. Apply knowledge of animal morphology and anatomy to understand Microorganisms development and evolution.

Unit 2: Microorganisms Physiology

1. Understand the principles of Microorganisms physiology, including nervous and circulatory systems.

2. Explain the mechanisms of Microorganisms growth and development.

3. Apply knowledge of Microorganisms physiology to solve problems in Microorganisms health and welfare.

Unit 3: Microorganisms Ecology

1. Understand the principles of animal ecology, including population dynamics and community structure.

2. Explain the interactions between animals and their environment.

3. Apply knowledge of Microorganisms ecology to understand and manage ecosystems.

Unit 4: Microorganisms Genetics and Evolution

1. Understand the principles of Microorganisms genetics and evolution.

2. Explain the mechanisms of animal genetic variation and evolution.

3. Apply knowledge of animal genetics and evolution to understand Microorganisms diversity and adaptation.

SHRI DAVARA UNIVERSITY NAYA RAIPUR

SEMESTER I

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXA INATION SCHEME				
DISCIPLINE SPECIFIC COURSE (DSC)			L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	CHSC-01T	Fundamental Chemistry-I (Chemistry)	2	1	0	3	70	30	-	-	100
2.	BOSC-O1T	Elementary Botany (Botany)	2	1	0	3	70	30	-	-	100
3.	MBSC-01T	Introduction Microbiology and Microbial Techniques (Microbiology)	2	1	0	3	70	30	-	-	100
GENERAL ELECTIVE (GE)											
4.	SCGE-01T	Introduction to Political Theory	3	1	0	4	70	30	-	-	100
ABILITY ENHANCEMENT COURSE (AEC)											
6.	AEC-01	Communication of English	2	0	0	2	35	15	-	-	50
VALUE ADDITION COURSE (VAC)											
7.	VAC-O1	Computer fundamental & MS Office	2	0	0	2	35	15	-	-	50
PRACTICALS (LAB)											
8.	CHSC-01P	Fundamental Chemistry-I	0	0	2	1	-	-	35	15	50
9.	BOSC-01P	Elementary Botany	0	0	2	1	-	-	35	15	50
10.	MBSC-01P	Introduction Microbiology and Microbial Techniques	0	0	2	1	-	-	35	15	50
Total Contact hours Per Week:30		Total credit:				20	Total mark				650

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**CHSC-01T**		
Course Title	**FUNDAMENTAL CHEMISTRY-I**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ **The know the contributions of ancient Indian scientists, study atomic , and periodic properties.** ➢ **To explore the concept of chemical bonding, including ionic and covalent bonding, hybridization, molecular orbital theory and intermolecular interaction.** ➢ **To learn about reaction mechanisms of inorganic reactions and their stoichiometry.σ** ➢ **To understand basics principles of organic chemistry**		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
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)	
I	**A. Chemistry in Ancient India**: (a) Chemical techniques in ancient India: General Introduction (b) Contribution of ancient Indi n scientists in chemistry, e.g, metallurgy, byes, pigments, cosmetics, Ayurveda, Charak Sanhita . **Ancient Indian Chemist-** Their Contribution and Books- Rishi Kanad, Aacharya Nagarjuna, Vagbhatta, Govindacharya. Yashodhar, Ramchandra, Somadava, Gopalbhatta Indian Chemist of 19th century-Aacharya Prafulla Chandra Ray-His Contribution and work for Indian Chemistry. **B. Atomic Structure and Periodic Properties**: (i) Review of Bohr's theory and us Sumitations. 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 Tilling electrons in various orbital's, 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 flective nuclear charge (UNC), shielding or screening effect. Slater rules, Atomic and lonic radii ionization energy and factors affecting ionization energy. Electron affinity. Electronegativity Pauling/Mulliken's electro negativity scales Relation of lector negativity with hybridization.	12
II	**Chemical Bonding**-1A**) Ionie Bonding:** General characteristics of ionic bondong Sonic **Bonding & Energy:** Lattice and solvation energies and their importance in the pantear context of stability and solubility of ionic compounds. **Bors-Haber Cycle and its Applications**: Covalent character in ionic compounds patlarizing power and polarizability, Fajan's moles.	11

	Covalent Beading: Lewis structures, Valence Bond theory, Hybridization (Concept and types with suitable examples), dipole moment and parentage tonic character .Value shell electron pair repulsion theory (VSEPR) and structure of NH_3,H_2O, SF_4,CIF_3,PCl_5,SF_6,XeF_2,XeF_6,XeO_3,$XeOF_4$, XeF_4. **Chemical Bonding-II** **A) MO theory:** LCAO method-criteria of orbital overlapping, types of molecular orbital's-σ ,π and, δ-MOs, formation of σ - and π -MOs and their, schematic illustration qualitative MO energy level diagram of homo- (N; & O:(including peroxide, superoxide) and hetero-diatomic molecules (NO, CO), magnetic properties, bond order and stability of molecules and ions. **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).	
III	**A. Chemical properties of s-block metals** Reaction with water, air, and nitrogen, Anomalous behavior of Li and Be, Compounds of -block metals: Oxides, hydroxides, peroxides, and super oxides (preparation and properties) Complexes of s-block metals, Complexes with crown ethers **B. Chemistry of p-Block Elements** **Boron group:** Hydrides (classification of beranes), Diborane (preparation, properties, and structure elucidation), Borazine (preparation and structure) **Carben 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,O, NO, NO2, N2O4, and N_2Os), Structure of oxyacids of nitrogen (HNO3, HNOJ, H_2NO1,), Nitrides (classification, preparation, properties, and uses) Structure of Oxides and oxoacids of phosphorus: (P_2O_3, P_2O) H_2PO, H_2POS, H_3PO HPO **Halogen:** Hydrides, Oxides and oxyacids of halogens (structure only) - Inter halogen compounds and pseudo halogen.	11
IV	**A. 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. Tautomeriam (keto-enol amido-imidol, and nitro-acinitro forms). Reaction Intermediates: Formation and stability of carbocations, carbanions, free radicals, carbenes, nitrene and benzyne. **B. Stereochemistry of Organic Compounds** **Optical Isomerism**- Elements of symmetry, chirality, enantiomers, and optical activity, Chiral und achiral molecules with the 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). **Goumetrical Isomerism-**Geometrie somerism (cis-trans isomerism) in alkenes with saamples (maleic acid Sunaric acid, and 2-butane), E/Z system of nomenclature.	11
Keywords	*Ancient Indian Chemistry, Atom Structure, Perlodic Properties, Chemical Bonding, p sment, Electronic effects, Stereochemistry*	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Puri, B. R., Sharma, L. R., & Kalis, K. C. (2018) Principles of Inorgante Chemistry. Nagin Chand and Co., New Delhi.
2. Satyaprakash, G., Tali, S. K., Basu, S. K., & Maden, R. D. (2017). Advanced Inorganic Chemistry (Vol. 1, 5th Ed.). S. Chand & Company.
3. 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. 5. Ray, Acharya Prafulla Charndra, History of Chemistry in Ancient And Medieval India, Chowkhamba Krishnadas Academy (Reprint 2004).

Reference Books Recommended-

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.
4. 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-

- e-books and e-learning portals
- https://bit.lv/3AvV3mZ
- https://bit.ly/30V85z
- https://bit.ly/3C9PXPS
- https://bit.ly/301p9rZ
- https://bit.ly/BPnwqe

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

ART -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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART- A: Introduction			
PROGRAMME: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-1**	**Sessio : 2024-2025**
Course Code	**CHSC-01P**		
Course Title	**Lab. Course -01 (FUNDAMENTAL CHEMISTRY)**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ **Analyze mixtures for catlons (NH, Pb, etc.) & anions (CO, S, etc.) using H3S or other methods.** ➢ **Perform ürimetric analysis (standardization, unknown conc determination).** ➢ **stimate the concentration of acetic acid in vinegar (using NaOH), alkali content in soaps/detergents.** ➢ **Utilize complexometric titrations for calcium (Ca"), water hardness, Fe/Fe", and Cu.**		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
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 Content of Course	**QUALITATIVE INORGANIC MIXTURE ANALYSIS**: Inorganic mixture Training analysis containing up to four lonic species (two cations and two anions) using are interfering and Experiment CHS (hydrogen sulfide) or other appropriate methods (Excluded of Course insoluble salts) Cations and anions that may be encountered include: **Cations:** NiH, P, BP, Cu, Cd, Fe/Fe, Al, Co, Ni, Mn, Zn, Ba S, Ca, Na **Anines:** CO, S, 50, NO, CILCOO, CT, Br, I, NO, 50 (Spot tesis may be used wherever feasible.) TIERIMETRIC ANALYSIS Standardize sodium hydroxide solution using a standard oxalic acid solution Determine the concentration of hydrochloric acid (HCI) solution using standardized sodium hydroxide solution as an intermediate		30
Keywords	Qualitative Analysis, Titrimetric Analysis.		
Signature of Convener & Members (CBoS)			

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books 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. 3. Ahluwalia, V. K., Dhingra, S., & Dhingram, S. (2005). College Practical Chemistry. Universities.
4. Kamboj, P. C. (2014). Advanced University Practical Chemistry (Part 1). Vishal Publishing Co. 5. Fultariya, C., & Harsora, J. (2017). Volumetric Analysis: Conceptt 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-

- E-resources/e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- www.egyankosh.ac.in
- www.litm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in

Online Resources-

e-sources/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/arcas-of-specialization- in-botany.html

RT -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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):35	Laboratory/Field Skill Performance: On spot Assessment Section A : Performed the Task based on lab, work 20*1=20 Marks B: Performed the Task based on lab, work (written) 10*1=10Marks Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**BOSC-01T**		
Course Title	**Elementary Botany**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite(if any)	**As per PROGRAMME**		
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 processing of understanding of the identification, cultivation, and medicinal plants, and their chemical constituents.** ➢ **Utilize plants resources for livelihood.**		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
Total Marks	**Max. Marks:=100**	**Min Passing M rks: 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)	
I	**Basics of Plant Science:** Differences and resemblances between; living and nonliving plants and animals, plant and animal cell. Concept of prokaryotes and eukaryotes. Importan12 features of thallophyta, Bryophyta, Pieridophyta, Gymnosperm and Angiosperm.Structure an 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 paita, Bamboo and Firewood Ethnobotany in India: Methods to study Ethno botany, Applications of Ethno botany, Ethno medicinal plants and Ethno ecology. Application of plant products for certain discuses-Cough and cold, Jaundice, Infertility, Diabetes, lood pressure and Skin diseases.	11
IV	**Ancient Indian Botany:** Indigenous Medicinal Sciences; Definition and Scope-Ayurveda History, origin, panchamahabhutas, saptadhatu and tridosha concepts, Rusayana, plants used in ayurvedic treatments, Siddha: Origin of Siddha medicinal systems, Basis of Siddha system, plaats used in Siddika medicine. Unsai: History, concept. Charaksamhita. Ancizot and modem Botanista and their contributions Charak, Jugdish Chandra Bose, B.P.Pal, Desikachary, K.C. Mehta M.S. Swaminathan etc.	11
Keywords	Prokaryotes, Ethno botany, Taxonomy, Ayurveda	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

6. College Botany Gangili Kar and Datta HIMALAYA Publishers
7. Handbook of Medicinal Plants" by L.D. Kapoor
8. "Indian Medicinal Plants: An Illustrated Dictionary" by C.P. Khare
9. "Medicinal Plants in India: Conservation and Sustainable Utilization in the Emerging Global Scenario" edited by V.K. Gupta
10. A Compendium of Medicinal Plants in India: An Introduction to Ayurveda" by S.L. Kochhar
11. A handbook of forest utilization by T. Mehta
12. Plants and human welfare by O.P.Sharma

Reference Books Recommended-

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

Online Resources-

- e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- http://www.egvankosh.ac.in
- http://www.itm.sc.in
- http://www.eskillindia.org
- http://www.eshiksha.mp.gov.in
- http://www.viah.co.in
- http://www.internshala.com

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

- https://www.pbs.org/video/botany-basics-iuu2bl/
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

RT -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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks, Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
PROGRAMME: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-1**	**Session: 2024-2025**
Course Code	**BOSC-01P**		
Course Title	**Lab. Course -01 (Elementary Botany)**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per PROGRAMME**		
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**		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
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 Content 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 *Riccia* and *Marchantia.* 4. 4. Identification of different plants growing in college campus. 5. Study of a typical flowering plant and it's parts 6. Study of internal structure of root and stem. 7. Study of parenchyma, collenchyma and sclerunchyma. 8. Study of medicinal plants of college campus. 9. Study of plants med to cure cough and cold, jaundice and skin diseases. 10. Visit to any local ayurvedic hospital/practitioner to understand Ayurveda.	30
Keywords	Prokaryotic, Parenchyma, Jaundice, Ayurveda	

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

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

Reference Books Recommended-

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

Online Resources-

- E-resources/e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- www.egyankosh.ac.in
- www.litm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in

Online Resources-
e-sources/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/arcas-of-specialization- in-botany.html

RT -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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):35	Laboratory/Field Skill Performance: On spot Assessment Section A : Performed the Task based on lab, work 20*1=20 Marks B: Sporting based on lab, work (written) 10*1=10Marks Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF MIROBIOLOGY

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**MBSC-01T**		
Course Title	**Introductory Microbiology and Microbial techniques**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**At the end of this course,the students will be able to-** ➢ relate the development and scope of Microbiology ➢ illustrate the contributions made by prominent scientists including Indian Vedic Knowledge on microbiology ➢ demonstrate the nomenclature and characteristics of different types of microorganisms ➢ identify the basic techniques in microbiology ➢ explain the methods of microbial control		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
Total Marks	**Max. Marks:=100**	**Min Passing M rks: 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)	
I	**History and scope of microbiology** -History,development and Scope of Microbiology,Golden era of microbiology,Contributions of Anton von Leeuwenhoek,Louis Pasteur,Robert Koch,Alexander Fleming and Edward Jenner,The Forgotten Past of Microbiology in Indian Vedic Knowledge	12
II	**Systems of classification** -Binomial nomenclature,principles of microbial classification,Whittaker's five kingdom and Carl Woese's three domain, classification systems and their utility,Major groups of microorganisms;General features and structure of bacteria,virus,fungi,algae and protozoa	11
III	**Microbial culture and staining techniques** -Obtaining pure culture by streaking,serial dilution and plating;types of culture media,maintenance and preservation/stocking of pure cultures;cultivation of anaerobic bacteria cultivation of fungi,actinomycet s and algae. Principle, procedure and applications of Simple staining,negative staining; Differential staining-Gram's staining,acid fast staining.	11
IV	**Microbial control** -Sterilization:Physical Agents -Heat:Boiling Tyndallization,Steam under pressure(Autoclave),incineration,hot air Oven Radiations:lonizing and non-ionizing radiations.Filtration,Chemical agents - Disinfection, Antiseptic, Germicide, Sanitizer, Principle and application of Laminar airflow, Biological agents -Antibiotics	11
Keywords	**History and scope, Nomenclature, Pure culture technique, Microbial control**	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Microbiology:P.D.Sharma,Rastogi Publications
2. A textbook of Microbiology:R.C.Dubey and Maheshwari,S Chand publications
3. General Microbiology,Vol.II,C.B.Powar and Daginawala
4. Fundamentals of Microbiology and Immunology,Ajit Kr.Banerjee and Nirmalya Banerji,Central publication.

Reference Books Recommended-

1. Microbiology:Pelczar,MJ Chan ECS and Krieg NR,McGraw-Hill
2. Microbiology:5th Edition Prescot,M.J.,Harley,J.P.and Klein,D.A.WCB Mc Graw Hill,New York
3. Microbiology:An Introduction:Pearson Education Tortora,G.J.,Funke,B.R.and Case,C.L.,Singapore
4. Fundamentals of Microbiology:VI Edition Alcomo,I.E.,Jones and Bartlett Publishers.Sudbury Massachusetts, (2001).

Online Resources-

https://www.britannica.com/science/microbiology
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7810802/
https://www.slideshare.net/HarinathaReddyA/methods-for-isolation-of-pure-culture
https://microbenotes-com.webpkgcache.com/doc/-/s/microbenotes.com/sterilization-physical-and- chemical-methods/

RT -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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks Q2 Short answer typ -5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART- A: Introduction			
PROGRAMME: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-1**	**Session: 2024-2025**
Course Code	**MBSC-01P**		
Course Title	**Introduction Microbiology and Microbial Techniques**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**At the end of this course,the students will be able to -** ➢ define the basic laboratory practices and safety measures. ➢ explain the principle,working and applications of Instruments. ➢ select the proper culture media for microbial growth. ➢ identify different microorganisms in the laboratory.		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
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 Content of Course	1. Good Laboratory Practices and Bio-safety in Microbiology. 2. To study the principle and applications of autoclave,incubator,BOD incubator,hot air oven,laminar air flow,light microscope. 3. Preparation of culture media(liquid &solid),sterilization and assessment of sterility 4.Isolation of microorganisms from environment by pour plate,streak plate and spread plate technique 5.Observation of microorganisms -cyanobacteria,protozoa,fungi,yeasts and algae from natural habitats. 6. Observation of bacteria by Gram staining technique. 7. Study of common fungi, algae and protozoan using temporary permanent mounts		30
Keywords			
Signature of Convener & Members (CBoS)			

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

<table>
<tr><td colspan="3">PART-C: Learning Resources</td></tr>
<tr><td colspan="3">Text Books, Reference Books and Others</td></tr>
<tr><td colspan="3">Text Books Recommended-</td></tr>
<tr><td colspan="3">1. Experiments in microbiology,plant pathology and biotechnology:K R Aneja
2. Practical microbiology: R C Dubey and D K Maheshwari.'</td></tr>
<tr><td colspan="3">Reference Books Recommended-</td></tr>
<tr><td colspan="3">Online Resources-
➢ https://www.youtube.com/watch?v=IIndcMvuEXs
➢ · https://www.youtube.com/watch?v=CbMGr9wFV2w</td></tr>
<tr><td colspan="3">RT -D: Assessment and Evaluation</td></tr>
<tr><td colspan="3">Suggested Continuous Evaluation Methods:
Maximum Marks: 50 Marks
Continuous Internal Assessment (CIA): 15 Marks
End Semester Exam (ESE): 35 Marks</td></tr>
<tr><td>Continuous Internal Assessment (CIA): 15
(By Course Teacher)</td><td>Internal Test/Quiz:10+10
Assignment/ Semenar-05
Total Marks-15</td><td>Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks</td></tr>
<tr><td>End Semester Exam (ESE):35</td><td colspan="2">Laboratory/Field Skill Performance: On spot Assessment
Section A : Performed the Task based on lab, work 20*1=20 Marks
B: Spotting frased on tools & technology (written) 10*1=10Marks
Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks</td></tr>
<tr><td colspan="3">Signature of Convener & Members (CBoS)</td></tr>
</table>

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF POLITICAL SCIENCES

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**PSSC-01**		
Course Title	**Introduction to Political Theory**		
Course Type	**Discipline Specific course (GE)**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	➢ **Create the understanding of the concept of political science, and methodology.** ➢ **Evaluate the concept of state, Its theories of organism, functions and relation with individuals.** ➢ **Analyses the basic concepts of Political Science like liberty, right, sovereignty.** ➢ **Apply the knowledge of democracy and democratic norms, the functional machinery of electoral democracy like political party system and pressure groups Rule of State as welfare agency, and as an agency of social change.**		
Credit Value	**4 Credits**	**Credit =60 Hours-learning & Observation**	
Total Marks	**Max. Marks:=100**	**Min Passing M rks: 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)	
I	**Political Science –Initial:** Political science Concept, nature, Scope Power, Authority meaning, characteristics, types. Legitimacy concept, relationship of power, authority and legitimacy Study methods of political science, Behaviorism and post-behaviorism.	15
II	**State:** State: Concept, Development of Stine, 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.	15
III	**Concept:** Sovereignty concept, types, Characteristics. Principles 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, Mints and dements, Principles of democracy Necessary conditions by the success of Democracy.	15
IV	**State in Function:** Forms of Government Unitary and Federal, Parliamentary and Presidential Totalitarian Concept, types Organs of Government Legislature, Executive and Judiciary Theory of Separation of Powers and Checks and Balances Constitution meaning and Lands Political Party meaning, kinds, major theories, merits and demerits Pressure Groups meaning, kinds and techniques Public Opinion Social justice, Theories of Representation	15
Keywords	Political theory, sate, sovereignty, right, they, democracy, constitution, party.	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF POLITICAL SCIENCE

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Ambadatt Pant Harimohan Jain Madan Gopal (1985) Fundamentals of Political Science, Central Publishing House Allahabad. U.P.
2. Sandhu Man Singh (1956) Political Theory Hindi Medium Implementation Directorate, Delhi University, New Delhi
3. Johari JC 1916) Basic principles of political science, Sahitya Bhavan, Agra.
4. Rajeev and Ashok Acharya (Eds) Political Theory A Flag, Dilsey Pearson, 2008

Reference Books Recommended-

1 umar, Sanjeev (Ed. Understanding of Political Theory, Delhi: Orient Book Swan, 2019
2 Hussain Shakeel (2018) Conceptual Introduction to Political Theory. Chhattisgarh State Hindi Forest Academy, Rampur.
3 K.K. Mishra (2010) Political Theory, 5. Chand Publishing Delhi
4 OP Gouba (2014) An Introduction to Political Theory, MacMillan Publishers, Delhi

Online Resources-

- e-books and e-learning portals
- https://www.coursera.org/lecture/emergence-of-life/
- http://www.ignou.ac.in
- https://www.shiksha.com/online-courses/
- http://www.itm.sc.in
- https://www.youtube.com/watch?v=uK-XY
- http://www.eshiksha.mp.gov.in
- https://www.youtube.com/watch?v=WxMSckEcio4
- http://www.internshala.com

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

- https://www.pbs.org/video/political-basics-iuu2bl/
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

RT -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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF ENGLISH

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**AEC-01**		
Course Title	**Communicative English and Soft Skills**		
Course Type	**Ability Enhancement Course**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**After completion of this course, the students will be able to: -** ➢ **Learn deviant use of English both in written and spoken forms.** ➢ **Understand the importance of communication in English. .** ➢ **Apply the ability to improve competence in using English language.** ➢ **Analyze the importance of reading skills.** ➢ **Develop language for speaking with confidence.**		
Credit Value	**2 Credits**	**Credit =30 Periods -learning & Observation**	
Total Marks	**Max. Marks:=50**	**Min Passing M rks: 20**	

PART -B: Content of the Course		
Total No. of Teaching-learning Periods (45 Min. per period) -30 Periods		
Unit	Topics (Course contents)	
I	**Prose:-** **1.** Darshana Dholakia: Baa-My Mother-A Person, A Woman. 2. Anita Desai: A Devoted Son. 3. Rabindranath Tagore: The Home Coming.	08
II	**Poetry:** 1. William Wordsworth: The Solitary Reaper 2. Robert Lee Frost: Stopping by the Woods on a Snowy Evening	07
III	**Letter Writing:** 1. Formal Letter 2. Informal Letter **Composition:** 1. Describing a Place or a Person 2. Writing a Biographical Sketch 3. Narrating an Event or Experience.	08
IV	**Writing Skills:** 1. Word Formation, Idioms and Phrases 2. Coordination and Subordination, One Word Substitutes **Grammar**: 1. Articles 2. Tenses	07
Keywords		
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF ENGLISH

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Fluency in English - Part 11, Oxford University Press, 2006.
2. Enrich Your English, OUP, SR Inthira and V. Saraswathi, CIEFL, 1997
3. Oxford A-Z of English Usage, ed. Jeremy Butterfield, OUP, 2007.

Reference Books Recommended-

1. Longman Dictionary of Common Errors, N.D. Turton and J.B. Heaton, Longman, 1998.
2. Contemporary Communicative English, S Chand
3. Malhotra Prerna, Deb Dulal Halder, (2019) Communication Skills: Theory and Practice, Eighth Edition, Book Age Publications, New Delhi.

Online Resources-

- Applying Communication Theory for Professional Life: A Practical Introduction. Dainto and Zelley, http://taime.uz.ac.zw/claroline/backends/download.php?urf-L0ludHJvX3RvX2NvbW1lbmljYXRpb25f
- https://www.coursera.org/lecture/emergence-of-life/4-5-invertebrates-successes-of-life-http://www.ignou.ac.in
- https://web.sol.du.ac.in/my modules/type/cbcs-11- 2/data/root/B.Com/Semester%202/ABILITY-ENHANCEMENT%20COMPULSORY%20COURSE-AECC/English%20Communication%20A-B-C/Unit%201-5.pdf
  https://www.youtube.com/watch?v=uK-XYhttp://www.eshiksha.mp.gov.in
  - https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com
  - https://archive.org/details/personality-development-book/mode/lup
  - https://www.coursera.org/articles/presentation-skills
  - https://www.cbs.de/en/blog/15-effective-presentation-tips-to-improve-presentation-skills/
  - https://benjaminball.com/blog/good-body-language-best-visual-aid-talks/

Online Resources-

- e-sources/e-books and e-learning portals https://blog.moderngov.com/importance-of-body-language-in-presentations-good-bad-
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

RT -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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 1*5=5 Marks Q2 Short answer type-2*5=10 (I. Vocabulary, II Unseen passage Section B : Descriptive answer type qts 1 out of 2frm each- 5*4=20 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF COMPUTER SCIENCES

COURSE CURRICULUM

PART-A: Introduction			
PROGRAMME: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-1**	**Session: 2024-2025**
Course Code	**VAC-01**		
Course Title	**Computer fundamental & MS Office**		
Course Type	**Value Additional Course**		
Pre-requisite(if any)	**As per PROGRAMME**		
Course Learning. Outcomes (CLO)	**Completing this course, students will be able to: -** ➢ **Study and use of basic concepts and terminology of information technology.** ➢ **Organize files and documents on storage devices.** ➢ **Acquire knowledge of ICT and Internet applications.** ➢ **Develop information technology solutions by evaluating user requirements in advance trends of IT.** ➢ **Acquire knowledge of MS-Excel, MS-PowerPoint and MS-Access.**		
Credit Value	**2 Credits**	**Credit =30 Periods -learning & Observation**	
Total Marks	**Max. Marks:=50**	**Min Passing M rks: 20**	

PART -B: Content of the Course		
Total No. of Teaching-learning Periods (45 Min. per period) -40 Periods		
Unit	Topics (Course contents)	
I	**Introduction to Computer:** History of computer, Generations and Classification, Basic Anatomy of Computer: Block Diagram, Central Processing Unit(CPU): Function of each Unit, Memory: Primary, Cache, Flash, Software and its needs, Types of S/W: System Software and Application Software, Types of Programming Language: Machine Language, Assembly Language, High Level Language their advantages and disadvantages, Language Processors/Translators: Assembler, Interpreter and Compiler, Fundamental of Information Technology: Data and Information, Concept of IT Application of IT, What is ICT?, Components of ICT, Impact of ICT in Society. **Advanced Trends in IT:** Cloud Technology, Virtual LAN Technology, M-Commerce. Nanotechnology, Virtual Reality, 3-D Printing, Internet of Things (IoT),Artificia Intelligence (AI),Machine Learning (ML), Cloud Computing,GoIdigitalinitiativesinhighereducation:SWAYAM,SwayamPrabha, National Academic Depository, National Digital Library of India, E-Sodh-Sindhu, Virtual labs, e-Yantra and NPTEL.	08
II	**MS-Word:** Introduction to word processing software and its features, Creating new document, Saving documents, Opening and Printing documents. Home Tab: Setting fonts, Paragraph settings, Various styles (Normal, No spacing, Heading1, Heading2, Title, Strong), Find & Replace, Format painter, Copy paste and paste special. Insert Tab: Pages, Tables, Pictures, Clipart, Shapes, Header & Footer, Word Art, Equation and Symbols. Page Layout Tab: Page setup, Page Background, Paragraph (indent and spacing). Mailing Tab: Create Envelops and Labels, Mail Merge. Review Tab: Spelling and Grammar check, Protect document, View Tab: Document views, Zoom, Window (New window, Split, Switch window).	07
III	**MS-Excel:** Introducing Excel, Use of Excel sheet, creating new sheet, Saving, Opening, and Printing workbook. Home Tab: Font, Alignment, Number, Styles and cells and editing,	08

	Conditional Formatting. Insert Tab: Table, Charts (column chart, Pie chart, Bar chart, Line chart) and Texts (header & footer, word-art, signature line). Page Layout Tab: Page setup options, Scale to fit (width, height, scale). Formulas Tab: Auto sum (sum, average, min, max), Logical (IF, and, or, not, true, false), Sort and Filter options, Group and ungroup. Review Tab: Protect sheet, Protect workbook, and Share workbook. View Tab: Page breaks, Page layout, Freezing Panes, Split and hide.	
IV	**PowerPoint:** Introducing PowerPoint, Use of PowerPoint presentation, Creating new slides saving. Opening and printing. Home Tab: New slide, Layout. Reset, Delete, Setting text direction, Align text, Convert to smart art, Drawing options. Insert Tab: Table, Picture, Clipart, Photo album, Smart art, Shapes and chart, Movie and sound, Hyperlink and action, Text box, Word art, Object. Design Tab: Page setup options, Slide orientation, Applying various themes, Selecting background style and formatting it. Animations Tab: Custom animation for entrance, Exit and emphasis, Applying slide transition, Setting transition speed and sound, Animation on rehearse timing. Slideshow & View Tab: Start slide, Show options, and Setup options. View tab: Presentation views, Colors and Window option.	07
Keywords	Information Technology (IT), Information and Communication Technology (ICT), G-Suit MS Excel, MS Power Point, MS-Access.	

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAMME (2024-28)

DEPARTMENT OF COMPUTER SCIENCE

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Computer Fundamentals, P.K. Sinha, BPB Publication, Sixth Edition.
2. Fundamentals of Information Technology, Chetan Shrivastava, Kalyan Publishers.
3. Fundamentals of Computers, V. Rajaraman, PHI Sixth Edition.

Reference Books Recommended-

1. Publisher IIP. Computer Fundamentals Architecture and Organization, B. Ram, New Age International Publishers, Fifth Edition.
2. Fundamentals of Information Technology, Alexis Leon and Mathews Leon, Vikash Publication.
3. Introduction to Information Technology, V. Rajaraman, PHI publication.
4. Fundamental of IT, Leon and Leon, Leon Tec world.
5. Introduction to Information Technology, Aksoy and Denardis, Cengage learning.
6. Computers Today, Suresh K. Basandra, Galgotia Publications.
7. Information Technology The breaking wave, Dennis P.Curtin, Kim Foley, Kunai Sen and Cathleen Morin, TMH.

Online Resources-

- Introduction to Computer Fundamental from W3school:
- https://www.w3schools.blog/computer-fundamentals-tutorial
- Introduction to MS-Word from W3school: https://www.w3schools.blog/ms-word-tutorial
- Introduction to MS-Excel from W3school:https://www.w3schools.com/excel/excel_introduction.php
- Introduction to MS-PowerPoint from W3school:https://www.w3schools.blog/powerpoint-tutorial Introduction to MS-Access from W3school:
- https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com

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

- https://www.rgycsm.org/uploads/books/MICROSOFT-OFFICE-BOOK.pdf
- https://www.youtube.com/watch?v=SH40YV5AJ6A
- https://www.youtube.com/watch?v=SH40YV5AJ6A
- https://hte.rajasthan.gov.in/dept/dte/board

RT -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:10+10 Assignment/ Semenar-10 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):50	Two section A&B Section A :Q1 Objective 5*1=5 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 10*1=10 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY

NAYA RAIPUR (C.G.)

PROGRAMME CURRICULUM

FOR

BECHELOR IN LIFE SCIENCES

(MICROBIOLOGY)

SEMESTER-II

AS PER EDUCATION POLICY-2020

AND

NATIONAL EDUCATION POLICT-2025

FOUR YEAR UNDERGRADUATE PROGRAMME- 2024-25

(EFFECTIVE FROM THE SESSION-2024-2025)

INTRODUCTION OF THE DEPARTMENT:-

Department of Chemistry

Introduction

The Department of Chemistry is a vibrant community of scholars, researchers, and students dedicated to advancing our understanding of the chemical sciences. Our department offers undergraduate and postgraduate programs in chemistry, providing students with a comprehensive education in the principles and applications of chemistry.

Mission

Our mission is to provide students with a rigorous and well-rounded education in chemistry, preparing them for careers in research, industry, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Chemistry engage in cutting-edge research in various areas, including:

1. Organic Chemistry: Synthesis and characterization of organic compounds.
2. Inorganic Chemistry: Study of inorganic compounds and their applications.
3. Physical Chemistry: Investigation of the physical principles underlying chemical phenomena.
4. Analytical Chemistry: Development and application of analytical techniques.

Department of Botany

Introduction

The Department of Botany is a dynamic community of plant biologists, researchers, and students dedicated to exploring the fascinating world of plants. Our department offers undergraduate and postgraduate programs in botany, providing students with a comprehensive education in plant biology.

Mission

Our mission is to provide students with a rigorous and well-rounded education in botany, preparing them for careers in research, conservation, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Botany engage in cutting-edge research in various areas, including:

1. Plant Systematics: Study of plant classification, evolution, and diversity.
2. Plant Physiology: Investigation of plant growth, development, and responses to environmental stimuli.
3. Plant Ecology: Study of plant interactions with their environment and other organisms.
4. Plant Biotechnology: Application of biotechnology to improve plant breeding, genetics, and agriculture.

Department of Microbiology

Introduction

The Department of Microbiology is a vibrant community of animal biologists, researchers, and students dedicated to exploring the fascinating world of animals. Our department offers undergraduate and postgraduate programs in Microbiology, providing students with a comprehensive education in animal biology.

Mission

Our mission is to provide students with a rigorous and well-rounded education in Microbiology, preparing them for careers in research, conservation, education, and beyond. We strive to create an inclusive and supportive environment that encourages collaboration, creativity, and intellectual curiosity.

Research Areas

Faculty and students in the Department of Microbiology engage in cutting-edge research in various areas, including:

1. Microorganisms Systematics: Study of animal classification, evolution, and diversity.
2. Microorganisms Physiology: Investigation of animal growth, development, and responses to environmental stimuli.
3. Microorganisms Ecology: Study of animal interactions with their environment and other organisms.
4. Microorganisms Behavior: Study of animal behavior, including social behavior, communication, and learning.

VISION OF DEPARTMENT:-

Department of Chemistry

Vision

To be a leading department of chemistry, recognized for its academic excellence, innovative research, and commitment to fostering a community of scholars who can address the complex chemical challenges of the 21st century.

Objectives

1. To provide students with a world-class education in chemistry, emphasizing both theoretical foundations and practical applications.
2. To conduct cutting-edge research in chemistry, focusing on areas of

national and global importance.

3. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

4. To develop and maintain state-of-the-art research facilities and instrumentation.

Department of Botany

Vision

To be a premier department of botany, dedicated to advancing our understanding of plant biology and addressing the critical challenges facing our planet, including climate change, food security, and conservation.

Objectives

1. To provide students with a comprehensive education in botany, emphasizing both theoretical foundations and practical applications.

2. To conduct innovative research in plant biology, focusing on areas of national and global importance.

3. To develop and maintain a diverse collection of plant specimens and living collections.

4. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

Department of Microbiology

Vision

To be a leading department of Microbiology, recognized for its academic excellence, innovative research, and commitment to fostering a community of scholars who can address the complex challenges facing Microorganisms populations and ecosystems.

Objectives

1. To provide students with a world-class education in Microbiology, emphasizing both theoretical foundations and practical applications.

2. To conduct cutting-edge research in Microorganisms biology, focusing on areas of national and global importance.

3. To develop and maintain state-of-the-art research facilities and instrumentation.

4. To foster collaborations with other departments, institutions, and industries to promote interdisciplinary research and innovation.

SCOPE OF DEPARTMENT: -

Department of Chemistry

Scope

1. Research and Development: Opportunities exist in various fields like medicinal chemistry, materials science, environmental chemistry, and analytical chemistry.

2. Industry and Manufacturing: Chemistry graduates can work in various industries like pharmaceuticals, petrochemicals, and materials manufacturing.

3. Environmental Conservation: Chemists can work in environmental monitoring, conservation, and sustainability.

4. Education and Academia: Chemistry graduates can pursue teaching and research careers in academic institutions.

5. Government and Policy: Chemists can work in government agencies, regulatory bodies, and policy-making institutions.

Department of Botany

Scope

1. Research and Development: Opportunities exist in various fields like plant breeding, genetic engineering, plant physiology, and plant ecology.

2. Agriculture and Horticulture: Botany graduates can work in agriculture, horticulture, and plant biotechnology industries.

3. Conservation and Environmental Science: Botanists can work in plant conservation, environmental monitoring, and sustainability.

4. Education and Academia: Botany graduates can pursue teaching and

research careers in academic institutions.

5. Government and Policy: Botanists can work in government agencies, regulatory bodies, and policy-making institutions.

Department of Microbiology

Scope

1. Research and Development: Opportunities exist in various fields like Microorganisms physiology, ecology, evolution, and conservation biology.

2. Microorganisms Conservation and Management: microbiology graduates can work in wildlife conservation, management, and research institutions.

3. Microorganisms Health and Veterinary Science: Microbiologists can work in Microorganisms health, veterinary science, and Microorganisms biotechnology industries.

4. Education and Academia: Microbiology graduates can pursue teaching and research careers in academic institutions.

5. Government and Policy: Microbiologists can work in government agencies, regulatory bodies, and policy-making institutions.

PROGRAMME OUTCOME: -

1**. Knowledge and Understanding:** Demonstrate advanced knowledge and understanding of scientific principles, theories, and concepts in their chosen field.

2. **Critical Thinking and Analysis:** Apply critical thinking and analytical skills to evaluate scientific data, theories, and methodologies.

3. **Research and Problem-Solving:** Design, conduct, and analyze research experiments, and apply scientific principles to solve complex problems.

4. **Communication and Collaboration:** Communicate complex scientific ideas effectively to various audiences, and collaborate with others in a research or professional setting.

5. **Scientific Literacy and Critical Evaluation:** Evaluate the scientific literature, identify gaps in knowledge, and propose new research directions.

6. **Professional Development and Leadership:** Demonstrate leadership skills, manage projects, and develop a professional network in their chosen field.

7. **Knowledge and Understanding:** Demonstrate a solid understanding of scientific principles, theories, and concepts in their chosen field.

8. **Critical Thinking and Analysis:** Apply critical thinking and analytical skills to evaluate scientific data and theories.

9. **Scientific Literacy and Communication:** Communicate scientific ideas effectively to various audiences, and demonstrate an understanding of the scientific method.

10. **Problem-Solving and Laboratory Skills:** Apply scientific principles to solve problems, and demonstrate laboratory skills and safety protocols.

11. **Teamwork and Collaboration:** Collaborate with others in a laboratory or project setting, and demonstrate an understanding of the importance of teamwork in science.

12. **Preparation for Further Study or Employment:** Demonstrate preparation for further study or employment in a scientific field, and exhibit a commitment to lifelong learning.

COURSE OUTCOME: -

Department of Chemistry

Course Outcomes

1**. Knowledge of Chemical Principles:** Understand and apply fundamental chemical principles, theories, and concepts.

2. **Laboratory Skills:** Develop laboratory skills, including experimentation, data analysis, and safety protocols.

3. **Analytical and Problem-Solving Skills:** Apply analytical and problem-solving skills to solve chemical problems and analyze data.

4. **Communication Skills:** Communicate chemical concepts and research findings effectively through written and oral presentations.

5. Critical Thinking and Scientific Literacy: Evaluate scientific literature, identify gaps in knowledge, and propose new research directions.

Department of Botany

Course Outcomes

1. **Knowledge of Plant Biology:** Understand and apply fundamental principles of plant biology, including morphology, anatomy, physiology, and ecology.

2. **Plant Identification and Classification:** Identify and classify plants using morphological, anatomical, and molecular characteristics.

3. **Laboratory and Field Skills:** Develop laboratory and field skills, including plant collection, preservation, and experimentation.

4. Ecological and Environmental Awareness: Understand the importance of plants in ecosystems and the impact of human activities on plant diversity and ecology.

5. **Communication and Critical Thinking:** Communicate botanical concepts and research findings effectively and critically evaluate scientific literature.

Department of Microbiology

Course Outcomes

1. **Knowledge of Microorganisms Biology:** Understand and apply fundamental principles of Microorganisms biology, including morphology, anatomy, physiology, and ecology.

2. **Microorganisms Identification and Classification:** Identify and classify Microorganisms using morphological, anatomical, and molecular characteristics.

3. **Laboratory and Field Skills:** Develop laboratory and field skills, including animal collection, preservation, and experimentation.

4. **Ecological and Environmental Awareness:** Understand the importance of animals in ecosystems and the impact of human activities on animal diversity and ecology.

5. **Communication and Critical Thinking:** Communicate Microbiological concepts and research findings effectively and critically evaluate scientific literature.

UNIT OUTCOME: -

Department of Chemistry

Unit 1: Atomic Structure and Chemical Bonding

1. Explain the structure of atoms and molecules.
2. Describe the types of chemical bonds and their properties.
3. Apply knowledge of atomic structure and chemical bonding to predict chemical behavior.

Unit 2: Thermodynamics and Kinetics

1. Understand the laws of thermodynamics and their applications.
2. Explain the principles of chemical kinetics and reaction mechanisms.
3. Apply thermodynamic and kinetic principles to solve chemical problems.

Unit 3: Organic Chemistry

1. Identify and classify organic compounds.
2. Explain the mechanisms of organic reactions.
3. Apply knowledge of organic chemistry to synthesize and analyze organic compounds.

Unit 4: Analytical Chemistry

1. Understand the principles of analytical chemistry techniques.
2. Apply analytical techniques to analyze and identify chemical substances.
3. Interpret analytical data to solve chemical problems.

Department of Botany

Unit 1: Plant Morphology and Anatomy

1. Identify and describe plant morphological and anatomical features.
2. Explain the functions of plant tissues and organs.
3. Apply knowledge of plant morphology and anatomy to understand plant development and evolution.

Unit 2: Plant Physiology

1. Understand the principles of plant physiology, including photosynthesis and respiration.

2. Explain the mechanisms of plant growth and development.

3. Apply knowledge of plant physiology to solve problems in agriculture and horticulture.

Unit 3: Plant Ecology

1. Understand the principles of plant ecology, including community structure and ecosystem function.

2. Explain the interactions between plants and their environment.

3. Apply knowledge of plant ecology to understand and manage ecosystems.

Unit 4: Plant Genetics and Evolution

1. Understand the principles of plant genetics and evolution.

2. Explain the mechanisms of plant genetic variation and evolution.

3. Apply knowledge of plant genetics and evolution to understand plant diversity and adaptation.

Department of Microbiology

Unit 1: Microorganisms Morphology and Anatomy

1. Identify and describe animal morphological and anatomical features.

2. Explain the functions of animal tissues and organs.

3. Apply knowledge of animal morphology and anatomy to understand Microorganisms development and evolution.

Unit 2: Microorganisms Physiology

1. Understand the principles of Microorganisms physiology, including nervous and circulatory systems.

2. Explain the mechanisms of Microorganisms growth and development.

3. Apply knowledge of Microorganisms physiology to solve problems in Microorganisms health and welfare.

Unit 3: Microorganisms Ecology

1. Understand the principles of animal ecology, including population dynamics and community structure.

2. Explain the interactions between animals and their environment.

3. Apply knowledge of Microorganisms ecology to understand and manage ecosystems.

Unit 4: Microorganisms Genetics and Evolution

1. Understand the principles of Microorganisms genetics and evolution.

2. Explain the mechanisms of animal genetic variation and evolution.

3. Apply knowledge of animal genetics and evolution to understand Microorganisms diversity and adaptation.

SEMESTER II

S.NO	COURSE CODE	COURSE TITLE	TEACHING HOURS PER WEEK				EXAMINATION SCHEME				
DISCIPLINE SPECIFIC COURSE (DSC)			L	T	P	C	THEORY		PRACTICAL		TOTAL MARKS
							EX	IN	EX	IN	
1.	CHSC-02T	Fundamental Chemistry-II	2	1	0	3	70	30	-	-	100
2.	BOSC-O2T	Microbes and Thallophyta	2	1	0	3	70	30	-	-	100
3.	MBSC-02T	Bacteriology, Virology and Protozoology	2	1	0	3	70	30	-	-	100
GENERAL ELECTIVE (GE)											
4.	SCGE-02	Constitutional Government in India	3	1	0	4	70	30	-	-	100
ABILITY ENHANCEMENT COURSE (AEC)											
5.	AEC-02	Hindi Language	2	0	0	2	35	15	-	-	50
SKILLS ENHANCEMENT COURSE (SEC)											
6.	SEC-02	Chemistry Lab Skills -II	1	1	0	2	35	15	-	-	50
PRACTICALS (LAB)											
7.	CHSC-02P	Fundamental Chemistry-II LAB	0	0	2	1	-	-	35	15	50
8.	BOSC-O2P	Microbes and Thallophyta-LAB	0	0	2	1	-	-	35	15	50
9.	MBSC-02P	Bacteriology, Virology and Protozoology	0	0	2	1	-	-	35	15	50
Total Contact hours Per Week:30		Total credit:				20	Total mark				650

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-A: Introduction			
Programme: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**CHSC-02T**		
Course Title	**FUNDAMENTAL CHEMISTRY-II**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite (if any)	**As per program**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ **To understand different acid-base theories and solvent system.** ➢ **To learn the preparation, bonding, and reactions of C-C σ- & π-bonded compounds.** ➢ **To understand the concept and chemistry of aromatic compounds and their reactions.** ➢ **To learn the basic concepts of various states of matter & understand the basic concepts of surface chemistry and chemical kinetics.**		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
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)	
I	**Acid, Base and Solvent System** **Theories of acids and bases: Arrhenius, Bronsted-Lowry, conjugate acids and bases relative strengths of acids and bases, the Lux-flood, solvent system and Lewis concepts of acids and bases.** **HSAB concept:** Classification of Acids and Bases According to HSAB Theory (Hard, Borderline, Soft). Applications of HSAB Theory in Inorganic Reactions – Solubility, Selectivity, Redox Reaction. Non-aqueous solvents: Physical properties of a solvent, types of solvents and their general characteristics, Liquid ammonia as a solvent. Acid-base, precipitation and complex, formation reactions. Solutions of alkali and alkaline earth metals in ammonia-application)	12
II	**CHEMISTRY OF C-C σ-BONDING** Alkanes: Preparation (Wurtz reaction, reduction/hydrogenation of alkenes, Corey-House method). Reactions (mechanisms): halogenation, free radical substitution. Cyclalkanes: Preparation (Dieckmanns ring closure, reduction of aromatic hydrocarbons), Reactions (mechanisms): substitution and ring-opening reactions.	11

	tability of cycloalkanes – Baeyer's strain theory, Sachse and Mohr predictions, Conformational structures of ethane, n-butane and cyclohexane. **'HEMISTRY OF C-C π- BONDING** lkenes: Preparation methods (dehydration, dehydrohalogenation, dehydrogenation, Holffmann and Saytzeff rules, cis and trans eliminations). Reactions (mechanisms): electrophilic and free radical addition (hydrogen, halogen, hydrogen halide, hydrogen bromide, water, hydroboration, ozonolysis, dihydroxylation with $KMnO_4$).)ienes: 1,2 and 1,4-additions, Diels-Alder reactions. lkynes: Preparation (dehdrohalogenation, dehydrogenation), Reactions: Acidity, formation of acetylides, addition of water, hydrogen halides and halogens, oxidation,)zonolysis, hydroboration/oxidation. **romatic Hydrocarbons** romatic hydrocarbons: Aromaticity: Huckel's rule, aromatic character of arenes, cyclic carbocations/ carnanions and heterocyclic compounds with suitable examples. Electrophilic aromatic substitution: halogenation, nitration, sulphonation and Friedel-Craft's alkylation/acylation with their mechanism. Directive effects of the groups.	
III	**Behaviour of ideal gases:** Kinetic theory of gases – postulates and derivation of the equation, $PV=1/3\ mne^2$ and derivation of the gas laws-Maxwell's distribution of molecular velocatities-effects of temperature-types of molecular velocities-degrees of freedom-Principle of equipartition of energy. **Behaviour of Real gases:** Deviation from ideal behaviour, derivation of van der Waals, equation of state and critical constants. Liquid state chemistry: structure of liquids (Eyring Theory), Properties of liquids, viscosity and surface tension. **Solid state chemistry:** Nature of the solid state, law of constancy of interfacial angles, law of rational indices, Miller indices, elementary ideas of symmetry, symmetry elements and symmetry operations, seven crystal systems and fourteen Bravais lattices; X-ray diffraction, Bragg's law, Crystal defects.	11
IV	**A. Colloids and surface chemistry:** Classification, Optical, Kinetic and Electrical Properties of colloids, Coagulation, HrdySchuize law, flocculation value, Protection, Gold number, Emulsion, micelles and types, Gel, Syneresis and thixotropy, Physical adsorption, chemisorption, **B.** Chemical kinetics: Rate of reaction, Factors influencing rate of reaction rate law, rate constant, Order and molecularity of reactions, rate determining step, Zero, First and Second order reactions, Rate and Rate Law, methods of determining order of reaction, Chain reactions. Temperature dependence of Reaction rate, Arrhenius theory, Physical	11

	significance of Activation energy, collision theory, demerits of collision theory, non-mathematical concept of transition state theory. Catalysis: Homogeneous and Heterogeneous Catalysis, types of catalyst, characteristics of catalyst, Enzyme catalysed reactions, Industrial applications of catalysis.	
Keywords	***Acid & bases, Alkanes, Cycloalkanes, alkenes, Dienes, alkynes, Aromatic Hydrocarbons, Kinetic theory of gases, Real gases, Intermolecular forces, Crystal structure, Chemical kinetics.***	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-C: Learning Resources

- Text Books, Reference Books and Others Paula, B. Y. (2014). Organic Chemistry (7th Ed.). Pearson Education, Inc. (Singapore).
- Solomons, T. W. G. (2017). Organic Chemistry (Global Ed.). John Wiley & Sons.
- Morrison, R. T., & Boyd, R. N. (2010). Organic Chemistry (7th Ed.). Prentice-Hall Of India Limited.
- Laidler, K. J., & Meiser, J. H. (2006). Physical Chemistry (2nd Indian Ed.). CBS Publishers.
- . Atkins, P. W., & De Paula, J. (2006). Physical Chemistry (8th Ed.). Oxford University Press.
- . Dogra, S., & Dogra, S. (2006). Physical Chemistry through Problems (2nd Ed.). New Age International.
- Sangaranarayanan, M. V., & Mahadevan, V. (2011). Textbook of Physical Chemistry. University Press.

Text Books Recommended-

- Bahl, A., & Bahl, B. S. (2014). Organic Chemistry (22nd Ed.). S. Chand & Sons.
- Ahhuwalia, V. K., & Goyal, M. (2001). A Textbook of Organic Chemistry. Narosa Publishing House.
- . Jain, M. K., & Sharma, S. C. (2017). Modern Organic Chemistry. Vishal Publishing Company. Puri, B. R., Sharma, L. R., & Pathania, M. S. (2013). Principles of Physical Chemistry (46th Ed.)..
- Shoban Lal Nagin Chand And Co. 5. Bahl, B. S. A., & Tuli, G. D. (2009). Essentials of Physical Chemistry (Multicolour Ed.). S. Chand & Company Pvt Ltd. 6. Puri, B. R., Sharma, L. R., & Kalia, K. C. (2018). Principles of Inorganic Chemistry. Nagin Chand and Co., New Delhi,

Online Resources-

- e-books and e-learning portals
- https://bit.lv/3AvV3mZ
- https://bit.ly/30V85z
- https://bit.ly/3C9PXPS
- https://bit.ly/301p9rZ
- https://bit.ly/BPnwqe

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

ART -D: Assessment and Evaluation

SHRI DAVARA UNIVERSITY NAYA RAIPUR

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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10∗1=10 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-II**	**Session: 2024-2025**
Course Code	**CHSC-02P**		
Course Title	**Lab. Course -01 (FUNDAMENTAL CHEMISTRYII)**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ Demonstrating and using common glassware for accurate measurements. ➢ Studying the functional group analysis organic compounds. ➢ points to assess compound purity and employing distillation and sublimation techniques to establish boiling points. ➢ Equipping with essential skills in measuring liquid surface tension and solution viscosity.		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
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 Content of Course	**Basic Laboratory Techniques:** Demonstration 80-82 ˚of Laboratory Glassware and Equipment , Calibration of Thermometer : (Naphthalene), 113.5 ˚- 114 ˚C (Acetanilide), 132.5 ˚C – 133 ˚C (Urea), 100 ˚C (Distilled Water) **Functional group analysis of Organic Compounds,** Detection of elements (N,S and halogens) and Functional groups. **Physical Chemistry** Surface tension measurements: Determine the surface tensionby (i) drop number (ii) drop weight method. Surface tension composition curve for a binary liquid mixture. Viscosity measurement using Ostwald's viscometer, Determination of viscosity of aqueous solutions of (i) sugar (ii) ethanol at room temperature. Study of the variation of viscosity of surface solution with th concentration of solute. Viscosity Composition curve for a binary liquid mixture.	30
Keywords	**Basic laboratory techniques ,Equipments, Calibration, Melting points, Qualitative analysis, physical chemistry, Surface tension, Viscosity.**	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books 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. 3. Ahluwalia, V. K., Dhingra, S., & Dhingram, S. (2005). College Practical Chemistry. Universities.
4. Kamboj, P. C. (2014). Advanced University Practical Chemistry (Part 1). Vishal Publishing Co. 5. Fultariya, C., & Harsora, J. (2017). Volumetric Analysis: Conceptt 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-

- E-resources/e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- www.egyankosh.ac.in
- www.litm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in

Online Resources-
e-sources/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/arcas-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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):35	Laboratory/Field Skill Performance: On spot Assessment Section A : Performed the Task based on lab, work 20∗1=20 Marks B: Performed the Task based on lab, work (written) 10*1=10Marks Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**BOSC-02T**		
Course Title	**Microbes and Thallophyta**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ Understand about the Microbes and their Importance. ➢ Identify edible mushrooms and learn cultivation techniques ➢ Learn about bio-fertilizers and their uses ➢ Understand life cycles of different algae and fungi.		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
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)	
I	**Viruses:-** general characteristics,nature ,structure and nomenclature,Bacteriophages and TMV Lytic and Lysogenic cycles,transmission and replication of viruses,Symptoms of viral diseases on plants ,important plant diseases,viroid,prions. **Actinomycetes:**general characteristics Structure,reproduction and economic importance. **Mycoplasma,Phytoplasma:**general characteristics,structure,reproduction and their economic uses.	12
II	**Bacteria:**History,general character,classification and morphology,Gram positive and Gram-negative bacteria,structure of bacteria shape,size flagella and ultra structure of bacterial cell Bacterial Growth curve,factors affecting growth of microbes;sporulation,reproduction,recombination in bacteria-Transformation Conjugation and Transduction,and Economic importance. **Cyanobacteria:**General characteristics,morphology,Heterocyst,cell structure of Cyanobacteria,reproduction and economic importance of Bacteria.	11
III	**Phycology:**General characteristic features of Algae.Algae in diversified habitat,Salient features,occurrence,classification and range of thallus organization.Prominent pigments found in Algae.Reproduction classification,general character and life cycle of -Volvox,Oedogonium,Chara,Vaucheria,Ectocarpus and Polysiphonia.Economic importance of algae -Role of algae in	11

	soil fertility, algae as biofertilizer, blue green algae and nitrogen fixation. Symbiosis ;algal products -Agar, biofuel	
IV	**Mycology,Mushroom Cultivation,Lichenology&Mycorrhiza:**General characteristic features of Fungi,Economic importance and Classification of Fungi,Nutrition,Heterothallism, Physiological specialization,Heterokaryosis &Parasexuality in Fungi.Fungi as biocontrol agent Classification,general character and life cycle of -Mucor,Phytophthora Penicillium,Peziza.Ustilago,Puccinia,Agaricus;Colletotrichum,Alternaria.Edible Mushroom-Button and Oyster ,mushroom and their cultivation.General account of lichens.General account of Myccorrhiza	11
Keywords	**Mycoplasma, Transduction, Biofertilizer, Para sexuality.**	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

1.Kumar,H.D.(1999).Introductory Phycology.Affiliated East-West.Press Pvt.Ltd.Delhi.2nd edition.

2.Tortora,G.J.,Funke,B.R.,Case,C.L.(2010).Microbiology:An Introduction,Pearson Benjamin Cummings, U.S.A.10th edition.

3.Sethi,I.K.and Walia,S.K.(2011).Text book of Fungi &Their Allies,MacMillan Publishers Pvt.Ltd.,Delhi.

4.Aggarwal,S.K.2009.Foundation Course in Biology,A one books Pvt.Ltd.,New Delhi.

5.Aneja,K.R.1993.Experiments in Microbiology,Pathology and Tissue Culture,VishwaPrakashan,NewDelhi.

6..Annie Ragland,2012.Algae and Bryophytes,Saras Publication,Kanyakumari,India

7.Basu,A.N.1993.Essentials of Plant Viruses,Vectors and Plant diseases,New Age International,New Delhi.

8.Chopra.G.L.1984.A text book of Algae,Rastogi publications,Meerut,India

9.Dubey,R.C.and Maheshwari.D.K.2012.Practical Microbiology,S.Chand &Company,Pvt.Ltd.,NewDelhi.

10.Fritsch,R.E.1977.Structure and Reproduction of Algae,Cambridge University Press,London.

11.Sharma,P.D.(2011).Plant Pathology.Meerut,U.P:Rastogi Publication.

12.Pandey B.P.2001.College Botany Volume 1,S Chand &Company Pvt.Ltd,New Delhi.

Text Books Recommended-

1.Webster,J.,Weber,R.(2007).Introduction to Fungi,3rd edition.Cambridge,U.K:Cambridge University Press

2.Pelzar,1963.Microbiology,Tata McGraw Hill,New Delhi

3.Rangaswamy,G.2009,Disease of Crop Plants in India,Prientice Hall of India,New Delhi.

4.Microbiology Fundamental and Applications (hindi)(pb)9.ISBN:9788188826230 Edition:03Year: 2016Author:Dr.Purohit SS,Dr.Deo Publisher:Student Edition Language:Hind

5.Modern Microbiology (hindi)(hb)ISBN:9788177543599Edition:1Year:2018Author:Dr.Purohit SS, Dr.Singh T Publisher:Agrobios (India

6.Plant pathology by R.S.Mehrotra,Tata McGraw-Hill Publication

SHRI DAVARA UNIVERSITY NAYA RAIPUR

Online Resources-

- e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- http://www.egvankosh.ac.in
- http://www.itm.sc.in
- http://www.eskillindia.org
- http://www.eshiksha.mp.gov.in
- http://www.viah.co.in
- http://www.internshala.com

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

- https://www.pbs.org/video/botany-basics-iuu2bl/
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks, Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-II**	**Session: 2024-2025**
Course Code	**BOSC-02P**		
Course Title	**Lab.Course-02 (Microbes and Thallophyta)**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**At the end of this course, the students will be able to** ➢ Understand the Viruses,Bacteria,Phycology,Mycology and Plant ➢ pathology ➢ Learn microbial techniques which will be beneficial for agriculture and industry. ➢ Learn life cycles of selected genera of different groups Understand etiology of plant diseases ➢ Apply their knowledge in the crop fields to eradicate or avoid the diseases		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
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 Content of Course	1.Collection of viral/Bactrial /fungal infected plants 2.Study of plant disease symptoms caused by viral/Bactrial /fungal/ Mycoplasma **3.BACTERIAL IDENTIFICATION:** Isolation of bacteria Staining techniques:Gram's,staining 4.Study/Slide preparation of available Cyanobacteria **5.PHYCOLOGY:**Study/Slide preparation and Staining of algae-Volvox Oedogonium and Chara;Vaucheria;Ectocarpus Polysiphonia **6.MYCOLOGY:** Study/Slide preparation and.Staining of fungi.Mucor,Phytophthora Penicillium,Peziza,Ustilago,Puccinia;Agaricus,colletotrichum,Alternaria Study of Button and Oyster Mushroom		30

SHRI DAVARA UNIVERSITY NAYA RAIPUR

	Lichens:crustose,foliose and fruticose specimens Study of VAM fungi	
Keywords	**Infected P lants, VAM, Algae, Fungi**	
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SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF BOTANY

COURSE CURRICULUM

PART-C: Learning Resources

1.Practical Botany (Part I)ISBN #:81-301-0008-8 Sunil D Purohit,Gotam K Kukda &Anamika Singhvi Edition:2013 Apex Publishing House Durga Nursery Road,Udaipur,Rajasthan (bilingual).

2.Pandey S.K.(2012).Quick Concept of Botany.Publisher LAP LAMBERT Academic Publishing GmbH&Co.KG,Germany (ISBN:978-3-8484-3104-5).

3.Dubey,R.C.and Maheshwari.D.K.2012.Practical Microbiology,S.Chand &Company,Pvt. Ltd.,New Delhi.

4.Pandey.B.P.2014 Modern Practical Botany,(Vol-I)S.Chand and Company Pvt.Ltd.,New Delhi.

Text Books Recommended-

Reference Books Recommended-

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

Online Resources-

- E-resources/e-books and e-learning portals
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- www.egyankosh.ac.in
- www.litm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in
- www.vlab.co.in

Online Resources-
e-sources/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/arcas-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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):35	Laboratory/Field Skill Performance: On spot Assessment Section A : Performed the Task based on lab, work 20∗1=20 Marks B: Sporting based on lab, work (written) 10*1=10Marks Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**MBSC-02T**		
Course Title	**Bacteriology, Virology and Protozoology**		
Course Type	**Discipline Specific course (DSC)**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**After successfully completing this course, the students will be able to –** ➢ recall the ultrastructure of bacteria. ➢ relate ecological distribution of microorganism and their significances for society. ➢ Illustrate the essential and current knowledge of bacteria identify virus,protozoa and archaebacteria with their special characteristics ➢ outline the beneficial &harmful behavior of viruses ,bacteria protozoan and other microbes		
Credit Value	**3 Credits**	**Credit =15 Hours-learning & Observation**	
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)	
I	**Morphology and Ultra structure of Bacteria:** Cell size ,shape and arrangements Composition, structure and function of cell membrane, cell wall of gram-positive, gram-negative bacteria, capsule, flagella, pili ,ribosomes, inclusions ,nucleoid, plasmids. Structure and stages of spore formation.	12
II	**Gram negative,positive bacteria &Archaebacteria**:Gram negative and positive bacteria;characteristics and examples -Gram negative (non-proteobacteria-Deinococcus,Spirochetes.Alpha proteobacteria,Rhizobium, Agrobacterium.Gamma proteo-bacteria-Escherichia,Pseudomonas).Gram positive low G+C;Bacillus, Clostridium,Staphylococcus.High G+C: Streptomyces, Frankia. General characteristics, **Ecological significance and economic importance of Archaea:** Methanogens, thermophiles (Thermococcus, Pyrococcus,thermoplasma)and halophiles (halo bacteria and halo coccus).	11

III	**Morphology,ultrastructure,Classification &multiplication of viruses:** General introduction,morphology and ultra-structure of viruses,capsid, envelopes.Types of Viral genome.Viral related forms -virions,viroids,virusoids and prions.Classification of viruses.Salient features and life cycle of viruses: Bacteriophages (T4&Lambda) ,Plant (TMV&CMV),Animal (Adenovirus & Pox virus)	11
IV	**Introduction to protozoa;** Occurrence and classification of protozoa.Structure, reproduction,life cycle and diseases caused by important protozoans -Entamoeba, Giardia,Leishmania,Trypanosoma and Plasmodium	11
Keywords	**Bacteria, Archaea, Virus, Bacteriophage, Prions, Protozoan.**	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF MICRIBIOLOGY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

1.General Microbiology;VolI&II,Powar C.B.and Daginawala H.I.,Himalay Pub.House,Bombay
2.A Text Book of Microbiology;Dubey &Maheshwari.

3.A Text Book of Microbiology;R.P.Singh.

4.Fundamentals of Microbiology and Immunology,Ajit Kr.Banerjee and Nirmalya Banerji,Central publication.

5.Parasitology;H.S.Singh and P.Rastogi,First Edition,Rastogi Publications

Reference Books Recommended-

1.Prescott's Microbiology.Wiley J M,Sherwood L M and Woolverton C J

2.Microbiology.Pelczar M J,Chan E C S and Krieg N R.

3. General Microbiology.Stanier R Y,Ingraham J L,Wheelis M L,and Painter P R

4.Microbiology:An Introduction.Tortora G J,Funke B R and Case C L

Online Resources-

- e-books and e-learning portals
- https://www.coursera.org/lecture/emergence-of-life/4-5-invertebrates-successes-of-life-http://www.ignou.ac.in
- https://www.shiksha.com/online-courses/introduction-to-biology-biodiversity-course-http://www.itm.sc.in
- https://www.youtube.com/watch?v=uK-XYhttp://www.eshiksha.mp.gov.in
- https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com

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

- https://www.pbs.org/video/botany-basics-iuu2bl/
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART- A: Introduction			
Program: Bachelor in Life Sciences **(Certificate/Diploma/Degree/Honors**		**Semester-II**	**Session: 2024-2025**
Course Code	**MBSC-02P**		
Course Title	**Lab. Course -03 Bacteriology, Virology and Protozoology**		
Course Type	**Laboratory course**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**After successfully completing this course, the students will be able to –** ➢ **C**ulture microorganisms and get the knowledge about their ➢ Morphological features ➢ Illustrate different staining procedures ➢ Identify bacteria and protozoa from different samples ➢ Get practice of identification of colonies on different culture media		
Credits Value	**1 Credits**	**Credit =30 Hours Laboratory or Field learning/Training**	
Total Marks	**Max. Marks:50**	**Min Passing Marks: 20**	

Commented [u1]:

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 Content of Course	1.Isolation and characterization of bacteria by colony characteristics. 2.Growth on simple media-Nutrient agar and Nutrient broth. 3.Growth on complex media-Blood agar,Chocolate agar,Maconkey's,and EMB agar. 4.Differential Staining Techniques:Gram staining and acid-fast staining. 5.Special Staining Techniques:Negative staining and Endospore. 6.Study of cytopathic effects of viruses using photographs. 7.Observation of protozoa from different samples.	30

SHRI DAVARA UNIVERSITY NAYA RAIPUR

Keywords	**Isolation, Identification, Staining Techniques, Cytopathic effects, Protozoa.**	
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SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF MICROBIOLOGY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. S.S. Lal, Practical Zoology, Invertebrate. 12 Edition Rastogi Publications, Meerut, New Delhi.
2. A manual of practical Zoology. Dr. P.S Verma, S. Reference Books Recommended- Chand Publication, New Delhi.

Reference Books Recommended-

1. Park Haswell, Marshall and Williams, A textbook on Zoology Invertebrate, AITBS Publishing and Distributers, Delhi .
2. Park Haswell, Marshall and Williams, A textbook on Zoology Vertebrate, AFTBS Publishing and Distributers, Delhi.

Online Resources-

- E-resources/e-books and e-learning portals
- http://ndi.ätkgp.ac.in/he/document/swayamprabha/swayam
- http://www.swayam.ac.in
- http://www.ignou.ac.in
- www.egyankosh.ac.in
- www.litm.ac.in
- www.eskillindia.org
- www.eshiksha.mp.gov.in

Online Resources-

e-sources/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/arcas-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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):35	Laboratory/Field Skill Performance: On spot Assessment Section A : Performed the Task based on lab, work 20*1=20 Marks B: Spotting frased on tools & technology (written) 10*1=10Marks Section B : Viva-voce (based on principle/technology) - 5*1=05 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF POLITICAL SCIENCES

COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**PSGE-02**		
Course Title	**Constitutional Government in India**		
Course Type	**Discipline General Elective course (GE)**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**After completion of the course, the student shall be able to..** ➢ **Construct the political ideals mentioned in the preamble of the constitution.** ➢ **Assess the provisions of citizenship, fundamental rights and duties and their correlation.** ➢ **Examine the role of president and the functioning of union executive.** ➢ **Interpret the provisions and functioning of the union legislature and constitutional bodies of functional democracy, like election commission, finance commission and C&AG.**		
Credit Value	**4 Credits**	**Credit =60 Hours-learning & Observation**	
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)	
I	**Constitution Citizenship and Rights** Making of Indian Constitution: Cabinet mission plan and Constituent assembly. Preamble, features, Sources. Schedules, citizenship. Fundamental Rights and Duties, Directive Principles of State Policy. Constitution Amendment Process.	12
II	**Union** President, Vice President, Council of Ministers and Prime Minister. Federal Parliament Lok Sabha and Rajya Sabha. Supreme court Organization Functions, Powers, Judicial Review.	11
III	**Union and Federal administration** controller and auditor general Centre State Relations: Legislative, Financial, Administrative. Union and state public service commission, Election Commission, Finance Commission.	11
IV	**State and Local self government** Legislature, Executive: Governor, Council of Ministers and Chief Minister. State High Court-Organization. Functions, Rights.	11

SHRI DAVARA UNIVERSITY NAYA RAIPUR

Keywords	Political theory, sate, sovereignty, right, they, democracy, constitution, party.
Signature of Convener & Members (CBoS)	

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF POLITICAL SCIENCE

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

Text Books Recommended-

1. Ambadatt Pant Harimohan Jain Madan Gopal (1985) Fundamentals of Political Science, Central Publishing House Allahabad. U.P.
2. Sandhu Man Singh (1956) Political Theory Hindi Medium Implementation Directorate, Delhi University, New Delhi
3. Johari JC 1916) Basic principles of political science, Sahitya Bhavan, Agra.
4. Rajeev and Ashok Acharya (Eds) Political Theory A Flag, Dilsey Pearson, 2008

Reference Books Recommended-

1 umar, Sanjeev (Ed. Understanding of Political Theory, Delhi: Orient Book Swan, 2019
2 Hussain Shakeel (2018) Conceptual Introduction to Political Theory. Chhattisgarh State Hindi Forest Academy, Rampur.
3 K.K. Mishra (2010) Political Theory, 5. Chand Publishing Delhi
4 OP Gouba (2014) An Introduction to Political Theory, MacMillan Publishers, Delhi

Online Resources-

- e-books and e-learning portals
- https://www.coursera.org/lecture/emergence-of-life/-http://www.ignou.ac.in
- https://www.shiksha.com/online-courses/-http://www.itm.sc.in
- https://www.youtube.com/watch?v=uK-XYhttp://www.eshiksha.mp.gov.in
- https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com

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

- https://www.pbs.org/video/political-basics-iuu2bl/
- https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf
- https://www.botanytoday.com/brunches-of-botany

RT -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:20+20 Assignment/ Semenar-10 Total Marks-30	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks

End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 10*1=10 Marks Q2 Short answer type-5*4=20 Section B : Descriptive answer type qts 1 out of 2frm each- 4*10=40 Marks

Signature of Convener & Members (CBoS)

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF HINDI

COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**AEC-02**		
Course Title	**Hindi Language**		
Course Type	**Ability Enhancement Course**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**After the completion of this course, the students will be able to-** ➢ विद्यार्थी हिन्दीभाषा एव ंव्याकरण संबंधीज्ञान से समृद्ध होंगे। ➢ भाषा ज्ञान के माध्यम से भारतीय संस्कृति एवं भावनात्मक एकता के महत्व को समझने की क्षमता विकसित हो सकेगी। ➢ मुहावरे एव ंलोकोक्तियाँ का महत्व समझ सकेंगे। व्यंग्य, निबंध एवं कविता विद्या से परिचित होंगे। ➢ निबंध लेखन एवं अपठित गद्यांश के माध्यम से विद्यार्थियो ंका बौद्धिक विकास हो सकेगा।		
Credit Value	**2 Credits**	**Credit =30 Periods -learning & Observation**	
Total Marks	**Max. Marks:=50**	**Min Passing Marks: 20**	

PART -B: Content of the Course		
Total No. of Teaching-learning Periods (45 Min. per period) -30 Periods		
Unit	Topics (Course contents)	
I	**रचनाएं** **भारत वंदना–सूर्यकांत त्रिपाठी 'निराला' (कविता)** **जीव–हरिशंकर परसाई (व्यंग्य) चोरी और प्रायश्चित–महात्मागांधी (निबंध)**	08
II	**हिन्दी व्याकरण एवं शब्द रचना** **प्रत्यय, संधि समास** **पर्यायवाची शब्द, विलोम शब्द, अनेकार्थी शब्द, समश्रुत शब्द, अनेक शब्दों के लिए एक शब्द**	07
III	**हिन्दी व्याकरण एवं रचनापक्ष** **मुहावरे एवं लोकोक्तियां** **परिभाशिक षब्दावली एवं हिन्दी में पदनाम, षब्द षुद्धि, वाक्य षुद्धि**	08

IV	रचनात्मक लेखन निबंध लेखन अपठित गद्यांश (नोट– विद्यार्थी को किसी एक विशय पर निबंध व प्रदत्त गद्यांष का षिर्शक तथा सारांष लिखना होगा।)	07
Keywords	रचनात्मक लेखन निबंध लेखन हिन्दी व्याकरण एवं रचना पक्ष	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF HINDI

COURSE CURRICULUM

PART-C: Learning Resources		
Text Books, Reference Books and Others		
Text Books Recommended- 1- भारतीयता के अमर स्वर– डॉ. धनंजय वर्मा, मध्यप्रदेश हिन्दी अकादमी 2- आधुनिक हिन्दी व्याकरण और रचना– डॉ वासुदेव नंदन 3- हिन्दी भाषा और व्यवहार– डॉ. गंगा चरण त्रिपाठी 4- हिन्दी व्याकरण माला– डॉ. के.आर. गहिया, डॉ विमलेश शर्मा 5- हिन्दी व्याकरण– कामता प्रसाद गुरू		
Online Resources- ➢ Applying Communication Theory for Professional Life: A Practical Introduction. Dainton and Zelley, http://taime.uz.ac.zw/claroline/backends/download.php?urf-L0ludHJvX3RvX2NvbW1lbmljYXRpb25f ➢ https://www.coursera.org/lecture/emergence-of-life/4-5-invertebrates-successes-of-life-http://www.ignou.ac.in ➢ https://web.sol.du.ac.in/my modules/type/cbcs-11- 2/data/root/B.Com/Semester%202/ABILITY-ENHANCEMENT%20COMPULSORY%20COURSE-AECC/English%20Communication%20A-B-C/Unit%201-5. ➢ pdf https://www.youtube.com/watch?v=uK-XYhttp://www.eshiksha.mp.gov.in ➢ https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com ➢ https://archive.org/details/personality-development-book/mode/lup ➢ https://www.coursera.org/articles/presentation-skills ➢ https://www.cbs.de/en/blog/15-effective-presentation-tips-to-improve-presentation-skills/ ➢ https://benjaminball.com/blog/good-body-language-best-visual-aid-talks/		
Online Resources- ➢ e-sources/e-books and e-learning portals https://blog.moderngov.com/importance-of-body-language-in-presentations-good-bad- ➢ https://efaidohmannibpcapcalclefindorkaj/https://www2.ca.uky.edu/apcom/pubs/ho/ho96/ho96.pdf ➢ https://www.botanytoday.com/brunches-of-botany		
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:10+10 Assignment/ Semenar-05 Total Marks-15	Better marks out of the two Tot Quiz + obtained marks in Assignment shall be considered against 15 Marks
End Semester Exam (ESE):70	Two section A&B Section A :Q1 Objective 1*5=5 Marks Q2 Short answer type-2*5=10 (I. Vocabulary, II Unseen passage Section B : Descriptive answer type qts 1 out of 2frm each- 5*4=20 Marks	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-A: Introduction			
Program: Bachelor in Life Sciences (Certificate/Diploma/Degree Honors)		**Semester-II**	**Session: 2024-2025**
Course Code	**SEC-01**		
Course Title	**Chemistry Lab Skills-II**		
Course Type	**Course**		
Pre-requisite(if any)	**As per program**		
Course Learning. Outcomes (CLO)	**Completing this course, students will be able to: -** ➢ **To understand different acid-base theories and solvent system.** ➢ **To learn the preparation, bonding, and reactions of C-C σ- & π-bonded compounds.** ➢ **To understand the concept and chemistry of aromatic compounds and their reactions.** ➢ **To learn the basic concepts of various states of matter & understand the basic concepts of surface chemistry and chemical kinetics.**		
Credit Value	**1 Credits**	**Credit =30 Periods -learning & Observation**	
Total Marks	**Max. Marks:=50**	**Min Passing Marks: 20**	

PART -B: Content of the Course		
Total No. of Teaching-learning Periods (45 Min. per period) -15 Periods		
Unit	Topics (Course contents)	
I	**Introduction of Chemistry Laboratory** General introduction of the chemistry laboratory, common instructions for safe working in chemical laboratories, Good Laboratory Practices (GLP), Good Manufacturing Practices (GMP).Laboratory design, Storage, ventilation, lighting, fume, cupboard, arrangement of the store, Safety provisions, Organization of practical work, Maintenance of laboratory, equipment Cleaning of laboratories and glasswares / plasticwares and preparation room. Classification of apparatus in store and laboratory.	08
II	**Introduction of Chemistry Apparatus** Glass apparatus - Beaker, test tube, boiling tube, funnel, separating funnel, filtration flask, round bottom flask, flat bottom flask, condenser Liebig flask, watglass etc. measuring conical or condenser, Petridis, desiccators. Volumetric Apparatus – Measuring cylinder, burette, pipette, volumetric flask, analytical balance, single-pan electronic balance/ electrical analytical balance, Micropipette, Three way Pipette Bulb etc.	07
III	**Introduction of Chemistry Equipments** Clevenger apparatus, Buchner funnel, Soxhlet extractor, wire gauze, cork borers, filter pumps, crucible, mohr clip, pipe clay triangle, pestle and mortar, sprit lamp,spatulas, thermometer, pH meter.	08

SHRI DAVARA UNIVERSITY NAYA RAIPUR

IV	**Introduction of Chemistry Equipments**- laboratory centrifuge. Apparatus for heating and reaction: Magnetic Stirrer, Bunsen burner, water bath, oil bath hot plate, sand ,bath, hot air oven, heating mantle etc.	07
Keywords	*Introduction of Chemistry Laboratory.* Introduction of Chemistry Apparatus. Introduction of Chemistry Equipments	
Signature of Convener & Members (CBoS)		

SHRI DAVARA UNIVERSITY NAYA RAIPUR

FOUR YEAR UNDERGRADUATE PROGRAM (2024-28)

DEPARTMENT OF CHEMISTRY

COURSE CURRICULUM

PART-C: Learning Resources

Text Books, Reference Books and Others

- Text Books Recommended- Bahl, A., & Bahl, B. S. (2014). Organic Chemistry (22nd Ed.). S. Chand & Sons.
- Ahhuwalia, V. K., & Goyal, M. (2001). A Textbook of Organic Chemistry. Narosa Publishing House.
- . Jain, M. K., & Sharma, S. C. (2017). Modern Organic Chemistry. Vishal Publishing Company. Puri, B. R., Sharma, L. R., & Pathania, M. S. (2013). Principles of Physical Chemistry (46th Ed.)..
- Shoban Lal Nagin Chand And Co. 5. Bahl, B. S. A., & Tuli, G. D. (2009). Essentials of Physical Chemistry (Multicolour Ed.). S. Chand & Company Pvt Ltd. 6. Puri, B. R., Sharma, L. R., & Kalia, K. C. (2018). Principles of Inorganic Chemistry. Nagin Chand and Co., New Delhi,

Reference Books Recommended-

- Paula, B. Y. (2014). Organic Chemistry (7th Ed.). Pearson Education, Inc. (Singapore).
- Solomons, T. W. G. (2017). Organic Chemistry (Global Ed.). John Wiley & Sons.
- Morrison, R. T., & Boyd, R. N. (2010). Organic Chemistry (7th Ed.). Prentice-Hall Of India Limited.
- Laidler, K. J., & Meiser, J. H. (2006). Physical Chemistry (2nd Indian Ed.). CBS Publishers.
- . Atkins, P. W., & De Paula, J. (2006). Physical Chemistry (8th Ed.). Oxford University Press.
- . Dogra, S., & Dogra, S. (2006). Physical Chemistry through Problems (2nd Ed.). New Age International.
- Sangaranarayanan, M. V., & Mahadevan, V. (2011). Textbook of Physical Chemistry. University Press.

Online Resources-

- Introduction to Computer Fundamental from W3school: https://www.w3schools.blog/computer-fundamentals-tutorial
- Introduction to MS-Word from W3school: https://www.w3schools.blog/ms-word-tutorial
- Introduction to MS-Excel from W3school:https://www.w3schools.com/excel/excel_introduction.php
- ntroduction to MS-PowerPoint from W3school:https://www.w3schools.blog/powerpoint-tutorial Introduction to MS-Access from W3school:
- https://www.youtube.com/watch?v=WxMSckEcio4http://www.internshala.com

Online Resources-

e-sources/e-books and e-learning portals

- https://www.rgycsm.org/uploads/books/MICROSOFT-OFFICE-BOOK.pdf
- https://www.youtube.com/watch?v=SH40YV5AJ6A
- https://www.youtube.com/watch?v=SH40YV5AJ6A
- https://hte.rajasthan.gov.in/dept/dte/board

SHRI DAVARA UNIVERSITY NAYA RAIPUR

PART -D: Assessment and Evaluation		
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Signature of Convener & Members (CBoS)		