

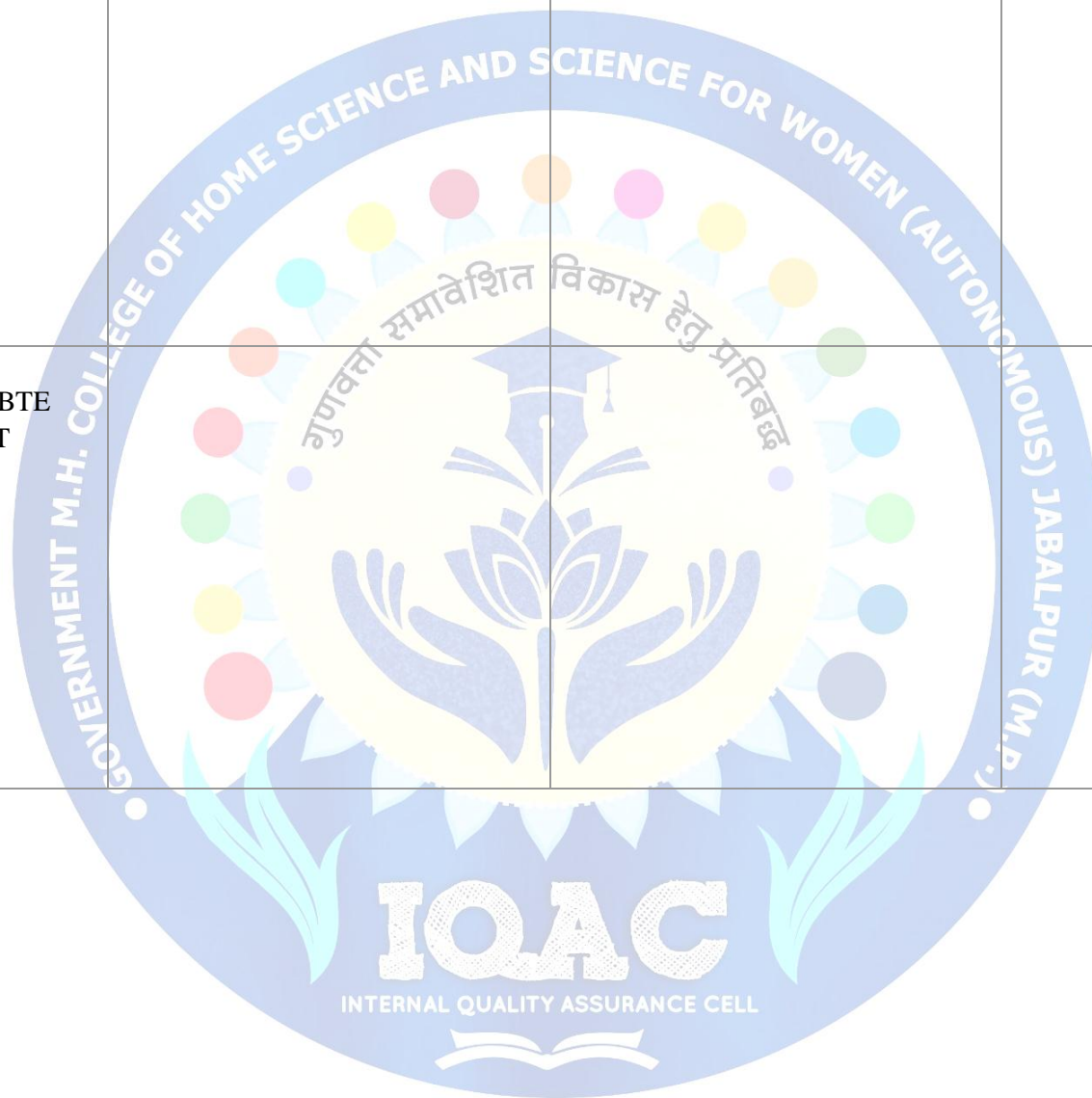


1.1.2

Title: Focus on employability/ Entrepreneurship/Skill Development (BIOTECHNOLOGY)

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Cell Biology and Biochemistry (Major)	CORE TH-1-SI-BTE CIT	Historical Background of the cell gives the idea about the basic structure of Cell. Detailed Structure of Prokaryotic and Eukaryotic cell identified through microscopy. Molecular Structure of Water and its role in Biomolecular Structure. Chemical Bonds and Biomolecules stability.	Various theories and principles related to chemical bonding. Acid-base concept, pH and buffer solution preparation. Analytes separation through chromatography, quantitative estimation of biomolecules using Spectrophotometer, Microscopy	Analytes separation through chromatography, quantitative estimation of biomolecules using Spectrophotometer, Microscopy etc.
2	Microbiology and Immunology (Major II)	CORE-TH-2 S1 BTEC2T	Study of history and Basic concept of Microbiology to know the application of microbiology in human welfare. Mathematical expression of Growth, Generation time and Growth yield.	Measurement of Growth, Cell count, Turbidometric measurement, Dry wet and Wet weight method by measurement of cellular activity.	Knowledge of working and application of Laminar Air Flow, Autoclave, Hot Air Oven. Immunological Techniques such as RIA, ELISA, Western Blotting etc.

3	Basic Molecular Biology (Major Paper I)	S2 BTE C1T			
4	Recombinant DNA technology (Major Paper II) & Minor/Elective	S2 BTE C2T			

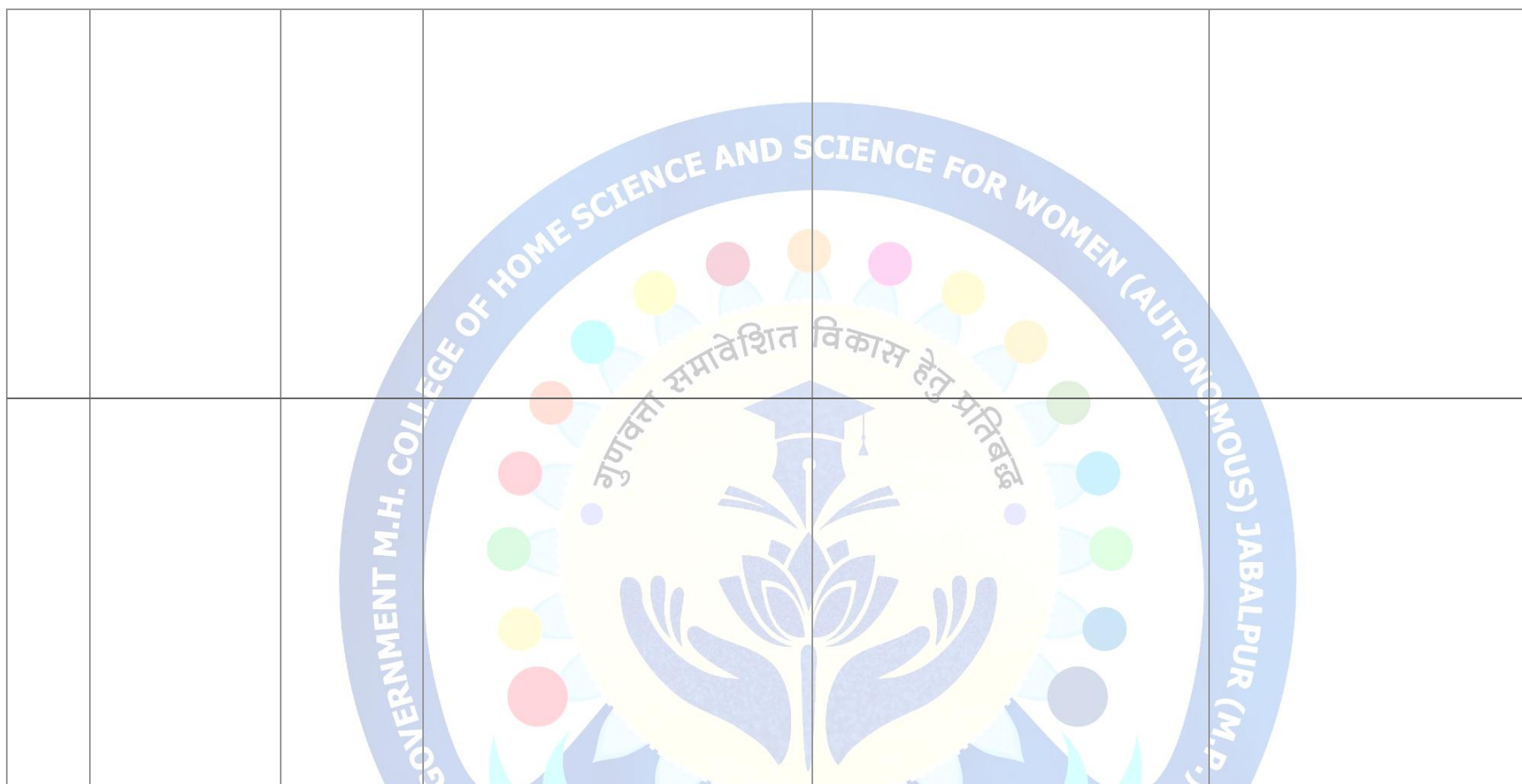


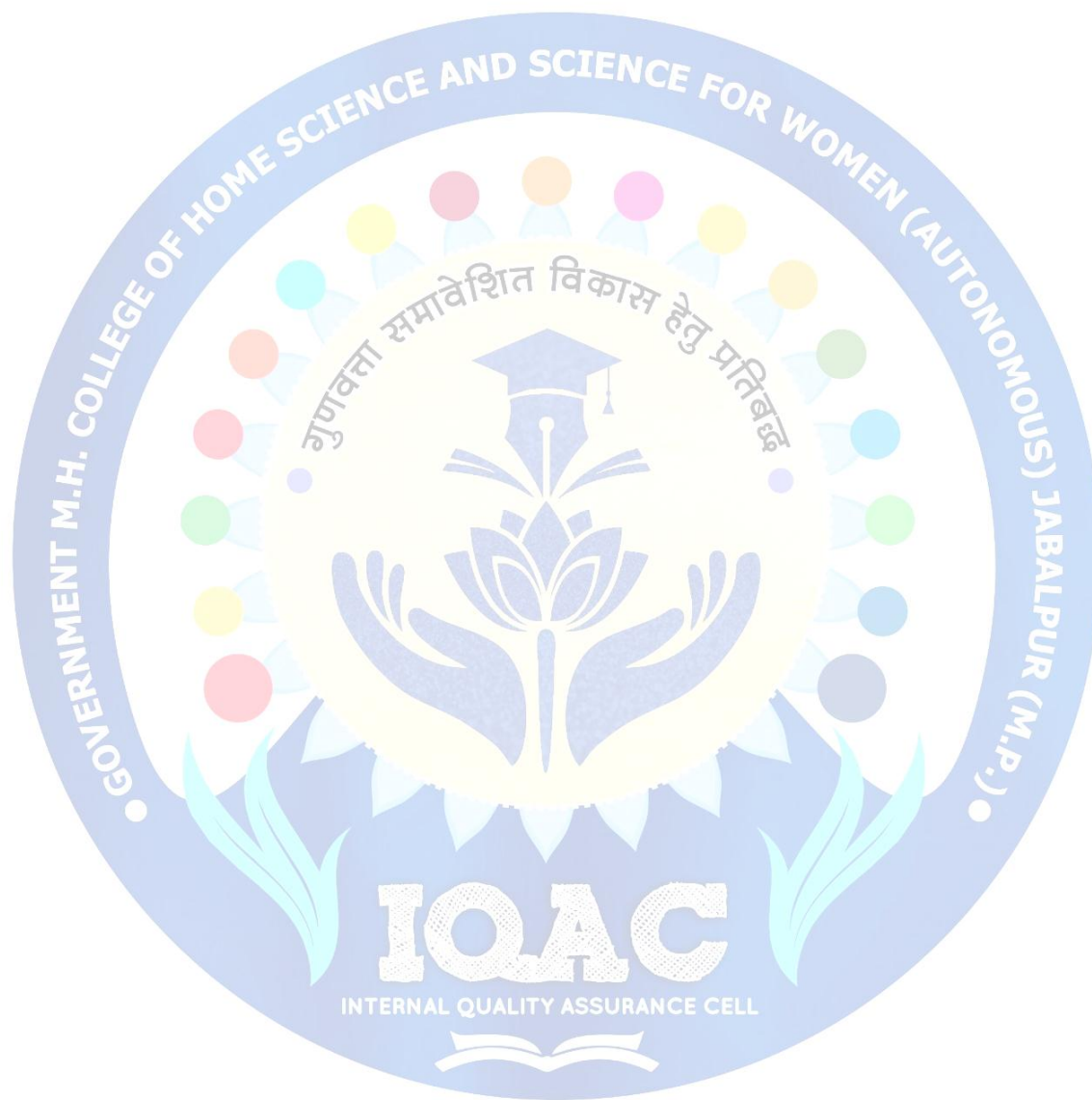
5	Industrial Biotechnology (Major Paper I)	S3- BTEC1D	<p>Concept of industrial and human beneficial living organism, their exploitation and application. Student will get insight on industrially important organism, recent development in fermentation processes and various optimization strategies at fermenter level. Immobilization of enzymes & its application, such as enzymatic bioconversions & bioprocess technology. It will creat interest about design, types of fermenter and various critical components of bioreactors and student can get job at production units, QC and R&D of Biotech/pharma companies</p>	<p>Bioreactor designs: Types of fermentation and fermenters, Measurement and control of bioprocess parameters; Scale up and scale down process. Techniques of enzyme isolation, purification, enzyme assay, strain improvement</p>	<p>Bioprocess control and monitoring variables such as temperature, agitation, pressure, pH Microbial processes production, optimization, screening, factors affecting downstream processing and recovery</p>
6	Agriculture Biotechnology (Major Paper II)	S3- BTEC2D	<p>Fundamental of the agriculture biotechnology such as organic farming agrobiolgy and techniques can help students in generating self-employment. The learner will get the deep understanding of soil microbiology, organic farming, composting, vermiculture and methane production. Basic principle of biofertilizer and biopeptide development will impart field knowledge.</p>	<p>Organic farming: Biofertilizers and Biopesticides, , Organic Food Quality and Human Health. Agrobacterium plant interaction, Genetic Transformation Agrobacterium mediated gene delivery, Gene Editing- Gene transfer technique Gene editing tools- CRISPR-Cass & TALEN, Techniques and Applications: enzyme detection, hybridization, PCR, Gene probe technology</p>	<p>Apiculture, Mushroom production, terrace farming, policies and incentives of organic production. Study of farm inspection and certification. Determination of water quality - pH, electrical conductivity, total solids, total suspended solids and total dissolved solids in given sample of water.</p>

3	Applied Biotechnology (Minor/ Elective)	S3-BTEC2T	<p>Basic concept on Pollution, Public awareness. Water Quality assessment and treatment. Biopesticide; Bacterial and fungal, microbial leaching , Biodegradation, modern fuel.</p>	<p>National and International strategies on Organic Farming, Biofertilizers, Fermentation. Elementary idea on Bioinformatics and Biostatics. IPR scope, WTO,TRIPS. GATT. Animal Breeder’s rights, Gene Potential Marker and Variants.</p>	<p>Organic Farming, Biofertilizers, Fermentation. Elementary idea on Bioinformatics and Biostatics. IPR scope, WTO,TRIPS. GATT. Animal Breeder’s rights, Gene Potential Marker and Variants.</p>
8	Medical Diagnostics (Vocational)	V1-ZOO- MEDT	<p>understand the role of medical diagnostic , to identify diseases and analysis will facilitate treatment process, will gain knowledge about the components of body fluid, their characteristics and abnormalities Job opportunities for students</p> <p>Medical Lab Technician Laboratory Receptionist Diagnostic Medical Sonographar Lab consultancy, Health Care Worker Medical Representative Medical Transcriptionist</p>	<p>Introduction to Medical Diagnostics and its importance, Diagnostic· methods used for analysis of body fluids, Urine Analysis 2.1 Physical characteristics 2.2 Abnormal constituent, Elementary idea of Diseases and Diagnostic Medical Imaging Techniques, Elementary idea of Diseases and Diagnostic.</p>	<p>Diagnostic· methods used for analysis of body fluids, Urine -Analysis Medical Imaging Techniques, Elementary idea of Diseases and Diagnostic.</p>

4.	Clinical Pathology and Medical Diagnostics	V2-ZOO-MEDT	<p>Introduction to Medical Diagnostics and it's scope, Detailed study on structure and anatomy of human heart, liver, kidney.</p> <p>Routine investigation in clinical pathology such as lipid Profile, Total Protein test etc.</p>	<p>Study of medical lab equipments, installation, calibration, operation. Specimen collection Pre and Post analytics. Histopathological techniques- collection, preservation. labeling of slides, blocks, use of fixative and stain.</p>	<p>Study of medical lab equipments such as Glucometer ,Microscope, Centrifuge, Thermometer, Sphigmomanometer, Stethoscope installation, calibration, operation. Specimen collection Pre and Post analytics. Histopathological techniques- collection, preservation. labeling of slides, blocks, use of fixative and stain.</p>
10	Medical Diagnostics & Health care (Vocational)	V3-ZOO-MEDT			









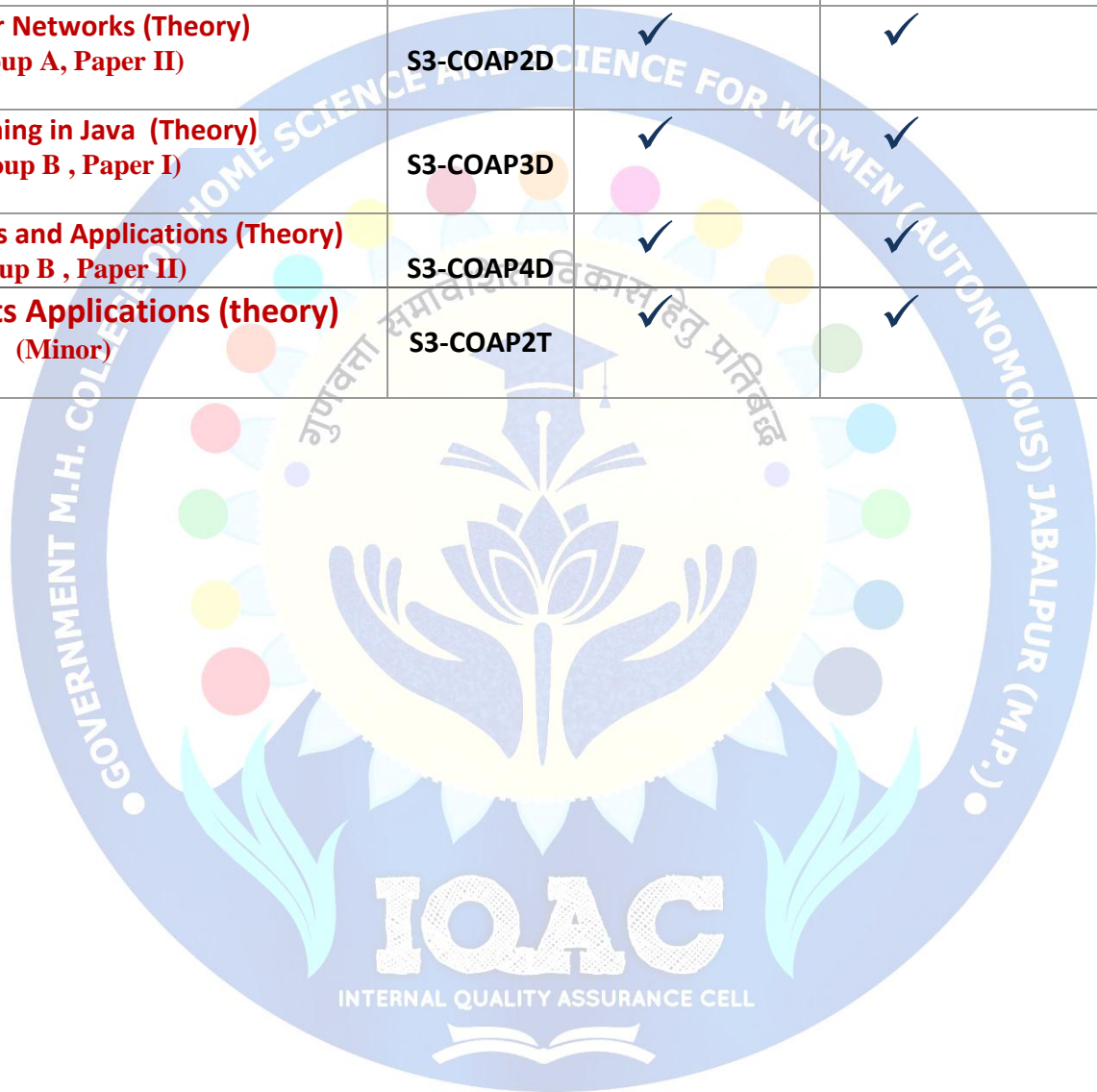
1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Mathematics and Computer

Computer Application

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Programming in C language (Major Paper I)	S1-COAP1T		✓	✓
2	Data Processing Software (PaperII)/Minor/Elective)	S1-COAP2T		✓	✓
3	Database Management System (Major Paper-I)	S2-COAP1T		✓	✓
4	Introduction to ASP.NET& C# (PaperII)/Minor/Elective)	S2-COAP2T		✓	✓

5	Operating System (Theory) (Group A , Paper I)	S3-COAP1D	✓	✓	✓
6	Computer Networks (Theory) (Group A, Paper II)	S3-COAP2D	✓	✓	✓
7	Programming in Java (Theory) (Group B , Paper I)	S3-COAP3D	✓	✓	✓
8	Multimedia Tools and Applications (Theory) (Group B , Paper II)	S3-COAP4D	✓	✓	✓
9	Internet and its Applications (theory) (Minor)	S3-COAP2T	✓	✓	✓





1.1.2

Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Chemistry

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Fundamentals of Chemistry (Major)	S1-CHEM1T	<p>Various theories and principles applied to reveal atomic structure. Significance of quantum numbers. Concept of periodic properties of elements. Theories related to chemical bonding. Acid-base concept, pH, buffer. Factors responsible for reactivity of organic molecules. Basics and mechanism of chemical kinetics. Properties of electrolytes.</p>	<p>Various theories and principles applied to reveal atomic structure. Significance of quantum numbers. Concept of periodic properties of elements. Theories related to chemical bonding. Acid-base concept, pH, buffer. Factors responsible for reactivity of organic molecules. Basics and mechanism of chemical kinetics. Properties of electrolytes.</p>	

2	Qualitative & Quantitative Chemical analysis(Major)	S1-CHEM1P	<p>Importance of chemical safety and lab safety while performing experiments in laboratory, Qualitative inorganic analysis, Elemental analysis of organic compounds (non-instrumental) Qualitative identification of functional group of organic compounds Techniques of pH measurements Preparation of buffer solutions</p>		<p>Importance of chemical safety and lab safety while performing experiments in laboratory, Qualitative inorganic analysis, Elemental analysis of organic compounds (non-instrumental) Qualitative identification of functional group of organic compounds Techniques of pH measurements Preparation of buffer solutions</p>
3	Analytical Chemistry(Minor)	S1-CHEM2T	<p>Basic concepts of Mathematics for Chemists. Fundamentals of analytical chemistry and steps involved in analysis. Basic knowledge of Computer for chemists. Basic Concepts of Chemical equilibrium. Principles of Chromatography and chromatographic techniques. Various techniques of Spectroscopic Analysis</p>	<p>Basic concepts of Mathematics for Chemists. Fundamentals of analytical chemistry and steps involved in analysis. Basic knowledge of Computer for chemists. Basic Concepts of Chemical equilibrium. Principles of Chromatography and chromatographic techniques. Various techniques of Spectroscopic Analysis</p>	

4	Analytical Processes and Techniques Core Course/ Minor/ Elective –	S1-CHEM2P	<p>Concepts and analytical methods in Chemistry. Preparation of solutions of different concentrations.</p> <p>Standardization of the solution.</p> <p>Identification of Organic compounds by chromatographic techniques.</p> <p>Analysis by Spectral Techniques.</p>	<p>Concepts and analytical methods in Chemistry. Preparation of solutions of different concentrations.</p> <p>Standardization of the solution. Identification of Organic compounds by chromatographic techniques. Analysis by Spectral Techniques.</p>
5	Chemistry in everyday life (Open Elective)	S1-CHEM3T	<p>Gain information about acids, bases and salts involved in our day to day life. Have an idea of food adulteration, its harmful effects, and methods to detect adulteration and the important constituents of our food. Student will be familiar with the chemical nomenclature of the commonly used materials in daily life including toiletries, kitchen and beverages. Have an Elementary idea of disinfectants, pesticides and cleaners.</p>	<p>Gain information about acids, bases and salts involved in our day to day life. Have an idea of food adulteration, its harmful effects, and methods to detect adulteration and the important constituents of our food. Student will be familiar with the chemical nomenclature of the commonly used materials in daily life including toiletries, kitchen and beverages. Have an Elementary idea of disinfectants, pesticides and cleaners.</p>

6	Chemistry in Everyday life	S1-CHEM3P	<p>Concepts and analytical methods in chemistry. Identification of acids, bases and salts involved in our day to day life. Methods to detect adulteration in commonly used food materials. Preparation of Natural indicator.</p>		<p>Concepts and analytical methods in chemistry. Identification of acids, bases and salts involved in our day to day life. Methods to detect adulteration in commonly used food materials. Preparation of Natural indicator.</p>
7	Reactions, Reagents and Mechanisms in Organic Chemistry (Major 1)	S2-CHEM1T	<p>Various organic reactions, reagents and their mechanisms, which will be helpful in understanding organic synthesis. Application of the reactions in the various industries. like pharmaceutical, polymer, pesticides, textile, Dyes etc. Important key reactions used in further study and Research work.</p>	<p>Various organic reactions, reagents and their mechanisms, which will be helpful in understanding organic synthesis. Application of the reactions in the various industries. like pharmaceutical, polymer, pesticides, textile, Dyes etc. Important key reactions used in further study and Research work.</p>	

8	Organic Qualitative Analysis, Reactions and synthesis (Major)	S2-CHEM1P	<p>To perform various reactions, which will be helpful in Understanding organic synthesis. To use reagents to perform organic reactions. To perform rearrangement reactions. To prepare various organic compounds. To use chromatographic technique to monitor organic reactions. Applications of the reactions in the industries, e.g., pharmaceutical, polymer, pesticides, textile, dyes, etc. industries. These experiments will also be useful in further study and research work.</p>		<p>To perform various reactions, which will be helpful in Understanding organic synthesis. To use reagents to perform organic reactions. To perform rearrangement reactions. To prepare various organic compounds. To use chromatographic technique to monitor organic reactions. Applications of the reactions in the industries, e.g., pharmaceutical, polymer, pesticides, textile, dyes, etc. industries. These experiments will also be useful in further study and research work.</p>
9	Transition Elements, Chemi-energetics, Phase Equilibria (Core Course/ Minor/ Elective)	S2-CHEM2T	<p>Chemistry of d- & f-block Elements, Basic Concepts of Coordination Chemistry. Stereochemistry of Transition Metal Complexes. Laws of Thermodynamics. Concepts of Phase Equilibrium with reference to Solid Solution, Liquid-Liquid Mixtures, partially Miscible Liquids. Basic Concepts of Electrochemistry</p>	<p>Chemistry of d- & f-block Elements, Basic Concepts of Coordination Chemistry. Stereochemistry of Transition Metal Complexes. Laws of Thermodynamics. Concepts of Phase Equilibrium with reference to Solid Solution, Liquid-Liquid Mixtures, partially Miscible Liquids. Basic Concepts of Electrochemistry</p>	

10	Metal Complex Preparation, Thermochemical & Phase equilibria experiments	S2-CHEM2P	<p>Chemistry of d- & f-block Elements, Basic Concepts of Coordination Chemistry.</p> <p>Stereochemistry of Transition Metal Complexes. Laws of Thermodynamics. Concepts of Phase Equilibrium with reference to Solid Solution, Liquid-Liquid Mixtures, partially Miscible Liquids. Basic Concepts of Electrochemistry</p>		<p>Preparation of inorganic complexes.</p> <p>Use of calorimeter for thermochemistry experiments.</p> <p>Determination of enthalpy of various system and reactions.</p> <p>Experiments on phase equilibria. Construction of phase diagrams.</p> <p>Study of reaction equilibrium</p>
11	Generic Elective -Chemistry for Farmers	S2-CHEM3T	<p>Pro cultivation crop improvement soil and crop management for sustainable organic agriculture production and development.</p> <p>Physical properties of soil and fertilizers types, Soil types and soil structure required for an agricultural field. Analysis and identification of complex agricultural problems and formulating ethical solutions. Innovative processes products and technology to meet the challenges in agriculture and farming practices.</p> <p>Fundamentals of horticulture modern farming and organic farming.</p>	<p>Pro cultivation crop improvement soil and crop management for sustainable organic agriculture production and development.</p> <p>Physical properties of soil and fertilizers types, Soil types and soil structure required for an agricultural field. Analysis and identification of complex agricultural problems and formulating ethical solutions. Innovative processes products and technology to meet the challenges in agriculture and farming practices.</p> <p>Fundamentals of horticulture modern farming and organic farming.</p>	

12	Green and Agriculture Chemistry	S3-CHEM1D	<p>Basic principle of green and sustainable chemistry. Understand stoichiometric calculation and relate them to green process metrics. Learn alternative solvent media green catalysis and energy sources of chemical processes. Understand the requirements of manures and fertilizers for various crops and their proper time of application. Understand to maintain soil fertility for better crop production.</p>	<p>Basic principle of green and sustainable chemistry. Understand stoichiometric calculation and relate them to green process metrics. Learn alternative solvent media green catalysis and energy sources of chemical processes. Understand the requirements of manures and fertilizers for various crops and their proper time of application. Understand to maintain soil fertility for better crop production.</p>	
13	Green and Agriculture Chemistry	S3-CHEM1Q	<p>To learn green synthesis of organic and inorganic compound. To learn to prepare green ionic liquids. To understand soil profile sampling and study minerals present in soil. To learn to estimate organic matter content of soil.</p>		<p>To learn green synthesis of organic and inorganic compound. To learn to prepare green ionic liquids. To understand soil profile sampling and study minerals present in soil. To learn to estimate organic matter content of soil.</p>

14	Laboratory Skill, Techniques and Management	S3-CHEM2D	<p>Familiarized with the basic facilities available in laboratories. To adopt appropriate disposal procedures and safety method suitable for laboratories. Expected to gain knowledge of the basic skill of organisation and management of science laboratories. Unable to expertise in the procedures to procurement and storage of laboratory equipment and materials. Trained in the operation and maintenance of simple instruments used in Science laboratories. Unable to develop skills in common laboratory techniques. Trained to adopt appropriate disposal procedures and safety method suitable for la</p>	<p>Familiarized with the basic facilities available in laboratories. To adopt appropriate disposal procedures and safety method suitable for laboratories. Expected to gain knowledge of the basic skill of organisation and management of science laboratories. Unable to expertise in the procedures to procurement and storage of laboratory equipment and materials. Trained in the operation and maintenance of simple instruments used in Science laboratories. Unable to develop skills in common laboratory techniques. Trained to adopt appropriate disposal procedures and safety method suitable for la</p>	
15	Exercise for development of lab skills	S3-CHEM2Q	<p>Preparation of standard solution. Determination of concentration. Determination of MP pH conductivity. Preparation of a stock solution. Preparation of various reagents.</p>		<p>Preparation of standard solution. Determination of concentration. Determination of MP pH conductivity. Preparation of a stock solution. Preparation of various reagents.</p>

16	Instrumental Techniques in Chemistry	S3-CHEM3D	<p>Preparation of standard samples for analysis. Determination of concentration of solution spectrometrically. Determination of stoichiometry and stability constant and complexes. Potentiometric and conductometric titrations. Advance chromatography techniques.</p>	<p>Preparation of standard samples for analysis. Determination of concentration of solution spectrometrically. Determination of stoichiometry and stability constant and complexes. Potentiometric and conductometric titrations. Advance chromatography techniques.</p>	
17	Instrumental Techniques in Chemistry	S3-CHEM3Q	<p>Preparation of standard samples for analysis. Determination of concentration of solution spectrometrically. Determination of stoichiometry and stability constant and complexes. Potentiometric and conductometric titrations. Advance chromatography techniques.</p>		<p>Preparation of standard samples for analysis. Determination of concentration of solution spectrometrically. Determination of stoichiometry and stability constant and complexes. Potentiometric and conductometric titrations. Advance chromatography techniques.</p>



18	Bio Physical, Bio Inorganic and Organometallic Chemistry	S3-CHEM4D	<p>Bio physical concepts like pHbiological oxidation bioenergetics. Magnetic properties and electronic spectra of transition metal complexes. Structure and bonding analysis of organometallic compounds using the MOtheory. Organometallic compounds of main group elements and their structure and bonding analysis. Bio Inorganic Chemistry and role of metal ions in biological systems</p>	<p>Bio physical concepts like pHbiological oxidation bioenergetics. Magnetic properties and electronic spectra of transition metal complexes. Structure and bonding analysis of organometallic compounds using the MOtheory. Organometallic compounds of main group elements and their structure and bonding analysis. Bio Inorganic Chemistry and role of metal ions in biological systems</p>	
19	Synthesis and analytical techniques	S3-CHEM4Q	<p>Synthesise of ferrocene from ferric chloride, potassium tries oxalate ferrate. Determine pH of bio sample; determine sugar in blood sample by photometry.</p>		<p>Synthesise of ferrocene from ferric chloride, potassium tries oxalate ferrate. Determine pH of bio sample; determine sugar in blood sample by photometry.</p>



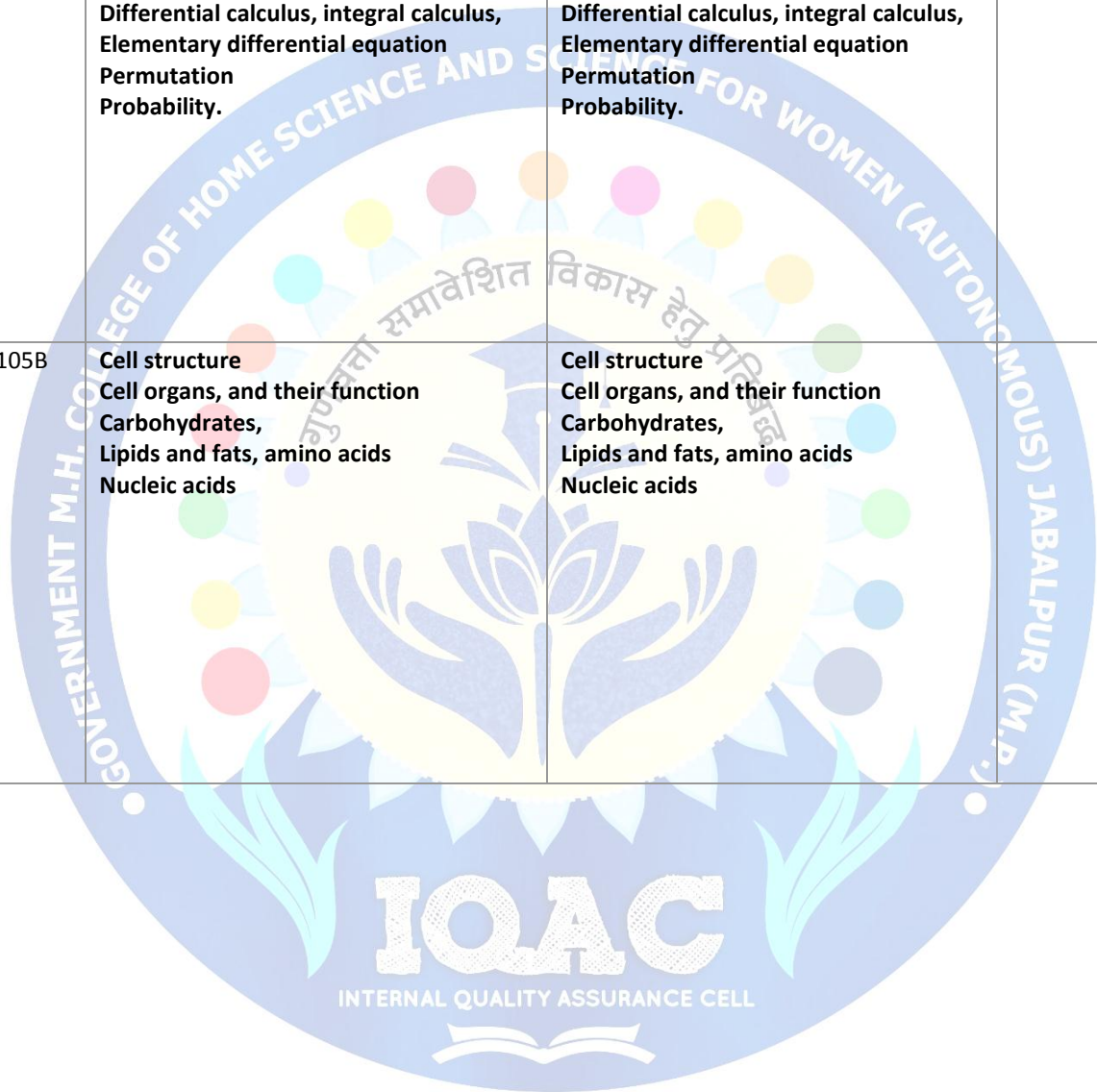
20	pharmaceutical and medicinal chemistry	S3-CHEM2T	<p>Understand importance of pharmaceutical chemistry and pharmacopoeia. Learn intellectual property rights patents trademark and copyright. Understand definition classification of the drug with example and structures. Describe the structure activity relation of some important class of drugs.</p> <p>Describe the over all process of drug discovery and the role played by medicinal chemistry in this process.</p> <p>Relate the structure and physical properties of drugs to their pharmacological activity. Explain you chemical properties related to QSAR.</p>	<p>Understand importance of pharmaceutical chemistry and pharmacopoeia. Learn intellectual property rights patents trademark and copyright. Understand definition classification of the drug with example and structures. Describe the structure activity relation of some important class of drugs.</p> <p>Describe the over all process of drug discovery and the role played by medicinal chemistry in this process. Relate the structure and physical properties of drugs to their pharmacological activity. Explain you chemical properties related to QSAR.</p>	
21	pharmaceutical and medicinal chemistry	S3-CHEM2T	<p>Preparation of acetanilide. Isolate the caffeine from the tea leaves. To learn about preparation of simple syrup as per IP and USP. Morphology of turmeric, Ginger and mentha.</p> <p>Preparation of suspension emulsion on it means in organic separations pharmaceutical buffer solutions.</p>	<p>Preparation of acetanilide. Isolate the caffeine from the tea leaves. To learn about preparation of simple syrup as per IP and USP. Morphology of turmeric, Ginger and mentha. Preparation of suspension emulsion on it means in organic separations pharmaceutical buffer solutions.</p>	

22	Processing of fats and oils (Generic elective)		<p>Gain knowledge about traditional Indian oil and traditional Indian oil processing methods.</p> <p>Gain the knowledge about importance type natural resources of fats and oils and their effect on health.</p> <p>Learn the method of refining and modification of fats and oils. Know about the nutritional aspects of fats and oils and their storage and handling.</p>	<p>Gain knowledge about traditional Indian oil and traditional Indian oil processing methods.</p> <p>Gain the knowledge about importance type natural resources of fats and oils and their effect on health.</p> <p>Learn the method of refining and modification of fats and oils. Know about the nutritional aspects of fats and oils and their storage and handling.</p>	
23	Environmental toxicology(Generic elective)		<p><i>Learn about definition and sources of toxicants.</i></p> <p><i>Learn about chemical toxicants biological toxicants and its assessment.Learn about different parts of ecotoxicology i.e. Immunotoxicology, Xenoviotics, neurotoxicology, bioaccumulation, biodegradation etc.Learn about the determination of acceptable risks and limits of environmental toxicants and utility of environmental benchmarks.Learn about environmental cytotoxicity and genotoxicity.</i></p> <p><i>Learn about what type of toxic chemicals affects in environment and solid West management.</i></p> <p><i>Learn about which factors influence the toxicity.</i></p>	<p><i>Learn about definition and sources of toxicants.</i></p> <p><i>Learn about chemical toxicants biological toxicants and its assessment.Learn about different parts of ecotoxicology i.e. Immunotoxicology, Xenoviotics, neurotoxicology, bioaccumulation, biodegradation etc.Learn about the determination of acceptable risks and limits of environmental toxicants and utility of environmental benchmarks.Learn about environmental cytotoxicity and genotoxicity.</i></p> <p><i>Learn about what type of toxic chemicals affects in environment and solid West management.</i></p> <p><i>Learn about which factors influence the toxicity.</i></p>	

24	Inorganic Chemistry	MCH 101	<p>Stereochemistry, bonding, VSEPR theory, MO treatment Reaction mechanism of Substitution inertness and lability Electronic spectra of transition metal complexes Metal carbonyls, Dioxygen Complexes Wilkinson's Catalyst, borane chemistry including topology, nomenclature, reactivity</p>	<p>Stereochemistry, bonding, VSEPR theory, MO treatment Reaction mechanism of Substitution inertness and lability Electronic spectra of transition metal complexes Metal carbonyls, Dioxygen Complexes Wilkinson's Catalyst, borane chemistry including topology, nomenclature, reactivity</p>
25	Organic Chemistry	MCH 102	<p>Structure and bonding in organic molecules Aromaticity, antiaromaticity, homo aromaticity including weaker bonds. Stereochemistry, symmetry, chirality, optical activity and conformational analysis, Reaction mechanism, Hammett equation, SN1, SN2 and SET mechanism, UV-VIS, ORD & CD Spectroscopy</p>	<p>Structure and bonding in organic molecules Aromaticity, antiaromaticity, homo aromaticity including weaker bonds. Stereochemistry, symmetry, chirality, optical activity and conformational analysis, Reaction mechanism, Hammett equation, SN1, SN2 and SET mechanism, UV-VIS, ORD & CD Spectroscopy</p>

26	Physical Chemistry	MCH 103	<p>Schrodinger Wave equation, variation and perturbation theory, Classical thermodynamics, Phase rule, chemical dynamics, Arrhenius Equation, Theory of reaction rate and application of rate law on dynamic chain reaction Reaction catalysts</p>	<p>Schrodinger Wave equation, variation and perturbation theory, Classical thermodynamics, Phase rule, chemical dynamics, Arrhenius Equation, Theory of reaction rate and application of rate law on dynamic chain reaction Reaction catalysts</p>
27	Spectroscopy	MCH 104	<p>Electromagnetic spectrum Microwave spectroscopy Infrared Spectroscopy Raman and Electronic spectroscopy. CARS (Coherent and Stokes Raman Spectroscopy) and application of these spectral techniques in structure determination of molecule.</p>	<p>Electromagnetic spectrum Microwave spectroscopy Infrared Spectroscopy Raman and Electronic spectroscopy. CARS (Coherent and Stokes Raman Spectroscopy) and application of these spectral techniques in structure determination of molecule.</p>

28	Mathematics for Chemist	MCH 105A	<p>Basic concept of mathematical technique involved in Chemistry like Mathematics Algebra Differential calculus, integral calculus, Elementary differential equation Permutation Probability.</p>	<p>Basic concept of mathematical technique involved in Chemistry like Mathematics Algebra Differential calculus, integral calculus, Elementary differential equation Permutation Probability.</p>	
29	Biology for Chemist	MCH 105B	<p>Cell structure Cell organs, and their function Carbohydrates, Lipids and fats, amino acids Nucleic acids</p>	<p>Cell structure Cell organs, and their function Carbohydrates, Lipids and fats, amino acids Nucleic acids</p>	



30	Inorganic Chemistry	MCH 106	<p>Qualitative and Quantitative Analysis Chromatography Preparations- Preparation of selected inorganic complexes and their studies by measurements of decomposition temperature, molar conductance, IR and electronic spectra.</p>	<p>Qualitative and Quantitative Analysis Chromatography Preparations- Preparation of selected inorganic complexes and their studies by measurements of decomposition temperature, molar conductance, IR and electronic spectra.</p>
31	Organic Chemistry	MCH 107	<p>Qualitative Analysis: Separation, purification and identification of compounds of binary mixture. Emphasis should be placed on physical principles, reaction chemistry and the technique involved in analysis. Organic Synthesis- Purification of compounds by TLC and column chromatography. Aromatic electrophilic substitutions, Reduction reaction Quantitative Analysis- Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method</p>	<p>Qualitative Analysis: Separation, purification and identification of compounds of binary mixture. Emphasis should be placed on physical principles, reaction chemistry and the technique involved in analysis. Organic Synthesis- Purification of compounds by TLC and column chromatography. Aromatic electrophilic substitutions, Reduction reaction Quantitative Analysis- Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method</p>

32	Physical Chemistry	MCH 108	<p>Adsorption Phase Equilibria Chemical Kinetics Solutions</p>	<p>Adsorption Phase Equilibria Chemical Kinetics Solutions</p>
33	Inorganic Chemistry	MCH201	<p>Metal ligand equilibrium, reaction mechanism, base hydrolysis, conjugate base mechanism in octahedral and mechanism of square planar complexes. Metal-ligand bonding Calculations of Dq, B and beta parameters Preparation, properties, structure and applications of metal nitrosyls. Symmetry elements, symmetry operations and the principle involved in group theory</p>	<p>Metal ligand equilibrium, reaction mechanism, base hydrolysis, conjugate base mechanism in octahedral and mechanism of square planar complexes. Metal-ligand bonding Calculations of Dq, B and beta parameters Preparation, properties, structure and applications of metal nitrosyls. Symmetry elements, symmetry operations and the principle involved in group theory</p>

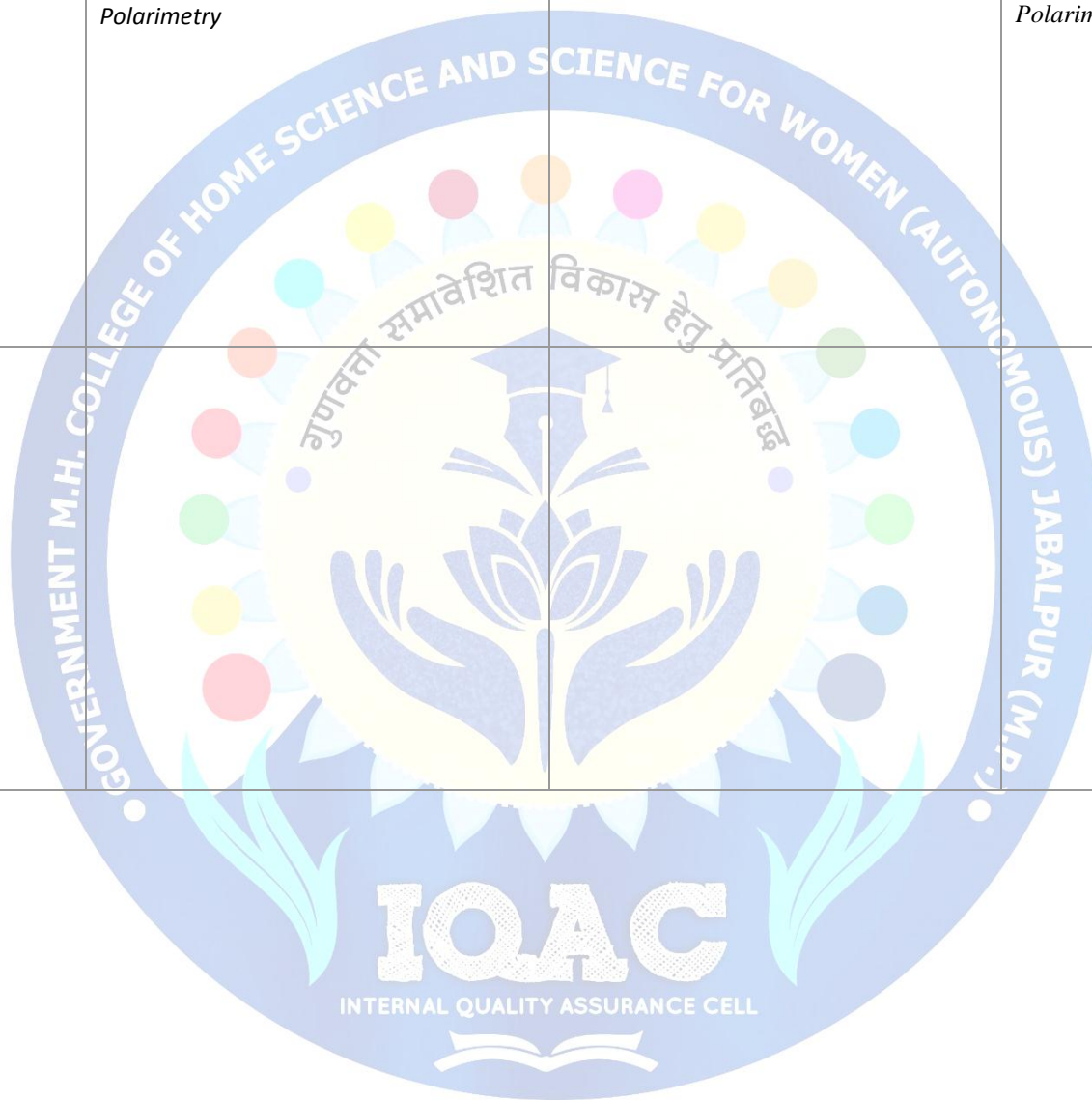
34	Organic Chemistry	MCH 202	<p>Mechanism- aromatic/aliphatic electrophilic substitution Free radical, allylic halogenation reaction, Addition to carbon-carbon and carbon-hetero atom multiple bond and aromatic nucleophilic substitution, SE1, SE2, SN1 SN2 & SRN1 reactions. ESR Spectroscopy IR and Raman spectra and their application in characterization of organic compounds</p>	<p>Mechanism- aromatic/aliphatic electrophilic substitution Free radical, allylic halogenation reaction, Addition to carbon-carbon and carbon-hetero atom multiple bond and aromatic nucleophilic substitution, SE1, SE2, SN1 SN2 & SRN1 reactions. ESR Spectroscopy IR and Raman spectra and their application in characterization of organic compounds</p>	
35	Physical Chemistry	MCH 203	<p>Chemical dynamics Adsorption and electrokinetic phenomenon, Micellization, DHO equation. Lipmann electro-capillary phenomenon including different models. Macromolecules and colloid including their types, emulsification, irreversible electrode phenomenon including decomposition voltage overlaps.</p>	<p>Chemical dynamics Adsorption and electrokinetic phenomenon, Micellization, DHO equation. Lipmann electro-capillary phenomenon including different models. Macromolecules and colloid including their types, emulsification, irreversible electrode phenomenon including decomposition voltage overlaps.</p>	

36	Spectroscopy & Diffraction Methods	MCH204	<p>Photoelectron spectroscopy, photoacoustic spectroscopy, X ray Diffraction, Neutron Diffraction.</p> <p>Biological cell, constituents, Bioenergetics</p> <p>Thermodynamics of biopolymer solution and transport of ion through the cell membrane</p>	<p>Photoelectron spectroscopy, photoacoustic spectroscopy, X ray Diffraction, Neutron Diffraction.</p> <p>Biological cell, constituents, Bioenergetics</p> <p>Thermodynamics of biopolymer solution and transport of ion through the cell membrane</p>	
37	Computer for Chemist	MCH205	<p>Basic knowledge of computer and computing</p> <p>BASIC and FORTRAN based programming with especial reference to programming in chemistry.</p> <p>Rerunning of standard program in MS Word and MS Excel Search engines and various types of files like PDF, RTF, JPG OMR & Webcam.</p>	<p>Basic knowledge of computer and computing</p> <p>BASIC and FORTRAN based programming with especial reference to programming in chemistry.</p> <p>Rerunning of standard program in MS Word and MS Excel Search engines and various types of files like PDF, RTF, JPG OMR & Webcam.</p>	



38	Inorganic Chemistry	MCH 206	<p>Chromatography Separation of cations and anions by Column Chromatography Estimation of Ni – Fe, Ni (Gravimetrically), Fe (Volumetrically) Preparations- Preparation of selected inorganic complexes and their studies by measurements of decomposition temperature, molar conductance, IR and electronic spectra. <i>Interpretation of TG and NMR spectra of some known compounds</i></p>		<p>Chromatography Separation of cations and anions by Column Chromatography Estimation of Ni – Fe, Ni (Gravimetrically), Fe (Volumetrically) Preparations- Preparation of selected inorganic complexes and their studies by measurements of decomposition temperature, molar conductance, IR and electronic spectra. <i>Interpretation of TG and NMR spectra of some known compounds</i></p>
39	Organic Chemistry	MCH 207	<p>Qualitative Analysis: Separation, purification and identification of compounds of binary mixture. Emphasis should be placed on physical principles, reaction chemistry and the technique involved in analysis. Preparation of phenyl azo – β – naphthol from aniline. Aromatic electrophilic substitutions, Reduction reaction <i>Quantitative Analysis</i>-Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method</p>		<p>Qualitative Analysis: Separation, purification and identification of compounds of binary mixture. Emphasis should be placed on physical principles, reaction chemistry and the technique involved in analysis. Preparation of phenyl azo – β – naphthol from aniline. Aromatic electrophilic substitutions, Reduction reaction <i>Quantitative Analysis</i>-Determination of the percentage or number of hydroxyl groups in an organic compound by acetylation method</p>

40	Physical Chemistry	MCH 208	<i>Electrochemistry</i> <i>Conductometry</i> <i>Potentiometry/pH merry</i> <i>Polarimetry</i>	<i>Electrochemistry</i> <i>Conductometry</i> <i>Potentiometry/pH merry</i> <i>Polarimetry</i>

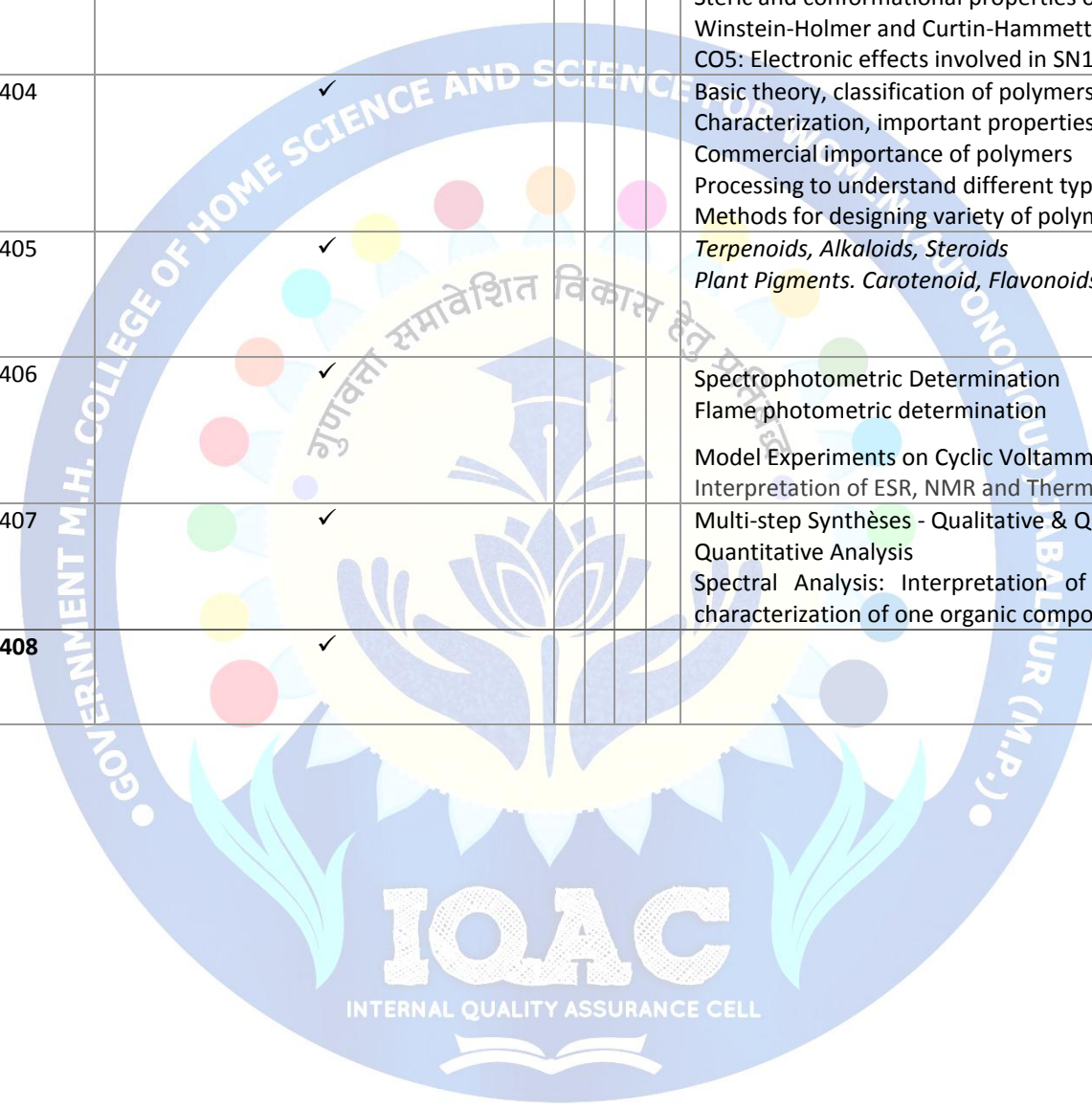


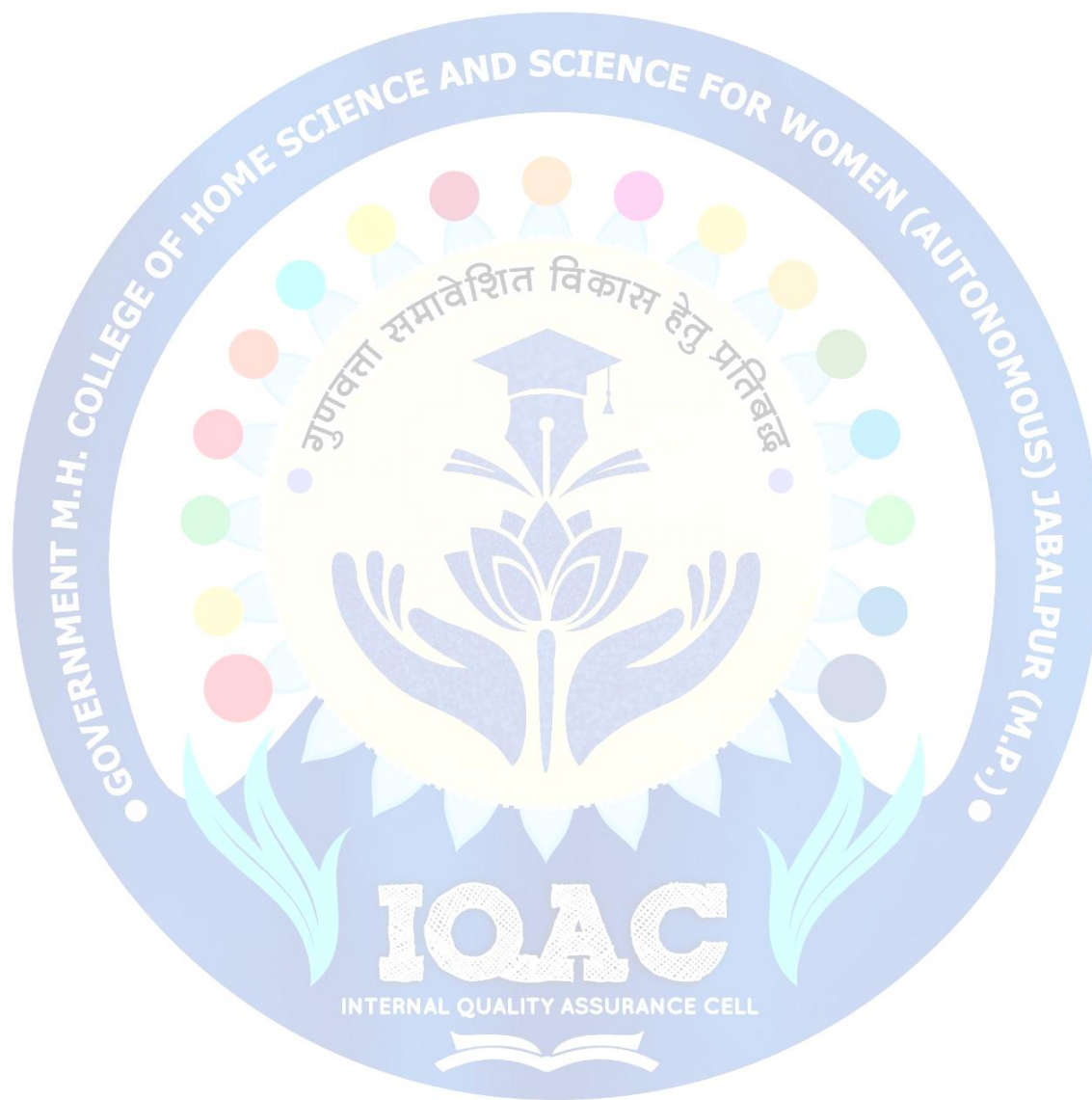
40	Physical Chemistry	MCH 208	✓						Electrochemistry Conductometry Potentiometry/pH merry Polarimetry
41	Inorganic Chemistry	MCH301	✓						Group theory, Character tables, orthogonality theorem, applications for C2v and D4h Correlation of vibrational spectroscopy with group theory. They will also understand energy levels and M.O. Diagrams, bonding of multidentate ligands, characterization by IR and NMR Shift reagents in NMR spectroscopy Structure and functioning of metalloenzymes e.g., carboxypeptidase, carbonic dehydratase Structure and functioning of biomolecules like Hemoglobin.
42	Organic Chemistry	MCH302	✓						Basic theory of NMR spectroscopy, applications to characterize organic compounds Photochemical reactions. Mechanism of pericyclic reaction, WoodwardHaffmann, FMO &PMO approach Sigma tropic rearrangements.
43	Physical Chemistry	MCH303	✓						Atomic concepts, Russell-Saunders terms and coupling. Molecular Orbitals, Hückel MO systems like ethylene, butadiene Homo and heterogeneous catalysis. Crystal defects. Schottky and Frankel defects Solid state reactions. Metallic bond Conductors, semiconductors, insulators and superconductors
44	Analytical Chemistry	MCH304B	✓						Statistical Analysis., Sample Preparation for Chromatography. Chromatography. Theory of Chromatography, Gas Chromatography, High Pressure Liquid Chromatography.

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						Chromatography, Capillary Electrophoresis. Ion Exchange, Solvent Extraction Atomic Absorption Spectrometry, Electrolytic Methods Acid-Base Titration Complexometric Titrations, Redox Titrations.
45	Photochemistry	MCH304C	✓			Photochemical Reactions Determination of Reaction Mechanism Photochemistry of Alkene Photochemistry of Carbonyl Miscellaneous Photochemical Reactions, Photo degradation of polymers. Photo
46	Inorganic Chemistry	MCH306	✓			Synthesis Synthesis of selected inorganic compounds and their studies by measuring temperatures and molar conductance, magnetic and IR electronic spectra. Qualitative test of suitable anion and determination of metal content group compounds. Interpretation of ESR and mass spectra of some known coordination compounds.
47	Organic Chemistry	MCH307	✓			Qualitative Analysis Separation, purification and systematic identification of the components of compounds (solids and liquids). Preparation of one derivative of each compound and ascertainment of purity of compounds. Multi-step Synthesis This exercise should illustrate the use of organic reactions/ diverse conditions for synthesis. Purification of compounds by chromatographic techniques.
48	Physical Chemistry	MCH308	✓			Potentiometry Conductivity Spectrophotometry Molecular Modeling
49	Inorganic Chemistry	MCH401	✓			ESR Spectroscopy Mossbauer, IR, Raman spectroscopy, Point groups and vibrational spectroscopy. Bio-inorganic chemistry, chlorophyll, photosystems one and two, Metalloproteins cytochromes, iron Sulphur protein, Nitrogen fixation.
50	Organic Chemistry	MCH402	✓			¹³ C NMR Spectroscopy, Mass spectroscopy. Reaction mechanism of elimination, E1, E2 & E1CB type, Substitution reactions and their functioning.

51	Physical Chemistry	MCH403	✓						NMR, ESR spectroscopy. Laws of photochemistry, fluorescence, Steric and conformational properties of molecules, Winstein-Holmer and Curtin-Hammett Equations CO5: Electronic effects involved in SN1 and SN2 type of reactions, and curve c
52	Polymer Chemistry	MCH404	✓						Basic theory, classification of polymers Characterization, important properties of polymers Commercial importance of polymers Processing to understand different types of casting like die-rotational, film Methods for designing variety of polymers
53	Chemistry of Natural Products	MCH405	✓						<i>Terpenoids, Alkaloids, Steroids</i> <i>Plant Pigments. Carotenoid, Flavonoids, Chlorophyll, Vitamins and Antibiotics,</i>
54	Inorganic Chemistry	MCH406	✓						Spectrophotometric Determination Flame photometric determination Model Experiments on Cyclic Voltammetry Interpretation of ESR, NMR and Thermogravimetric pre-recorded results of kr
55	Organic Chemistry	MCH407	✓						Multi-step Synthèses - Qualitative & Quantitative Quantitative Analysis Spectral Analysis: Interpretation of pre-recorded UV-Vis, IR, NMR, Ma characterization of one organic compound.
56	Physical Chemistry	MCH408	✓						







1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Mathematics and Computer

Computer Science

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Computer System Architecture (Major Paper I)	S1-COSP1T		✓	✓
2	Programming Methodologies & Data Structure (PaperII)/Minor/Elective)	S1-COSP2T		✓	✓
3	Computer Networks & Information Security (Major Paper-I)	S2-COSP1T		✓	✓
4	Object Oriented Programming with Java (PaperII)/Minor/Elective)	S2-COSP2T		✓	✓

5	Operating System (Theory) (Group A , Paper I)	S3-COSP1D	✓	✓	✓
6	Programming with Python (Group A, Paper II)	S3-COSP2D	✓	✓	✓
7	PHP & MySQL (Group B , Paper I)	S3-COSP3D	✓	✓	✓
8	Cloud Computing (Group B , Paper II)	S3-COSP4D	✓	✓	✓
9	Data Analysis and Visualization with Python (theory) (Minor)	S3-COSP2T	✓	✓	✓
10	Internet of Things (IoT) (Core-1)	S4-COSC1T	✓	✓	✓
11	Artificial Intelligence (AI) (Core-2)	S4-COSC2T	✓	✓	✓
12	Computing with Scilab - D1	S4-COSC1D	✓	✓	✓
13	Linux Server Administration -D2	S4-COSC2D	✓	✓	✓



1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Clothing and Textile

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Fundamentals of Textiles Major II / Minor	H1-HSCA2T	work at dyeing and printing unit in cottage industry, fabric analyst	Handloom set up for produce weaved fabric	Develop basic designs as designer for tie and dye, screen ,stencil etc printing
1.P	Fundamentals of Textiles Major II / Minor	H1-HSCA2P	work at dyeing and printing unit in cottage industry	Run the Weaving, Dyeing, printing unit at local level	Develop basic designs as designer for tie and dye, screen ,stencil etc printing
2	Dyeing and Printing Elective	H1-HSCA2G	work at dyeing and printing unit at domestic level	Locally Set up of Dyeing and Printing Unit for produce various designer fabrics	Develop basic designs as designer for produce different designs through dyeing and printing

3	Dyeing and Printing Elective	H1- HSCA2R	work at dyeing and printing unit at domestic level	Locally Set up of Dyeing and Printing Unit for produce various designer fabrics	Develop simple designs as designer for produce different designs through dyeing and printing
4	Fundamentals of Clothing Constructions Major II/ Minor	H2- HSCA2T	Locally set up boutique, Trainer, machine technician	Open unit for basic stitching, Training centre, wardrobe advisor	Designing, garment finishing skill
5	Fundamentals of Clothing Constructions Major II/ Minor	H2 - HSCA2P	Locally set up boutique, supervisor, pattern maker, machine operator	Open unit for basic stitching, fashion designer, wardrobe advisor	Designing, garment finishing skill
6	Textile and Craft DSE Paper-I	H3- HSCA3D	Textile craft artist, Designer, carpet designer, handloom weaver, embroidery artist	Different types of textile craft making, carpet making, tie and dye, printed, painted products	Designing, embroidery skill
7	Textile and Craft DSE Paper-I	H3- HSCA3Q	Work at textile craft industries like embroidery, printing, dyeing, stitching etc	Set up unit of min. any one textile craft	Designing, dyeing and printing skill
8	Textile Design and Illustration DSE Paper-II	H3- HSCA4D	Work as Designer, Supervisor	Freelancing for Domestic as well as Cottage industries	drawing, designing skills and various illustration techniques
9	Textile Design and Illustration	H3- HSCA4Q	Designer, Illustrator in related unit	Freelancing for Domestic as well as Cottage industries and open own unit also	Designing, drawing skills and various illustration

	DSE Paper-II				techniques to convey the ideas effectively
10	Apparel Construction Minor/Elective Paper	H3-HSCA2T	In garment unit as supervisor, quality controller, quality inspector	Boutique, freelancing designing	designing, marketing, communication related to stitching
11	Apparel Construction Minor/Elective Paper	H3-HSCA2P	In garment unit as pattern maker supervisor, quality controller	Boutique, freelancing designing	designing, marketing, communication related to stitching
12	Traditional Textile and Costumes of India CC-I	H4HSCA3T	work in readymade garment industry and as accessory designer	Boutique and freelancing designing with traditional textile. Work with Indian costumes	Designing skill for produce products from out of waste. Draping skill of different state costumes.
13	Traditional Textile and Costumes of India	H4HSCA3P	In garment unit	Open a shop or boutique of traditional textile of any state	Designing , develop utility production skill and draping skill of various costumes
14	Processes in Apparel Designing CC-II	H4HSCA4T	In garment unit as supervisor, quality controller, pattern maker	Boutique, freelancing designing for fashion industry or any related domestic industry	Designing, stitching, communication, marketing etc.
15	Processes in Apparel Designing	H4HSCA4P	In garment unit as supervisor, quality controller, pattern maker	Boutique, freelancing designing for fashion industry or any related domestic industry	Designing, stitching, communication, marketing etc.
16	Textile Processing DSE-I	H4HSCA3D	In dyeing, printing industry	Open dyeing or printing or finishing unit	colour making and application skill, designing skill, managing and

					communication skill
17	Textile Processing DSE-I	H4HSCA 3Q	In dyeing,printing industry	Open dyeing or printing or finishing unit	colour making and application skill, designing skill, managing and communication skill
18	Fashion Marketing & Merchandising DSE-II	H4HSCA 4D	Merchandiser, Public relation professional, brand manager, product packing designer	Freelancing, wholeseller, retailer. Product promoter, product packaging	Marketing, merchandising, advertising skill
19	Fashion Marketing & Merchandising DSE-II	H4HSCA 4Q	Merchandiser, Public relation professional, brand manager, product packing designer	Freelancing, wholeseller, retailer. Product promoter, product packaging, Advertising studio	Marketing, merchandising, advertising skill
20	Research Methodology	H4HSCA 1M	Work as Tteacher in education field	Data interpretationer, freelancer	Thinking and writing skill
21	Research Methodology	H4HSCA 1S	Work as Tteacher in education field	Data interpretationer, freelancer	Thinking and writing skill
22	Textile Chemistry	MCT-101	Textile consultant, textile chemist, Reseacher	Coaching, consultant	fabric analysis skill, writing skill
23	Fabric construction & Woven fabric analysis	MCT-102	In Textile industry, working with NGO	Freelancing designing for weaved products, consultancy, Open NGO	Designing and communication skill
24	Apparel Designing	MCT-103	In garment unit as supervisor, quality controller, pattern maker, Packager	Boutique, freelancing designing for fashion industry or any related domestic industry	Designing, stitching, communication, marketing etc.

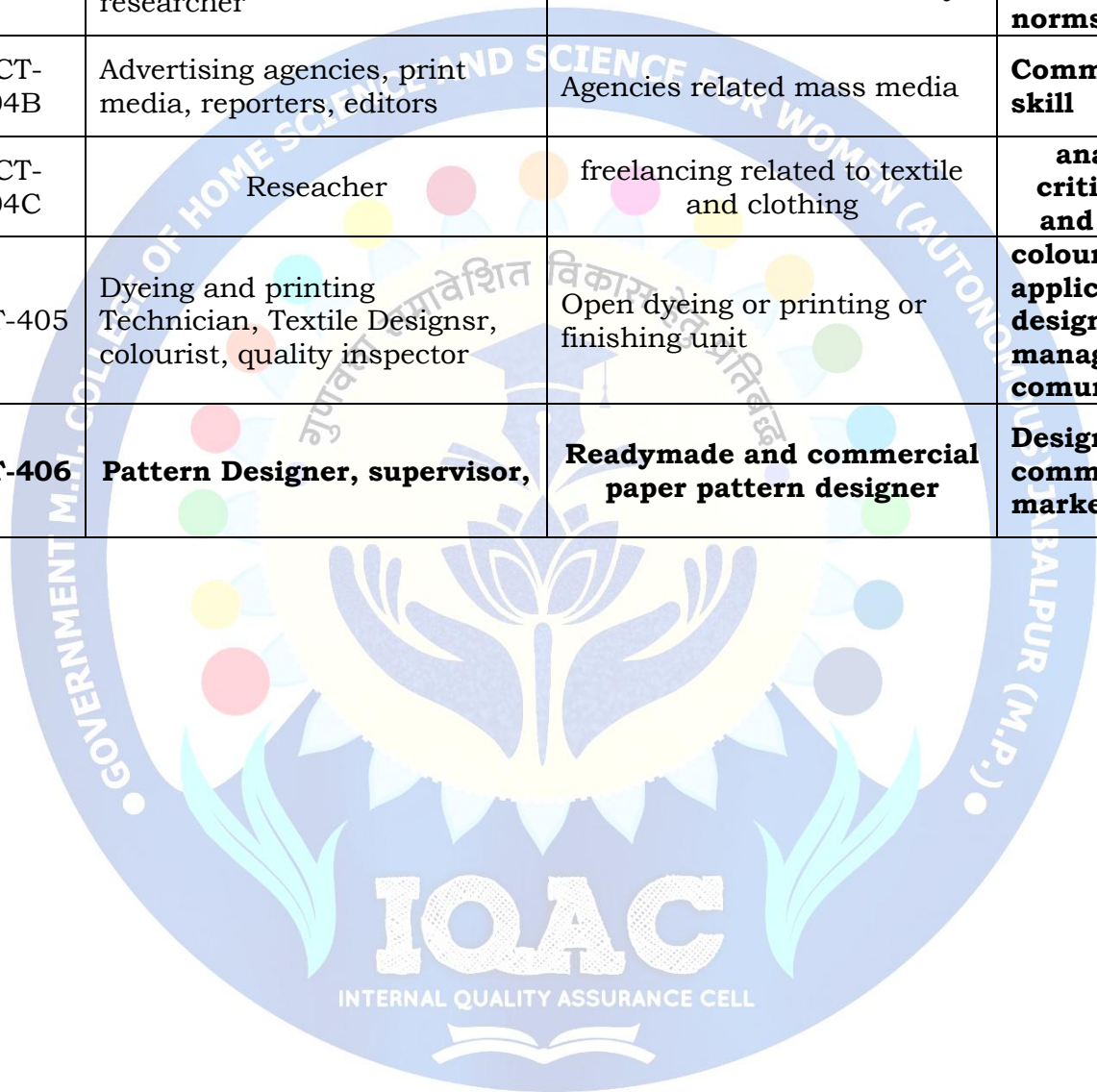
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25	Research Methodology	MCT-104	Work as Tteacher in education field	Data interpretationer, freelancer	analytical and critical Thinking and writing skill
26	Textile Chemistry & fabric construction	MCT-105	Suitable department of Textile industry	Freelancing, set up of handloom unit	Designing, managing etc skill
27	Apparel Designing	MCT-106	In garment and Fashion Industry, Work with NGO	Freelancing designing for Apparels, running NGO	Designing, Stitching and communication skill
28	Textile Testing & Quality Control	MCT-201	Work as quality controller, lab assisstant in textile Industry	Testing lab, Consultency	Practical knowledge skill
29	Historic Textiles	MCT-202	teaching profession	Designing of varous traditonal ornamentations on textiles	Creativity, Designing skill
30	Fashion Design	MCT-203	In varous departments of fashion industry	freelancing designing, consultancy	Creativity, Designing, sketching skill
31	Statistics & Computer Application	MCT-204	Work as Tteacher in education field	Data interpretationer, freelancer, Reseach analyst	typing, analytical and critical Thinking and writing skill
32	Textile Testing & Quality Control	MCT-205	Work as quality controller, lab assisstant in textile Industry	Consultency	Practical knowledge skill
33	Historic Textile, Fashion Design & Fashion Illustration	MCT-206	Designer, Illustrator inFashion Industry	freelancing designing, consultancy	Creativity, Designing, sketching, Painting, embroidery skill

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34	Knitting Technology	MCT-301	Kniiting technician, designer, product developer In Knitting Industry	Freelancing Designing, Hand Knitting Unit	Designing, Managing etc skill
35	Historic Costume	MCT-302	Costume Designer, Contemporary dress designer	Fashion forcaster, writer	Sketching, draping, grooming skill
36	Social & Psychological Aspects of Clothing	MCT-303	Teaching in educational Institute, counsellor	Counselling, consultancy	Convencing skill
37	Fashion Communication	MCT-304	Publishing unit, Local, Domestic garments outlets / shops, visual merchandiser	Writer, interior designer, Boutique, shop	Marketing, Communication skill
38	Draping	MCT-305	In garment and Fashion Industry	Designer, Boutique owner	Designing skill for produce products from out of waste. Draping skill of fashion apparel and costumes.
39	Textile Design (Structure)	MCT-306	In Textile Industry	Designer, Illustrator	Designing, painting skill
40	Dyeing & Printing	MCT-401	In dyeing,printing industry	Open dyeing or printing or finishing unit	colour making and application skill, designing skill, managing and communication skill
41	garment Production Technology	MCT-402	In Garment Industry	Boutique, local or cottage level Industry	Stitching, Designing, marketing, communication skill
42	Fashion Marketing & Merchandising	MCT-403	Publishing unit, Local, Domestic garments outlets / shops, visual merchandiser	interior designer, Boutique, shop	Marketing, Communication skill

43	Textile Industry in India	MCT-404A	Textile exporter and importer, Textile industry professional, researcher	Textile business owner, manufacturer, Consultancy	Communication skill and knowledge about industry norms
44	Mass Communication	MCT-404B	Advertising agencies, print media, reporters, editors	Agencies related mass media	Communication skill
45	Dissertation	MCT-404C	Researcher	freelancing related to textile and clothing	analytical and critical Thinking and writing skill
46	Dyeing and Printing	MCT-405	Dyeing and printing Technician, Textile Designsr, colourist, quality inspector	Open dyeing or printing or finishing unit	colour making and application skill, designing skill, managing and communication skill
47	Pattern Making and Grading	MCT-406	Pattern Designer, supervisor,	Readymade and commercial paper pattern designer	Designer, communication and marketing skill





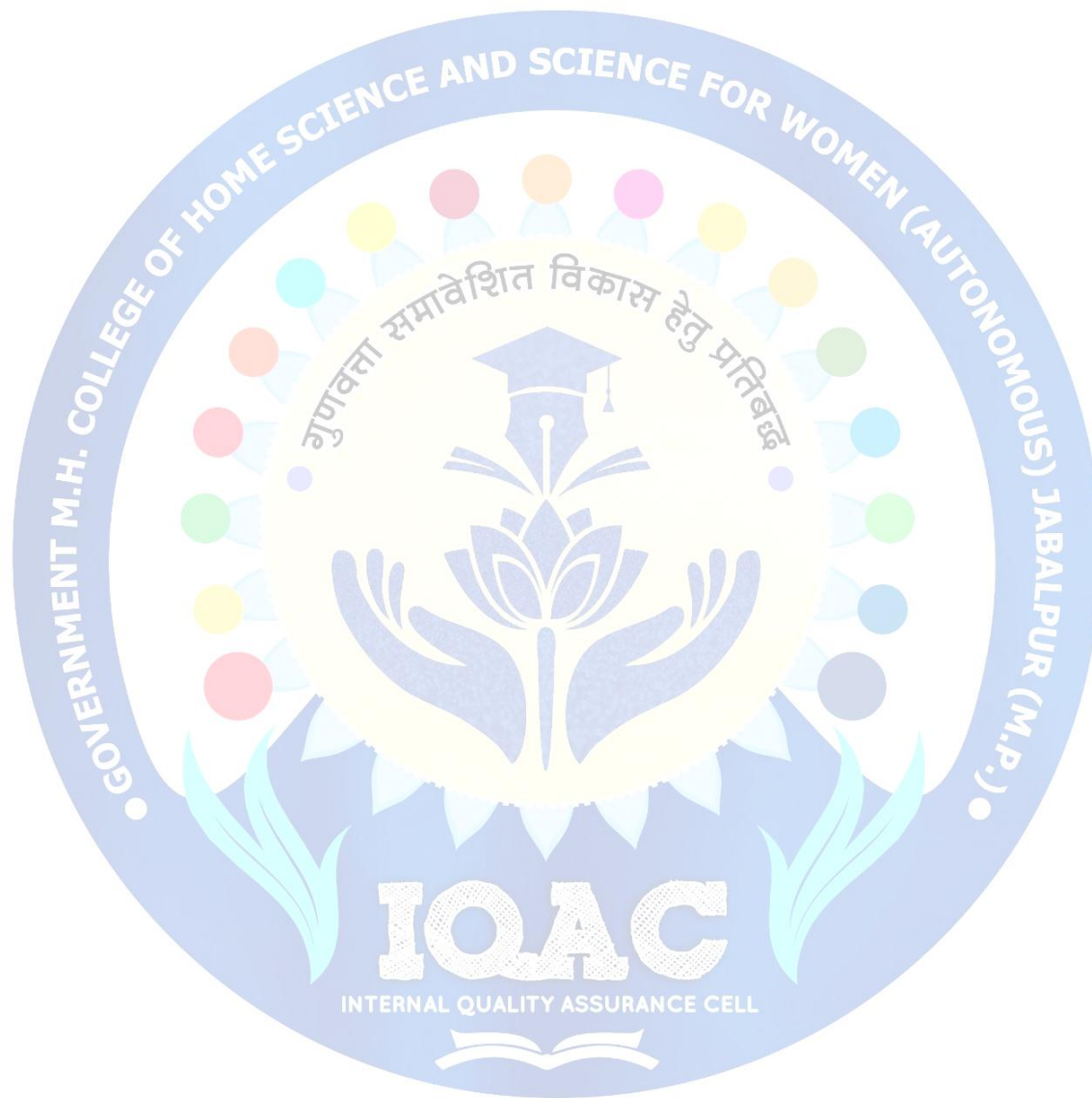
1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of English Language

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	English Language and Indian culture	X1-FCHB1T			<ul style="list-style-type: none"> ➤ Prepare for various competitive exams by developing their English language competence. ➤ Promote their comprehension skills by being exposed to a variety of texts and their interpretations. ➤ Build and enhance their vocabulary. ➤ Develop their communication skills by strengthening grammar and usages. ➤ Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.

2	<p>English Language and Foundation</p>	<p>X2- FCHB1T</p>			<ul style="list-style-type: none"> ➤ Strengthen their grammar and vocabulary. ➤ Acquire and develop LSRW (Listening, Speaking, Reading and Writing) skills. ➤ Learn to think creatively and critically. ➤ After the completion of the course, students are expected to gain competency and proficiency in English language to perform at examinations at State and National level.
3	<p>English Language and Communication Skill</p>	<p>X3- FCHB1T</p>			<ul style="list-style-type: none"> ➤ Prepare for various competitive exams by developing their English language competence. ➤ Promote their comprehension skills by being exposed to a variety of texts and their interpretations. ➤ Build and enhance their language competence through regular Practice. ➤ Develop their knowledge of English Grammar and usages in a practical manner. ➤ Compete in national and state level examinations for various competitions after the completion of the course. ➤ Seek a good job and to settle down in self employment or their

					own business of profession.
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1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development
Department of food and nutrition

S.no	Paper name	Code	Employability	Entrepreneurship	Skill devp
1	Introduction to Food (Clinical Nutrition) (Major)	S1-CLND1T	✓		✓
2	Basic Nutrition (Clinical Nutrition) (Minor)	S1-CLND2T	✓		
3	Food and Nutrition (Home Science- Group A) (Major-I)	H1-HSCA1T	✓		
4	Human Physiology (Home Science- Group C) (Major-I)	H1-HSCC1T	✓		
5	First aid, Nursing and Hygiene (Elective)	H1-HSCC2G	✓	✓	✓
6	Nutrition and Dietetics (Vocational)	VI-CLN-NUTT	✓	✓	✓
7	Human Biochemistry (Clinical Nutrition) (Major)	S2-CLD1T	✓	✓	✓
8	Human Physiology (Clinical Nutrition) (Minor)	S2-CLD2T	✓		
9	Nutritional Biochemistry and Physiology (Home Science-Group A) (Major-I)	H2-HSCA1T	✓	✓	✓
10	Promotive life style and applied Science (Home Science-Group C) (Major-I)	H2-HSCC1T	✓	✓	✓

11	Food Product Development (Elective)	H2-HSCA1G	✓	✓	✓
12	Management of Nutrition in life cycle (Vocational)	V2-CLN-NUTT	✓	✓	✓
13	Nutrition in Life Cycle (Clinical Nutrition) (Group-A) (Paper-I)	S3-CLND1D	✓		✓
14	Public Nutrition (Clinical Nutrition) (Group-A) (Paper-II)	S3-CLND2D	✓	✓	✓
15	Dietetics-I (Clinical Nutrition) (Group-A) (Paper-I)	S3-CLND3D	✓	✓	✓
16	Dietetics-II (Clinical Nutrition) (Group-B) (Paper-II)	S3-CLND4D	✓	✓	✓
17	Normal and Therapeutic Nutrition (Home Science-Group A) (Paper-I)	H3-HSCA1D	✓	✓	✓
18	Public Health and Nutrition (Home Science-Group A) (Paper-II)	H3-HSCA2D	✓	✓	✓
19	Health Science (Home Science-Group C) (Paper-I)	H3-HSCC1D	✓		✓
20	Nutrition and Dietetics (Vocational)	V3-CLN-NUTT	✓		✓
21	Applied physiology	Paper-1	✓		
22	Advanced nutritional biochemistry	Paper-2	✓	✓	✓
23	Public nutrition	Paper-3	✓		✓
24	Research Methods and Statistics	Paper-4	✓	✓	✓
25	Advance in food microbiology	Paper-1	✓	✓	✓
26	Applied Biochemistry and Technique	Paper-2	✓	✓	✓

27	Nutrition and Health problems	Paper-3	✓		✓
28	Statistics & Computer	Paper-4	✓	✓	✓
29	Advanced Nutrition	Paper-1	✓		✓
30	Clinical and Therapeutic Nutrition	Paper-2	✓	✓	✓
31	Food Science & Current Trends	Paper-3	✓	✓	✓
32	Issues Related to Women's Health	Paper-4	✓		✓
33	Health and Fitness	Paper-1	✓	✓	✓
34	Clinical & Therapeutic Nutrition	Paper-2	✓	✓	✓
35	Food Science & Current Trends	Paper-3	✓	✓	✓
36	Nutrition and Health of Child and Elderly	Paper-4	✓	✓	✓



1.1.2

Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Human Development

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
	B.Sc. I Year Life Span Development I Major	H1-HSCBIT	✓	✓	✓
	B.Sc. I Year Introduction to Extension & Communication (Paper II) Major/Minor/ Elective	H1-HSCC2T	✓	✓	✓

B.Sc. I Year Personality Development	V1-PS4- DEVT	✓	✓	✓
B.Sc. II Year Life Span Development II Major	H2-HSCBIT	✓	✓	✓
B.Sc. II Year Community Development ✓ Minor/ Elective	H2-HSCC2T	✓	✓	✓
B.Sc. II Year Personality Development (Vocational)	V2-PS4- DEVT	✓	✓	✓
B.Sc. III Year Early Childhood Education	H3- HSCB1D	✓	✓	✓

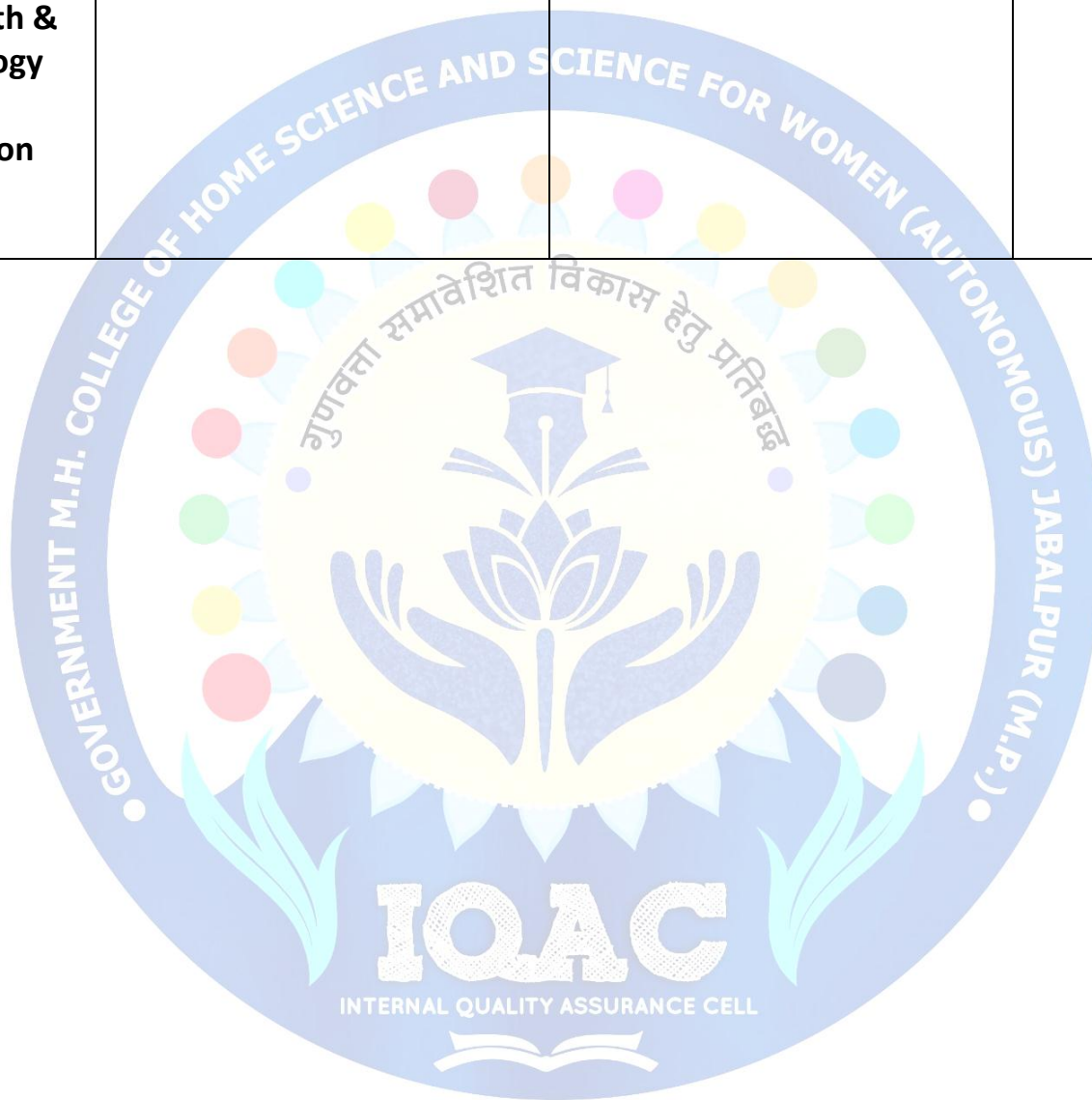


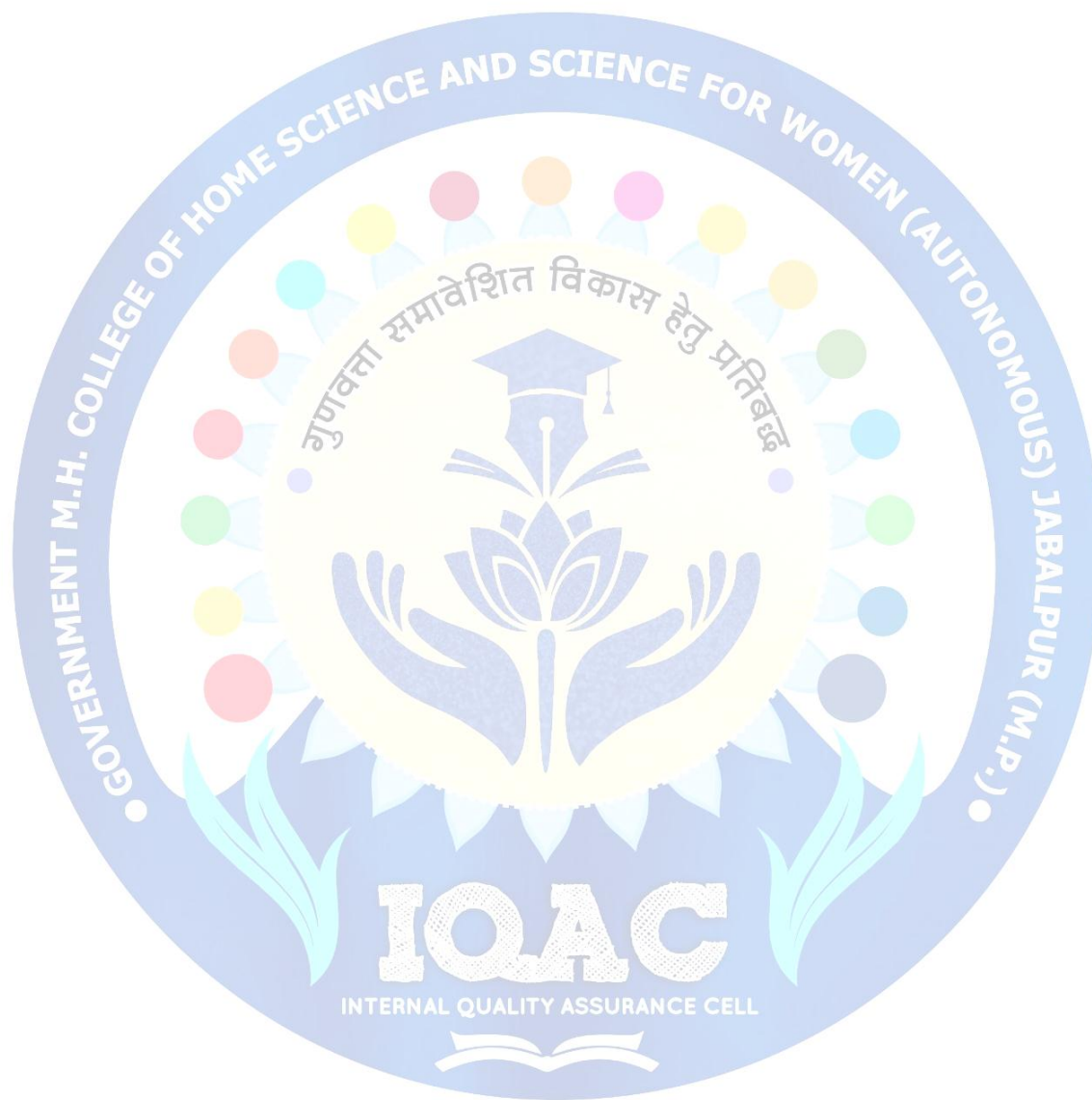
	B.Sc. III Year Family Welfare and Counseling (pre-marital Counseling) Family/child welfare Agencies life skill, marriage & family Counseling	H3- HSCB2Q	✓	✓	✓
	B.Sc. III Year Personality Development (Vocational)	V-3 Psy- DEVT	✓	✓	✓
1.	M.Sc. I sem. Paper I History & Theories of Human Development		✓	✓	✓
2.	M.Sc. I sem. Paper II A. Methods of studying Human		✓	✓	✓

	Development B. Study of Family in Society			
3.	M.Sc. I sem. Paper III Early Childhood care & Education	✓	✓	✓
4.	M.Sc. I sem. Paper IV Research Methods & Statics	✓	✓	
5.	M.Sc. II sem. Paper I Advance Study in Human Development	✓	✓	
6.	M.Sc. II sem. Paper II A. Infect Development B. Par entity in Early Childhood	✓	✓	✓
7.	M.Sc. II sem. Paper III Adolescence & Youth	✓	✓	✓

8.	M.Sc. II sem. Paper IV Research Methods & Statics	✓	✓	✓
9.	M.Sc. III Paper I Advance Study in Human Development	✓	✓	✓
10	M.Sc. III Paper II Person with Special needs I	✓	✓	✓
11	M.Sc. III Paper. III Principle of Guidance & Counseling	✓	✓	✓
12	M.Sc. III Paper. IV Mental Health & Psychopathology	✓	✓	✓
13	M.Sc. IV Paper I Advance Study in Human Development	✓	✓	✓
14	M.Sc. IV Paper II Person with Special needs II	✓	✓	✓
15	M.Sc. IV Paper. III Principle of Guidance	✓	✓	✓

	& Counseling II			
16	M.Sc. IV Paper. IV 1. Mental Health & Psychopathology 2. Mass Communication OPTIONAL	✓	✓	✓





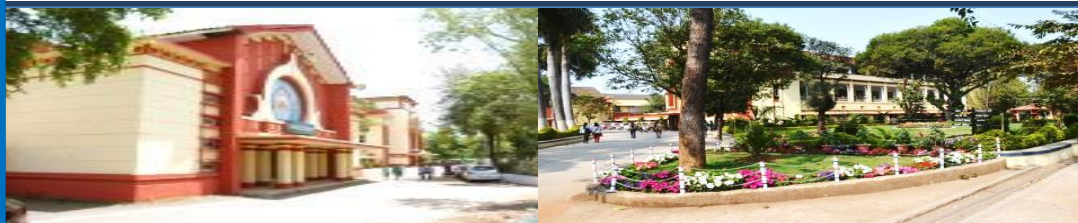


1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Hindi Language

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	भाषा एवं संस्कृति	X1-FCEA1T	-	-	<ul style="list-style-type: none"> ➤ उत्कृष्ट साहित्यिक पाठों के अध्ययन से रूचि का विकास करना। ➤ सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना। ➤ भाषा-ज्ञान ➤ सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना। ➤ विशिष्ट शब्दावली (बीज शब्द/की वर्ड) से परिचित करवाते हुये बोध के स्तर को विकसित करना। ➤ प्रतियोगी परीक्षाओं हेतु तैयार करना।
2	भाषा एवं संस्कृति		-	-	<ul style="list-style-type: none"> ➤ भारतीय ज्ञान परंपरा से विद्यार्थियों को अवगत एवं लाभांवित करना। ➤ उत्कृष्ट साहित्यिक पाठों के अध्ययन से रूचि

		X2- FCEA1T		<p>का विकास करना।</p> <ul style="list-style-type: none"> ➤ सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना। ➤ भाषा-ज्ञान ➤ सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना। ➤ विशिष्ट शब्दावली (बीज शब्द/की वर्ड) से परिचित करवाते हुये बोध के स्तर को विकसित करना।
3	भाषा एवं संस्कृति	X3- FCEA1T		<ul style="list-style-type: none"> ➤ इस पाठ्यक्रम के अध्ययन से विद्यार्थी हिन्दी के प्रसिद्ध रचनाकार एवं उनकी रचनाओं से परिचित हो सकेंगे। ➤ पठित रचनाओं के माध्यम से विद्यार्थी देश की सभ्यता एवं संस्कृति से परिचित हो सकेंगे। ➤ पाठ्यक्रम के अध्ययन से विद्यार्थियों के व्यक्तित्व का बहुमुखी विकास होगा एवं रोजगार के अवसर उपलब्ध होंगे। ➤ विशिष्ट शब्दावली (बीज शब्द/की वर्ड) से परिचित करवाते हुये बोध के स्तर को विकसित करना।



1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Mathematics

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Algebra, Vector Analysis and Geometry (Major Paper-I)	S1-MATH1T		✓	✓
2	Calculus and Differential Equations (PaperII)/Minor/Elective)	S1-MATH2T		✓	✓
3	Abstract Algebra and Linear Algebra (Major Paper-I)	S2-MATH1T		✓	✓
4	Advanced Calculus and Partial Differential Equations (PaperII)/Minor/Elective)	S2-MATH2T		✓	✓
5	Numerical Methods and Scientific Computation (Group A , Paper I)	S3-MATH1D		✓	✓
6	Elements of Discrete Mathematics (Group A, Paper II)	S3-MATH2D		✓	✓
7	Probability and Statistics (Group B , Paper I)	S3-MATH3D		✓	✓

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8	Integral Transform (Group B , Paper II)	S3-MATH4D	✓	✓	✓
9	Fundamental of Boolean Algebra (Minor)	S3-MATH2T	✓	✓	✓
10	ADVANCED ABSTRACT ALGEBRA (Core-1)	S4-MATH1T	✓	✓	✓
11	REAL ANALYSIS(Core-2)	S4-MATH2T	✓	✓	✓
12	TOPOLOGY- D1	S4-MATH1D	✓	✓	✓
13	COMPLEX -D2	S4-MATH2D	✓	✓	✓
14	ADVANCED ABSTRACT ALGEBRA	M101	✓	✓	✓
15	COMPLEX ANALYSIS II	M102	✓	✓	✓
16	FUNCTIONAL ANALYSIS	M103	✓	✓	✓
17	REAL ANALYSIS	M104	✓	✓	✓
18	TOPOLOGY	M105	✓	✓	✓
19	Advanced Abstract Algebra	M201	✓	✓	✓
20	ADVANCED DISCRETE MATHEMATICS	M202	✓	✓	✓
21	COMPLEX ANALYSIS	M203	✓	✓	✓
22	LEBESGUE MEASURE & INTEGRATION	M204	✓	✓	✓

23	FUZZY SET AND THEIR APPLICATION (Optional)	M205	✓	✓	✓
24	ORDINARY & PARTIAL DIFFERENTIAL EQUATIONS (Optional)	M205	✓	✓	✓
25	LINEAR PROGRAMMING	M301	✓	✓	✓
26	MATHEMATICAL STATISTICS	M302	✓	✓	✓
27	ADVANCED SPECIAL FUNCTION	M303	✓	✓	✓
28	APPLIED FUNCTIONAL ANALYSIS	M304	✓	✓	✓
29	INTEGRAL TRANSFORMS	M305	✓	✓	✓
30	OPERATIONS RESEARCH	M401	✓	✓	✓
31	SPLINE THEORY	M402	✓	✓	✓
32	PROGRAMMING IN C	M403	✓	✓	✓
33	ADVANCE SPECIAL FUNCTIONS – II	M404	✓	✓	✓
34	INTEGRAL TRANSFORMS II	M405	✓	✓	✓



1.1.2 Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Physics, Electronics and Computer Maintenance

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Thermodynamics and statistical physics (Major paper-I)	S1-PHYS1T		✓	✓
2	Mechanics and general properties of matter (Paper-II Elective/Minor)	S1-PHYS2T		✓	✓
3	Waves And Optics (Major paper-I)	S2-PHYS1T		✓	✓
4	Electricity Magnetism and Electromagnetic Theory (Paper-II Elective/Minor)	S2-PHYS2T		✓	✓
5	Quantum atomic and molecular physics (Major paper-I)	S3-PHYS1D	✓	✓	✓
6	Solid state physics and Electronics (Paper-II Elective/Minor)	S3-PHYS2Q	✓	✓	✓
7	Computer fundamentals and system diagnostics(major paper-1)	S1-COMN1T		✓	✓

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8	System administration (minor paper-2)	S1-COMN2T		✓	✓
9	Computer peripherals and interfacing (major paper-1)	S2- COMN1T		✓	✓
10	Network management (minor paper-2)	S2-COMN2T		✓	✓
11	Advance network management (major paper-1)	S3 – COMN1D	✓	✓	✓
12	Ethics in information technology (paper-2 major)	S3 – COMN2D	✓	✓	✓
13	Hardware and software testing (minor paper -1)	S3-COMN2T	✓	✓	✓
14	Semiconductor devices (Major paper -1)	S1-ELEC1T		✓	✓
15	Basic circuit theory and network analysis(paer-2 – major/minor /elective)	S1-ELEC2T		✓	✓
16	Electronic circuits(major paper- 1)	S2-ELEC1T		✓	✓
17	Operational amplifiers and amplification (paper-2 major/minor/elective)	S2-ELEC2T		✓	✓
18	Microprocessor and microcontroller (major paper 1)	S3-ELEC1D	✓	✓	✓
19	Electromagnetic transmission lines and wave guides(major paper-2)	S3-ELEC2D	✓	✓	✓
20	Electronic communication(minor/elective)	S3- ELEC2T	✓	✓	✓



1.1.2

Title: Focus on employability/ Entrepreneurship/Skill Development

Department of Zoology

S. No.	Course Name	Course Code	Employability	Entrepreneurship	Skill Development
1	Animal Diversity: Non-Chordata MAJOR I	S1-ZOO1T	Systemic taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla. Understand the various morphological, anatomical structures and functions of animals of different phyla. Get the knowledge about economic, ecological and medical significance of various animals in human welfare. Understand the important parasites and their control measures.		

2	Cell biology, Reproductive biology and Developmental Biology Core Course/ Minor/ Elective –	S1-ZOO2T	<p>Develop deeper understanding of what life is and how it functions at cellular level. Understand the nature and basic concepts of Cell biology, Reproductive and Developmental biology. Understand structure and functions of cell membrane and cellular organelles. Understand the importance of latest reproductive trends, reproductive techniques to be applied for human welfare. Understand the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multi-cell ular orgamsms. Understand about the evolutionary development of various animals</p>		
3	Diversity of Chordates and Comparative Anatomy MAJOR I	S2-ZOOL 1T	<p>Understand. chordate of animals and their taxonomic position Identify the morrphological and anatomical features and basis of chordate classification Know economic importance and present status that will develop positive attitude towards conservation of biodiversity. Diifferentiate the organism belonging to different taxa by studying comparative anatomy. The project, assignment will give them a flavor of research in</p>		

			<p>studying biodiversity, taxonomy besides improving their writing skills and lay foundation of career in Zoology</p>	
4	<p>Physiology and Biochemistry Core Course/ Minor/ Elective</p>	S2-ZOOL2T	<p>Understand how organs function at different levels i.e. from cellular to system levels. Examine internal harmony of different body systems by learning Understand functions of biomolecules & their role in metabolism by studying biochemistry. Develop a strong foundation for research & employability skills Improve the student's perspective of health biology through deep study of physiology</p>	<p>Develop a strong foundation for research & employability skills Improve the student's perspective of health biology through deep study of physiology</p>

5	Aquaculture major paper I	S3-ZOOL1D	<p>Identify Aquaculture and its scope in India.</p> <p>Recognize the different economically important fishes and other culturable fauna.</p> <p>Identify the details of different steps involved in Aquaculture.</p> <p>Identify the profitability of the culture and identify the fields of Aquaculture which generate self employment.</p>	<p>Identify Aquaculture and its scope in India.</p> <p>Recognize the different economically important fishes and other culturable fauna.</p> <p>Identify the details of different steps involved in Aquaculture.</p> <p>Identify the profitability of the culture and identify the fields of Aquaculture which generate self employment.</p>	
6	MAJORPAPER II- WILD LIFE CONSERVATION & MANAGEMENT	S3-ZOOL2D	<p>Gain knowledge of conservation of forest and wild animals (Ex situ and In situ)</p> <p>Identify the role of local and tribal communities in protected areas.</p> <p>Know the opportunities of employment in the field of wild life.</p> <p>Identify and realize the values of wild animals, forests and the rare, threatened and endangered species of wildlife.</p>		<p>Develop an understanding for wise use and management of natural resources</p>

7	GENETICS PAPER- MINOR/ELECTIVE	S3-ZOOL2T	<p>Deeper understanding of linkage, Sex determination, Chromosomes, Mutations and mutagens.</p> <p>Gain knowledge of human karyotype, Genome project, Inheritance</p> <p>Demonstrate, gene therapy, PCR, DNA fingerprinting techniques and their application.</p> <p>Find Job Opportunities in Hospitals, Pharmaceutical Companies and other health services, Forensic Science Research Associates, Genetic Counselor, Clinical Research Associate,</p>		

			Animal Breeder, Genetic Laboratory Technician	
8	M.Sc. ZOOLOGY Semester-I PAPER I BIOSYSTEMATIC , TAXONOMY AND EVOLUTION		<p>Taxonomy uses hierarchical classification as a way to help scientists understand and organize the diversity of life on our planet. Students Know basic concepts of Biosystematics taxonomy and Classification. They Gain Knowledge of Nomenclature and Taxonomic Procedures. They learn about concept and trends in Evolution. Students get Knowledge of Phylogenetic and Biological Concept of Species.</p>	

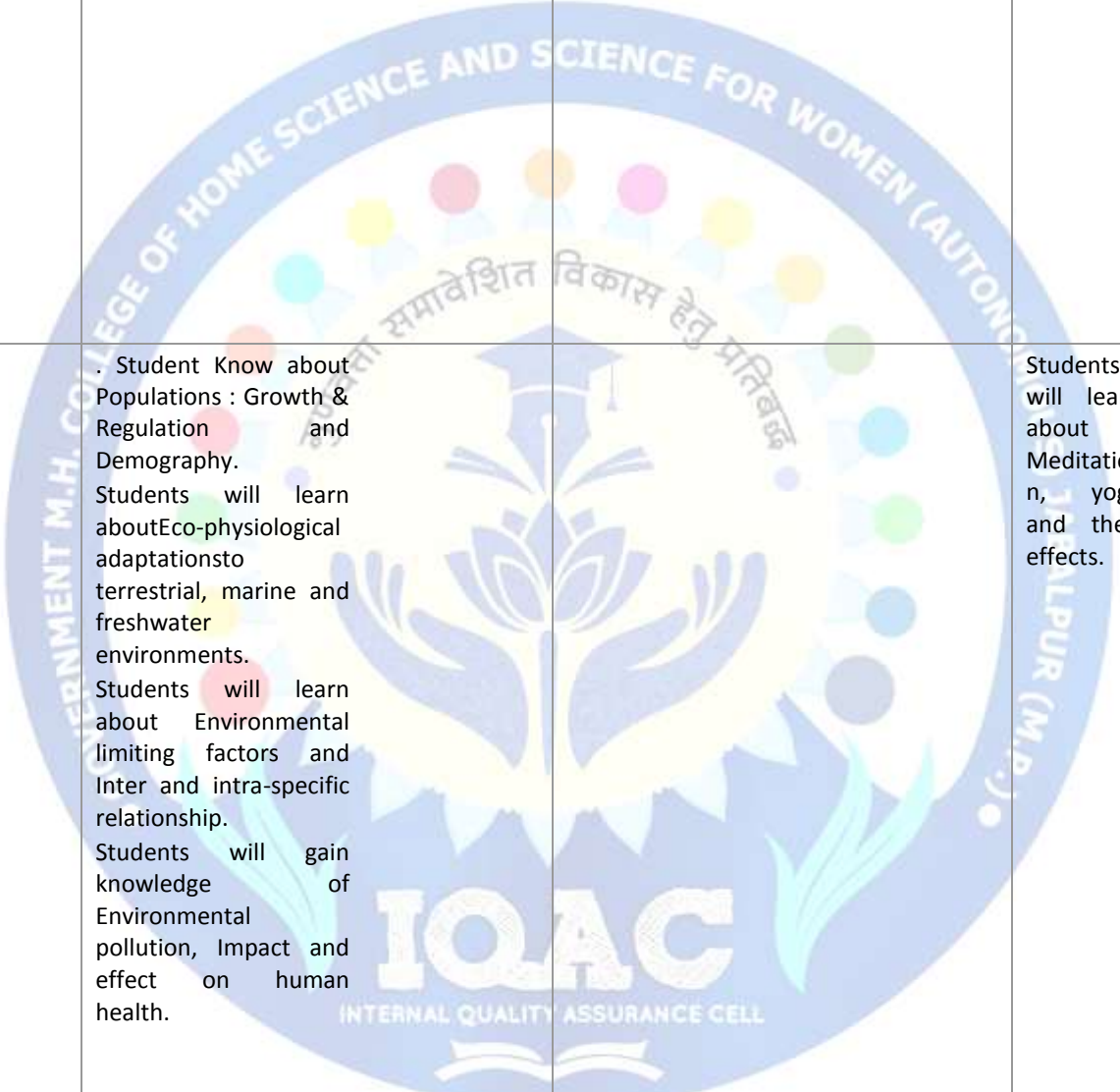
9	M.Sc. ZOOLOGY Semester-I PAPER II STRUCTURE AND FUNCTION OF INVERTEBRATE S		<p>Students Know how to evolve multicellularity.</p> <p>Did learn about organization of coelom.</p> <p>They learn movements or filters in invertebrates.</p> <p>They learn about respiratory and excretory organ in invertebrates.</p> <p>They get knowledge of primitive and advanced nervous system.</p> <p>They learn about protostomes and Duterostomes.</p> <p>They know about Minor phyla.</p>		

10	M.Sc. ZOOLOGY Semester-I PAPER III QUANTATIVE BIOLOGY BIODIVERSITY AND WILD LIFE		<p>They learn about rare species, National parks, Sanctuaries and Biosphere reserve.</p> <p>They Gain Knowledge of Mean, Mode, Median, Variation, ANOVA and Chi Square Test.</p> <p>Central tendency refers to measures used to assess the average of observations.</p>		
			<p>Analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups.</p> <p>The Chi-Square test is a statistical procedure used by students to examine the differences between categorical variables in the same population.</p> <p>They Gain Knowledge of Principal and Conservation of Biodiversity.</p>		

			<p>Biodiversity provides functioning of ecosystems.</p> <p>Students Know about Wildlife Protection act and its Types.</p> <p>Wildlife provides stability to different processes of the nature.</p> <p>The goal of wildlife conservation is to ensure the survival of these species, and to educate people on living sustainably with other species.</p>	
11	M.Sc. ZOOLOGY Semester-I PAPER IV BIOMOLECULE AND STRUCTURAL BIOLOGY		<p>Student will learn about chemical foundation of biology that is acid base buffer system and Biomolecules.</p> <p>Students will learn about importance of nanoparticles and biomaterials in the field of biology which is important branch of modern biology.</p> <p>Students gain</p>	<p>Student will learn about chemical foundation of biology that is acid base buffer system and Biomolecules.</p> <p>Students will learn about importance of nanoparticles and biomaterials in the field of biology which is important branch of modern biology.</p> <p>Students gain</p>

		<p>knowledge of proteins, nucleic acids, carbohydrates and fats with their importance for eukaryotes.</p> <p>Students also know about genetic material, Application and transport of materials by active and passive transport.</p> <p>Students will learn about basic concepts of metabolism and about biosynthesis of Biomolecules.</p> <p>They gain knowledge of Protein synthesis and enzymes. They also learn about principles of thermodynamics in biology and also about biological energy transducers.</p>	<p>knowledge of proteins, nucleic acids, carbohydrates and fats with their importance for eukaryotes.</p> <p>Students also know about genetic material, Application and transport of materials by active and passive transport.</p> <p>Students will learn about basic concepts of metabolism and about biosynthesis of Biomolecules.</p> <p>They gain knowledge of Protein synthesis and enzymes. They also learn about principles of thermodynamics in biology and also about biological energy transducers.</p>	
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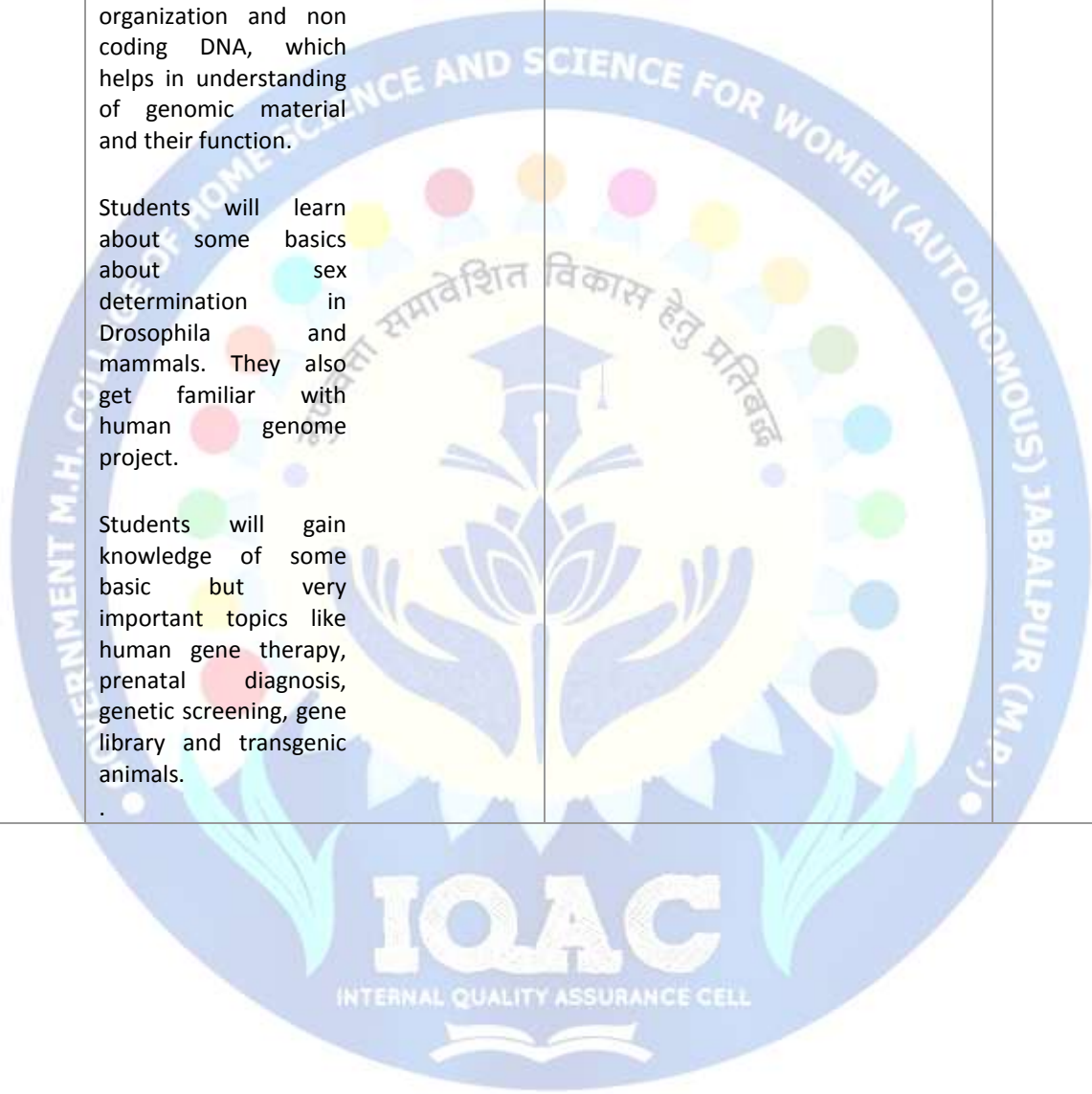
12	<p>M.Sc. ZOOLOGY Semester-II PAPER - I GENERAL AND COMPARATIVE ANIMAL PHYSIOLOGY AND ENDOCRINOLOGY</p>		<p>Student Know about Respiratory pigments, Transport of oxygen and carbon dioxide in blood and body fluids.</p> <p>Students will learn about Nitrogenous Waste Product, Structure of Kidney and Mechanism of Urine formation.</p> <p>They also Known as Comparative physiology of digestion.</p> <p>They also Known as Comparative study of Mechanoreceptor, Photoreception, Phonoreception and Chemoreception.</p> <p>They learn about Bioluminescence and Pheromones amongst fishes.</p> <p>Students gain knowledge of Phylogeny and Ontogeny of endocrine glands.</p>	
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13	M.Sc. ZOOLOGY 2024 – 25 SECOND – SEMESTER PAPER - II POPULATION ECOLOGY AND ENVIRONMENTAL PHYSIOLOGY		<p>Student Know about Populations : Growth & Regulation and Demography.</p> <p>Students will learn about Eco-physiological adaptationsto terrestrial, marine and freshwater environments.</p> <p>Students will learn about Environmental limiting factors and Inter and intra-specific relationship.</p> <p>Students will gain knowledge of Environmental pollution, Impact and effect on human health.</p>		Students will learn about Meditation, yoga and their effects.

14	M.Sc. ZOOLOGY 2024 – 25 SECOND – SEMESTER PAPER - III TOOLS AND TECHNIQUES IN BIOLOGY		<p>Students gain knowledge of various types of Microscope, Principle & Applications of Various Lab Instrument like as Colorimeter, Spectrophotometer and Ultra centrifuge.</p> <p>Students will learn about Media Preparation and sterilization.</p> <p>Students will learn about Use of Fomenters and Microbial identification.</p> <p>Students gain knowledge of</p>		

		<p>Computer aided techniques for data presentation data analysis and Statistical techniques.</p> <p>Students gain knowledge of Radioisotope and main isotope techniques related to biology.</p> <p>Students will learn about Immunological and Surgical techniques.</p> <p>Students will learn about Cytological and Molecular biology techniques.</p>	
15	M.Sc. ZOOLOGY 2024 – 25 SECOND – SEMESTER PAPER - IV MOLECULAR CELL BIOLOGY AND GENETICS	<p>Students will learn about biomembranes, transport process, cell skeleton and cell movement.</p> <p>They will learn about Cell to cell signaling through cell surface receptors and second messenger system.</p> <p>Students will gain knowledge of Cell</p>	

			<p>adhesion and cell communication process along with genome organization and non coding DNA, which helps in understanding of genomic material and their function.</p> <p>Students will learn about some basics about sex determination in Drosophila and mammals. They also get familiar with human genome project.</p> <p>Students will gain knowledge of some basic but very important topics like human gene therapy, prenatal diagnosis, genetic screening, gene library and transgenic animals.</p>		
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16	<p>M.Sc. ZOOLOGY 2024 – 25 THIRD – SEMESTER PAPER - I COMPARATIVE ANATOMY OF VERTEBRATES</p>		<p>Students will learn about Origin of Chordata : Concept of Protochordata.</p> <p>Students can be able to identify all organs and organ systems of vertebrates.</p> <p>Students able to explain the evolutionary significance and function of each of these system.</p> <p>Students able to identify all classes of vertebrates by their various anatomical features.</p> <p>Students can explain and apply the concept of homology, analogy, morphogenesis, ontogeny and phylogeny related to the anatomical features of vertebrates.</p>	
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17	M.Sc. ZOOLOGY 2024 – 25THIRD – SEMEST PAPER - II LIMNOLOGY		<p>. Students will be able to learn about the new branch of zoology i.e. limnology is its scope, definition and historical development.</p> <p>Students will gain the knowledge of different physiological parameter of freshwater.</p> <p>Students will learn about plankton and their interrelationship and aquatic flora and fauna.</p> <p>Students will learn about Bioindicators and Sewage treatment.</p> <p>Students will gain the knowledge of aquatic pollution its causes control and legislation.</p> <p>Students will be aware about aquatic birds & Insects and Their Environmental Significance.</p>	
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18	M.Sc. ZOOLOGY 2024 – 25THIRD SEMESTER PAPER - III ECO - TOXICOLOGY		<p>Students will gain the knowledge of Environmental Biology with emphasis on ecosystems.</p> <p>Students will learn about remote sensing techniques in environmental conservation.</p> <p>Students will gain the knowledge of Radioactive compounds and their impact on the environment.</p> <p>They will learn about Food toxicants and their control methods.</p> <p>Students will learn about Toxicology and various types of toxicological agents.</p> <p>Students will be aware about Public Health Hazards due to environmental disasters.</p>		
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19	M.Sc. ZOOLOGY 2024 – 25 THIRD SEMESTER PAPER - IV AQUACULTURE		<p>Students will gain the knowledge of Sustainability & Management of Aquaculture & Fisheries.</p> <p>Students will gain the knowledge of Mono, Poly, mixed and composite Fish culture. They also learn about Prawn culture and Frog culture.</p> <p>Students will learn about Fresh water fish farm engineering.</p> <p>Students will learn about Designing, layout and construction of different types of fish</p>	<p>tudents will gain the knowledge of Sustainability & Management of Aquaculture & Fisheries.</p> <p>Students will gain the knowledge of Mono, Poly, mixed and composite Fish culture. They also learn about Prawn culture and Frog culture.</p> <p>Students will learn about Fresh water fish farm engineering.</p> <p>Students will learn about Designing, layout and</p>	

		<p>ponds</p> <p>Students will gain the knowledge of Different types of craft and gears in fisheries.</p> <p>Students will gain the knowledge of Biochemical composition and nutritional value of fish.</p>	<p>construction of different types of fish ponds</p> <p>Students will gain the knowledge of Different types of craft and gears in fisheries.</p> <p>Students will gain the knowledge of Biochemical composition and nutritional value of fish.</p>
20	M.Sc. ZOOLOGY 2024 – 25 FOURTH SEMESTER PAPER - I ANIMAL BEHAVIOUR AND NEUROPHYSIOLOGY	<p>Students will gain the knowledge of the biology of Behaviour, and Comparative Psychology.</p> <p>Students will learn about Principles of Animal Communication. They will learn about Neural and hormonal control of behaviour and Ecological aspects of behaviour.</p> <p>Students will learn about Social behaviour and Reproductive behavior of various animals.</p> <p>Students will gain the knowledge of Biological rhythms, Learning and</p>	

		<p>memory in various animals.</p> <p>Students will gain the knowledge of Thermoregulation and comparative study of Receptor physiology.</p>	
21	<p>M.Sc. ZOOLOGY 2024 – 25 FOURTH SEMESTER PAPER - II GAMETE BIOLOGY, DEVELOPMENT AND DIFFERENTIATION IN VERTEBRATES</p>	<p>Students will learn about differentiation and Developments of gonads in mammals.</p> <p>Students will gain the knowledge of Spermatogenesis, oogenesis and vitellogenesis.</p> <p>Students will gain the knowledge of Cryopreservation of gametes and Embryo.</p> <p>Students will gain the knowledge of development of mammary gland and lactation.</p> <p>Students will learn about Haemopoietic</p>	

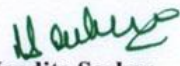
			and Embryonic stem cells.	
22	M.Sc. ZOOLOGY 2024 – 25 FOURTH SEMESTER PAPER - III (ICHTHYOLOGY) STRUCTURE AND FUNCTION)		<p>Student gain knowledge of evolution and classification of fishes.</p> <p>They know about specific organ of fishes weberian ossiclel, air bladder, lateral line system and electric organs.</p> <p>Student will learn respiratory, excretory and digestive system.</p> <p>They learn migration and Osmoregulation in fishes.</p> <p>They gain knowledge of deep sea and Hill stream adaptation.</p>	

			<p>Students know about early development and parental care in fishes.</p>	
23	<p>M.Sc. ZOOLOGY 2024 – 25 FOURTH SEMESTER PAPER- IV A (ICHTHYOLOGY) PISCI CULTURE AND ECONOMIC IMPORTANCE OF FISHES</p>	<p>Students will be able to learn about collection of fish seed and hypophysation and breeding of fishes.</p> <p>Students will gain the knowledge about the drugs useful in indeed breeding of fishes.</p> <p>They will also learn about types of points required for fish culture.</p> <p>Students will be able to learn about composite fish culture and prawn culture and riverine fisheries.</p> <p>Students will learn</p>	<p>Students will be able to learn about collection of fish seed and hypophysation and breeding of fishes.</p> <p>Students will gain the knowledge about the drugs useful in indeed breeding of fishes.</p> <p>They will also learn about types of points required for fish culture.</p> <p>Students will be able to learn about composite fish culture and prawn culture and riverine fisheries.</p> <p>Students will learn</p>	

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		<p>about coastal fisheries in India.</p> <p>They will gain the knowledge about rule of history in rural development.</p> <p>Students will learn about methods of fish preservation and marketing of fish in India.</p> <p>Students will gain the knowledge of shark liver oil industry in India and genetic engineering in fishes.</p>	<p>about coastal fisheries in India.</p> <p>They will gain the knowledge about rule of history in rural development.</p> <p>Students will learn about methods of fish preservation and marketing of fish in India.</p> <p>Students will gain the knowledge of shark liver oil industry in India and genetic engineering in fishes.</p>	
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Dr. Nandita Sarkar
PRINCIPAL
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