



Kohinoor Arts, Commerce & Science College, Khultabad

Tq. Khultabad Dist. Aurangabad, Maharashtra - 431 101

NAAC ACCREDITED (B+)

(A MINORITY INSTITUTION)

Phone: - 02437 - 241782 Website: - www.kacsck.com E-mail:- kohinoorcollege@yahoo.in kckadm@gmail.com

Ref. No.:- K.A.C.S.C.K. 2023-2024 7906-A

Date: 28/06/2023

This is to certify that following explanation include Course and Program Outcomes for the Academic Year 2021-2022

2.6.1 - Teachers and students are aware of the stated *programme and course outcomes* of the Programmes offered by the institution. The institution has stated learning outcomes (generic and programme specific) /graduate attributes which are integrated into the assessment process and widely publicized through the website and other documents.

The Kohinoor Arts, Commerce and Science College Khultabad is affiliated with Dr. Babasaheb Ambedkar Marathwada University Aurangabad which provides the curriculum and stated learning outcomes of the Programs and Courses for the Academic Year to all affiliated colleges time to time. The curriculum of each subject has been designed outcomes-based. The following mechanism is followed to communicate the learning outcomes to the teachers and students.

- a) The copy of Syllabus is available in each and every department for ready reference for students and faculty.
- b) Learning Outcomes of the Programs and Courses are discussed with students at the end of each topic of the study by the faculty leading to which technical applications.
- c) The learning outcomes are stated using Blooms Taxonomy and expressed in the lesson plan that clearly describe the knowledge skills and competency expected from the students to acquire as a result of completing the their programme of study
- d) All Programme Outcomes (POs) and course outcomes (COs) are incorporated in the curriculum and displayed on the college website which can be accessed by all the stakeholders namely Faculty, Students, Industry and alumni.
- e) Soft Copy of Curriculum and Learning Outcomes of Programs and Courses are also uploaded to the Institution/university website for reference.
- f) The importance of the learning outcomes has been communicated to the teachers in every IQAC Meeting. The students are also made aware of the same through Tutorial Meetings.

Program Outcomes and Course Outcomes were announced to students and parents after admission to the counselling centre. In the first lecture, the lecturers explain the results of the program and the course and the different options after the end of the program. Annual feedback on the curriculum was taken from various stakeholders such as students and teachers and IQAC prepares an activity report which can be viewed on the college's website. Various programs related to programs like training of students for competitive exams are conducted online. This program was regularly conducted by the competitive examination cell.

PRINCIPAL

Kohinoor Arts, Commerce & Science College

Khuldahad Aurangabad.

Course and Program Outcomes for the Academic Year 2021-2022

Department of Arabic

After completion of B.Sc. & B.Com Arabic students will able to

- Get information about the history of ancient, medieval and modern Arabic Literature.
- Read, write & Understand Arabic language fluently.
- Develop Reading, Writing and Communication Skills of Students.
- Get information about Literary Theory.
- Develop Attitude of Literary Forms. (Arabic Poetry, Prose, Grammar & History) .
- Develop Approach of Arabic Linguistics and Grammar.

DEPARTMENT OF MARATHI

After completion of B. A. and M. A. (Marathi) student will able to

- To protect Manavi mulya, Sanskar and Sanskruti.
- Vyavahar Dnyanache akalan hone.
- Develop Attitude of Literary Forms. (Marathi Poetry & Story)
- Develop Reading, Writing & Communication Skills of Students.
- Develop Attitude of Literary Forms. (Marathi Aatmkathan& Novel)
- Develop Reading, Writing & Communication Skills of Students.
- Get Information about the history of Medieval Marathi Literature.
- Get Information about Literary Theory.
- Develop Attitude of Literary Forms. (Marathi Drama &LalitGadya)
- Develop Attitude of Literary Forms. (Padya)
- Develop Reading, Writing & Communication Skills of Students.
- Get Information about the history of MODERN Marathi Literature.
- Develop Attitude of Marathi Linguistics & Grammar.
- Daily translation Use Marathi As Medium

Department of Chemistry

Outcome of B Sc Chemistry

- ➤ To provide a broad foundation in chemistry that stresses scientific reasoning and Analytical problem solving with a molecular perspective.
- ➤ To provide students with the skills required to succeed in graduate school, the chemical industry or professionalschool.
- > To expose the students to a breadth of experimental techniques using modern instrumentation.
- The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemicalinformation.
- The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
- ➤ The student will learn the laboratory skills needed to design, safely conduct and interpret chemical research.
- > The student will acquire a foundation of chemistry of sufficient breadth and depth to enable them to understand and critically interpret the primary chemicalliterature.
- > The student will develop the ability to effectively communicate scientific information and research results in written and oralformats.
- ➤ The student will learn professionalism, including the ability to work in teams and apply basic ethicalprinciples.

Outcome of M. Sc Drug Chemistry

- ➤ To equip students with the knowledge and generic skills for employment or further training in R&D, science based industry and establishments, education, and for training at management levels in otherprofessions.
- > To prepare students to develop interpersonal skills, relating to the ability to interact with other people and to engage in teamworking.
- > To stimulate intellectual development, develop powers of critical analysis and ability to solveproblems
- > To understand the instrumental method of analysis like AAS, FES, GC, HPLC, TGA, DTAetc.
- > To introduce student to chemical research methodology through carrying out a research project
- > To understand the official method of standardization and qualitycontrol

- > To understand the data handling and knowing accuracy, precision, Standard deviation and regressionetc.
- ➤ Understanding application of various volumetric and gravimetric analysis in the various field like agriculture and pharmaceutical.
- > To understand and perform analysis of drug cosmetics and food inlaboratory.
- > To understand analysis of petroleum product like polymer and plastic.
- ➤ The programme aims to provide a broad and in depth understanding of ideas central to chemistry
- To train students in the practical skills necessary for the safe manipulation of chemicals

Outcome of M. Sc Organic Chemistry

- To equip students with the knowledge and generic skills for employment or further training in R&D, science based industry and establishments, education, and for training at management levels in otherprofessions.
- > To stimulate intellectual development, develop powers of critical analysis and ability to solveproblems
- Understand the synthesis by various mechanism and characterization of organic compounds and natural compounds.
- To train students in the practical skills necessary for the safe manipulation of chemicals
- To generate interest in, and understanding of, the wider role of chemistry in society e.g. health,industry.
- To enable students to develop independent learning skills as well as the experience of working as part of ateam.
- ➤ Understand the Stereochemistry of the natural product and organic compounds.
- Perform the organic preparation of one, two and three stage preparation by green and chemical approach.
- ➤ Understanding application of organic compounds like antibacterial, anticancer and antifungal etc. in medical and pharmaceuticalfield.
- > To introduce student to chemical research methodology through carrying out a research project.
- Understanding application of IR, NMR, and GCMS for characterization of organic compounds.
- > To understand professional responsibility and ethics inChemistry

DEPARTMENT OF COMPUTER SCIENCES

On completion of the B.Sc. (Computer science) students are able to:

- Serve as Programmer or Software Engineer with sound knowledge of practical and theoretical concepts for developing softwares.
- Serve as Computer Engineer with enhanced knowledge of computers and its building blocks.
- Work as Hardware Designer/Engineer with knowledge of Networking concepts.
- Work as Systems Engineer and System integrator
- Serve as System Administrator with thorough knowledge of DBMS.
- Give Technical Support for various systems.
- Work as Support Engineer and Technical Writer
- Work as Consultant and Management officers for system management.
- Work as IT Sales and Marketing person.
- Serve as IT Officer in Banks and cooperative societies.
- Work as DTP Operator in small-scale industries.
- Serve as Web Designer with latest web development technologies.

Program Specific Outcomes of M.Sc. (Computer Science)

The career opportunities after **M.Sc.** (**Computer Science**) are quite huge. Many major national and multinational firms take in aspirants who have accomplished their graduation in these fields. The top IT firms such as Microsoft, Google, Yahoo, Rediff, Wipro, TCS, Infosys, Accenture, Cap Gemini etc. offer aspirants very attractive packages. Jobs for professionals in these fields can also be got with management consultancy organizations, Government organizations, Banks, Educational Institutions, Research Organizations and other organizations that use computers and computer-aided systems.

On completion of the M.Sc. (Computer science) students are able to work as:

- Programmer or Software Engineer
- Computer Engineer
- Web Designer
- Hardware Designer/Engineer
- Systems Engineer
- System integrator
- System Administration
- Technical Support
- Support Engineer
- Technical Writer
- Consultant
- Management
- Administration
- IT Sales and Marketing
- IT Officer
- Computer Scientist
- Research Staff Member
- Systems Analyst
- Logic Designer
- Computer Scientist in research and R & D laboretories.

Department of Environmental Science

On completion of B. Sc. (Environment Science) students are able to:

- ➤ Develop the techniques for minimization of environmental problems.
- ➤ Understand the role and responsibilities of Human Being towards the environment and environment related issues.
- imbibe the theoretical and practical knowledge in the field of environment conservation.
- ➤ Get an insight into wild life habitat, biodiversity conservation programme, environmental monitoring. EIA study, etc.
- ➤ Learn and understand various environmental aspects for sustainable development of living beings
- > Find newer techniques for adopting environmental friendly approach towards global society.
- ➤ Learn various Environment awareness programs for the ecosystems.
- ➤ Understand the environmental problems of industrial sector with sound knowledge of environment, health and safety.

KOHINOOR COLLEGE OF ARTS COMMERCE AND SCIENCE, KHULTABAD

DEPARTMENT OF MATHEMATICS

Program_Specific_Outcomes.

UG:

After completion of B. Sc. (Mathematics) student will able to

- 1. Learn to solve improper integrals.
- 2. use of Linear equations for solving any differential equations
- 3. Understand various problems related with planar graphs.
- 4. Understand Concepts of Matrices and linear equations.
- 5. learn properties of inverse Laplace transforms
- 6. Understand the concept of number theory.
- 7. Solution of Integral and Differential Equations by using Laplace Transform.
- 8. Basic concepts of Mechanics.
- 9. To learn basic concepts of Group Theory, and Ring Theory.
- 10. To learn Different Solution of Ordinary differential Equation.

PG:

After completion of M. Sc. (Mathematics) student will able to

- 1. Understand Lebesgue integrals.
- 2. Learn the methods of Real Analysis
- 3. Learn Ordinary and Partial differential equations
- 4. Know the fundamentals of game theory..
- 5. Know about differentiation of functions.
- 6. Application of Operation Research.
- 7. Use of Mathematics in C Language.
- 8. Application of Topology.
- 9. Application of Mathematics in solving different Physical Problems.
- 10. Application of Advanced Discrete Mathematics.
- 11. Understanding Functional Analysis.
- 12. Understanding Lattices Theory.
- 13. Application of Numerical Analysis.

DEPARTMENT OF PHYSICS

On completion of the B. Sc. (Physics) program, students will be able to

- Demonstrate a rigorous understanding of the core theories & principles of physics, which include mechanics, electromagnetism, thermodynamics, & quantum mechanics.
- Learn the Concept of Quantum Mechanics, Relativity, introduced at degree level in order to understand nature at atomic levels.
- Provide knowledge about material properties and its application for developing technology to ease the problems related to society.
- Understand the set of physical laws, describing the motion of bodies, under influence of system of forces.
- understand the relationship between particles & atom, as well as their creation & decay.
- Relate the structure of atoms & subatomic particles
- Understand physical properties of molecule the chemical bonds between atom as well as molecular dynamics.
- Analyze the application of mathematics to problem in physics & development of mathematical method suitable for such application & for formulation of physical theories.
- Learn the structure of solid materials & their different physical properties along with metallurgy, cryogenics, electronics, & material science.
- Understand fundamental theory of nature at small scale & energy levels of atom & subatomic particles.

On completion of the M. Sc. (PHYSICS) program, students will be able to

- To equip students with the knowledge and generic skills for employment or further training in R&D, science based industry and establishments, education, and for training at management levels in other professions.
- To prepare students to develop interpersonal skills, relating to the ability to interact with other people and to engage in team working.
- To stimulate intellectual development, develop powers of critical analysis and ability to solve problems
- To introduce student to physical research methodology through carrying out a research project
- To understand the official method of standardization and quality control
- To understand the data handling and knowing accuracy, precision, Standard deviation and regression etc.
- Understanding application of physics in various fields.
- The programme aims to provide a broad and in depth understanding of ideas central to physics.
- Understand fundamental theory of nature at small scale & energy levels of atom & sub- atomic and Nuclear particles.

DEPARTMENT OF SOCIOLOGY (B.A.)

After successful completion of three years degree course in B.A.Sociology, student will be well versed with Field skills and Research Field.

Society Skills:

- Learn about Society.
- Knowledge of Village.
- Solution of Village Problem
- Develop the Cultural Activity
 - Learning Skill
 - Mentally Prepared
 - Computer Knowledge
 - Hard work Skill

Transferable Skills

During the course student will develop skills other Field skills and Research Field that are transferable across the number of career areas. These are:

- Lawyer.
- Management Consultant Graphic Designing
- Market Research Analyst Background Artist
- Media Planner Composition Artist
- Policy Analyst

DEPARTMENT OF HINDI

B. A. in HINDI

After completion of B. A. Hindi student will able to

- Develop Reading, Writing & Communication Skills of Students.
- Develop Attitude of Literary Forms. (Hindi Poetry & Fiction)
- Get information about the history of ancient, medieval and modern Hindi Literature.
- learn the literary works on the basis of the foundation laid by the scholars.
- Get information about Literary Theory.
- Develop Approach of Hindi Linguistics & Grammar.

M.A in HINDI

After completion of M. A. Hindi student will able to understand

- Applications of Literature and Language concepts Of Bhartiy Hindi literature.
- the literary works on the basis of the foundation laid by the scholars.
- The basic need for strengthening the language capacity.
- The latest development of literary works in the world and within the country
- Indian National language and Hindi language used office work that help the student communicate.

DEPARTMENT OF ELECTRONICS

On completion of the B. Sc. (Electronics) program, students will be able to

- Water level Controller using PLC Simulator.
- Traffic light Control Using PLC simulator
- Understand Basic Circuits using Active Devices.
- Understand Basic Analog Circuits and their applications using Active Devices.
- learn basic test instruments such as power supply, function generator, DFM and CRO and their construction and working principle.
- Understand Basic differential amplifier and their applications in linear Integrated circuits
- Design & conduct experiments as well as to analyze data and its interpretation.
- Design a system components or process to meet desired needs within realistic constraints such as economic environmental, social, ethical, health & safety.
- Understand the fundamental concept of semiconductor like crystal structure, energy band gap, charge carrier statistics.

DEPARTMENT OF PUBLIC ADMINISTRATION

On completion of B.A (Public Administration), Students are able to:

- Understand basic concepts of Public Administration.
- Analyze **Administration** behavior in practice.
- Understand the Administration ways of thinking.
- Write clearly expressing Public Administration point of view.
- Understand alternative approaches Public Administration problems through exposure to coursework in allied fields.
- Create ability to suggest of the various Public Administration problems.

On completion of M.A (Public Administration), Students are able to

- Conduct socio- economical survey on Administration fields.
- Learn Indian Foreign Public Administration.
- Learn Modern Public Administration Issues.
- Understand Public Administration process in Indian Administration
- Learn public administration
- Learn socio- Public Administration research methods
- Understand comparison between public administration, private administration, Indian administration.

Department of URDU

After completion of B. A. Urdu student will able to

- Develop Attitude of Literary Forms. (Urdu Poetry, Gazal, ,Fiction, Non Fiction).
- Read and write Urdu language fluently.
- Develop Reading, Writing and Communication Skills of Students.
- Get information about the history of ancient, medieval and modern Urdu Literature.
- Learn the literary works on the basis of the foundation laid by the scholars.
- Get information about Literary Theory.
- Develop Approach of Urdu Linguistics and Grammar.

DEPARTMENT OF B.VOC FOOD PROCESSING TECHNOLOGY

After successful completion of three years degree course in B.Voc Food Processing Technology, student will be well versed with laboratory skills and transferable skills.

Laboratory Skills:

- Laboratory safety practices
- Accurate weighing and reagent preparation
- Skillful handling of basic and advanced instruments
- Calibration of basic instruments like Weighing Balance, Refrigerator, Hot Air Oven, etc
 - Adavanced techniques like
 - Food processing process
 - Food safety and hygiene
 - Handling Equipment

Transferable Skills

During the course student will develop skills other than laboratory skills that are transferable across the number of career areas. These are:

- Quality Control
- Production
- Research and Development
- Dairy Industries
- Hotels & Restaurants
- Video Editor
- Composition Artist
- Art Director
- Live Action Director

DEPARTMENT OF GEOLOGY

On completion of the B.Sc. Geology, Students are able to:

- Identify the Minerals and its various properties.
- Understand the crystal chemistry and crystallographic systems.
- Understand different Geological Processes of mineral formation.
- Understand the Mother Earth, Solar system and the Universe.
- Understand different types of Earth movements and Earth balancing system with resulting landforms and features.
- Understand about Basics of Mountains (Orogeny), Earthquakes (Seismology), Volcanoes (Volcanology), their impact on rocks and landforms with structural features.
- Analyze Mineralogical and Crystallographic problems of Geology and types of Geological Maps.
- Gain the knowledge about Petrology such as Types of rocks and their evolution, Magma-types and forms etc.
- Gain the Basics of Palaeontology, its branches and scope, also deal with the Fossils and their different phylum.
- Gain the Basics of Stratigraphy especially about India and its Physiography, Indian Geological Time Scale.
- Difference between Igneous, Sedimentary and Metamorphic rocks also Fossils and basic of Field Geology.
- Understand Crystalline, Non Crystalline Minerals and Silicate types.
- Understand Igneous rocks and Magma relation with respect to Crystallisation, Texture and Structure.
- Extend the knowledge of Crystallography and its Symmetry Systems, Classes and types.
- Understand Optical behaviour of Minerals under Normal and Microscopic observation.
- Differentiate Minerals on the basis of their physical properties as well as Crystal systems and Optical behaviour.
- Classify Igneous rocks on their Physical appearance and Optical behaviour under petrological microscope.
- Understand types of Sedimentary rocks, their Formation, Composition, Texture and Structures.
- Gain knowledge of Tectonics and Structural Geology, with linear, planer and vertical structural forms such as Folds, Faults, Joints and especially Unconformity.
- Extend knowledge of Palaeontology, Fossils and their types, Geological Environments in different Eras of Earth History.
- Differentiate Sedimentary and Metamorphic rocks on the basis of their physical appearance.
- Identify different Fossils and Geological structures given in the practical lab and in the field.
- Extend the knowledge about Indian Stratigraphy Division, Distribution, Formations, Groups and Geological Events, Fossil records in Indian Geological Time Scale.
- Understand Economic Geology of India, Formation of Mineral Deposits in different Geological Environments and their Distribution within India.
- Understand various Surface and Subsurface Techniques and Methods to gather Geological Information in the Field and in the Lab.
- Understand various aspects of Groundwater on Surface, Subsurface and its Occurrence, Hydrological properties, its Distribution and Movements.
- Identify Economic Minerals and depict their Distribution within country and Economic importance.
- Solve different Structural Maps and related problems; depict Geological, Stratigraphical, formations and groups on given Indian Maps.

DEPARTMENT OF HOME SCIENCE

<u>B. A.</u>

On completion of the B.A.Home ScienceProgramme, students are able to:

- ➤ Understand the basic concepts and modern trends in Home Science.
- ➤ Make the students aware of the applications of Home Science concepts.
- ➤ Understand the relationship between theoretical and practical principals of Home Science.
- ➤ Make the students aware of the various concepts in Home Science of the Indian context.
- ➤ Understand the Home Science measurements to help to understand the client.
- ➤ Understand the students how to follow up the behavioral problem and solve it with the behavior.
- Administer Home Science measurements and their interpretation.

Liwwi

Miss. Manisha Pandurang Wanjari

Assit. Prof. & Head Dept. of Home Science

DEPARTMENT OF MICROBIOLOGY

Class	Course	Outcomes (Students will be able to)
FYBSc	P-I: Fundamental s of Microbiology	Get an idea about the historical events in microbiology
		Understand the general characteristic of microorganism
		Know the scope of Microbiology
		Understand the taxonomic classification of microorganisms
		Know parts of microscope, type and its principal
	P-II:Microbiological Techniques and general Microbiology	Get the theoretical concepts of related stain
		Understand different methods of staining techniques
		Develop basic skill in aseptic techniques
		Understand various accessories for microbiology practicals
		Perform various staining techniques
		Cultivate bacteria with different cultivation technique
	Practical-P-III(based on paper I and II)	• Microscopy
		Stain the bacteria with differential staining techniques
		• Understand the effect of various environmental factors
		Perform various biochemical test
		Get familiar with various instrumentation
	P-IV: Cytology and general Microbiology	Understand concepts bacterial morphology and ultrastructure
		Understand the nutritional requirements
		Know bacterial growth
		Understood microbial physiology
		Know Advance s in Microbiology
	P-V:Basic Biochemistry	Understand carbohydrates
		Understand lipid

		Understand protein
		Understand nucleic acid
	Practical-P-VI(based on paper IV and V)	•Structural staining
		•Sterility check for autoclaving
		•understood isolation of microorganism
		•understood cultivation of anaerobes
		•know the effect environmental factors
		•Streak plate method
SYBSc	P-VII: Environmental Microbiology	•Microbiology of air
		• Understand microbiology of water and waste water management
		Know microbiology of sewage
	P-VIII: Immunology	Understand basics of immunology
		Know immunity
		Get an idea regardingimmuno response
		Understand the antigen and antibody
	D.VI. Applied	. Understand Missobiology of wills
	P-XI:Applied Microbiology	Understand Microbiology of milk
		Understand Microbiology of Soil
		Understand Microbiology of Food
		•Principles of food preservation.
	P-XII: Clinical	Understand Human Diseases
	Microbiology	
		Bacteria
		• Viruses

	• Protozoa
	• Fungi
	Typhus fever
Practical-P-IX and XIII	Microbial sampling of air
	• MPN,SPC.
	Measurement of chloride, phosphate and nitrate in water
	• BOD, COD.
	Isolation of coliphages from sewage and estimation of phage titre
	Preparation of media for cultivation of pathogenic bacteria
	Staining techniques
	RBC count by haemocytometer
	Agglutination tests
	• Isolation & study of normal flora of skin, nose, throat.
	Precipitation test
Practical-P-X and XIV	•Determination of R: S ratio
	Demonstration of IAA production using soil fungi
	• Isolation & study of Rhozobiumsp from root nodules of leguminous plants.
	Bacteriological analysis of milk and food.
	• Visit to waste treatment plants, dairies, food industries, agricultural universities
	Study of pathogens
	Isolation & Identification of Candida albicans
	Demonstration of haemolysin& coagulase tests
	Determination of antibiotic resistance of bacteria
	Detection of specific antigen by ELISA

TYBSc	P-XV: Microbial Genetics	DNA/RNA as genetic material
		• experimental proof
		DNA replication
		Post replication modifications
		Salient features of Genetic code
		Transcription
		Translation
		Regulation of gene expression at the level of transcription
		Bacterial Recombinations
		• Mutations
	P-XVI: Microbial metabolism	• Enzymes
		Nomenclature and classification of enzymes
		Types of enzymes
		Michaelis_Menten equation
		Commercial uses of enzymes
		Types of co-enzymes
		• Bioenergetics
		Modes of energy yielding metabolism
		Fermentation of carbohydrates
		Aerobic respirations
		\bullet Catabolism of saturated (16 carbon) and unsaturated fatty acids (16 carbon) by β oxidation

	Pharmaceutical audit and testing procedures for fermentation process
	Degradation of proteins and amino acids
	Transformation of aminoacids
	Nucleic acid catabolism
	Biosynthesis of nucleotides
	Carbohydrate synthesis
P-XIX:Recombinant DNA Technology	•Recombinant DNA technology
	•Modification of blunt ended DNA
	•Vectors
	Genetic engineering
	Genomic library
	Nucleic acid & protein blotting techniques
	Colony hybridization
	DNA sequencing
	• Probes
	• PCR
	Gene therapy
	Applications of genetic engineering
	Transposition
P-XX:Industrial Microbiology	Design of typical fermenter, types of fermenters
	Screening method
	Strain improvement methods

	Preservation methods
	•Fermentation media
	Down stream processing
	Production of Antibiotic, Vitamin, Amino acid, Organic Solvent
	• Production of Enzymes- α,Bakers yeast,Vaccines,Biofertilizers
Practical-P-X VII and XXI	Determination of one step growth curve of bacteriophage
	• Isolation of lac mutants of E.coli. (Lac) by UV induced mutagenesis and chemical mutagens
	• □ UV damage and photoreactivation
	• Study of transformation in E. Coli
	•Study of conjugation in E.Coli.
	•Study of conjugation in E.Coli.
	Demonstration : Polymerase chain Reaction
	• Isolation of genomic DNA from E. coli.
	Restriction analysis of E. coli
	Separation of plasmid DNA by agarose gel electrophoresis
	Western blotting
	• SDS PAGE
Practical-P-X VIII and XXII	Preparation of buffers and reagents
	•Study of enzymes
	Demonstration of nitrate reduction
	Demonstration of decarboxylation of amino acid
	•Isolation of photosynthetic bacteria by column method
	Primary screening

Production, detection and estimation.
i roduction, detection and estimation.

	Strain improvement
	•Paper / TLC
	Separation of proteins using agarose gel electrophoresis
	Bioassay of Penicillin/ Vit B12
	Study tour and report presentation
M.Sc.I:P TH- I:BIOSTATISTICS AND COMPUTER	Introduction to Biostatistics
APPLICATIONS	Measures of central tendency
	•Tests of significance
	Introduction to computers and computer applications
	• net working concepts
PAPER TH-II BIOENERGETICS AND MOLECULAR ENZYMOLOGY	Carbohydrate catabolic pathways and microbial growth on C1 Compounds
	Endogenous metabolism and degradation of aliphatic and aromatic compounds Properties of Enzymes
	Enzyme kinetics
	Bacterial fermentations (biochemical aspects) and Biosynthesis
PAPER TH-III BIOINSTRUMENTATION	Basic laboratory Instruments
	Chromatographic techniques
	Electrophoretic techniques
	Spectroscopy
	Radioisotopic techniques

Industrial Food fermentations
Quality assurances in foods
Food preservation methods
•Microbiology of cheese and beverage fermentation.
Advanced Food Microbiology
Representation of Statistical data
Determination of Statistical averages/ central tendencies
Determination of measures of Dispersion
Tests of Significance-Application of following
Computer operations-getting acquainted with different parts of Computers
An introduction to INTERNET, search engines, websites, browsing and Downloading.
• Isolation and Identification of Reserve food material (Glycogen / polyphosphates, PHB) of B. megaterium and Azotobacter SP
Quantitative estimation of amino acids by Rosen's method
Quantitative estimation of sugars by Summner's method
Quantitative estimation of proteins by Folin-Lowry / Biuret method
Production of fungal alpha amylase
Purification of fungal alpha-amylase
Studies on enzyme kinetics of alpha amylase/Protease

PRACTICAL PAPER P-III BIOINSTRUMENTATION	Studies on pH titration curves of amino acids
	• TLC or Paper Chromatography
	• gel electrophoresis
	Study of UV absorption spectra of macromolecules

	Quantitative estimation of hydrocarbons
	Demonstration of PCR, DNA sequencer and Fermenter
	Friske dosimetry
PRACTICAL PAPER - P-IV FOOD AND DAIRY MICROBIOLOGY	Production and estimation of lactic acid by Lactobacillus Sp. Or Streptococcus Sp
	•Extraction and estimation of diacetyl
	Sauerkraut fermentation
	Extraction and detection of afla toxin for infected foods
	•Preservation of potato/onion by UV radiation
	Production of fermented milk by Lactobacillus acidophilus
	Rapid analytical techniques in food quality control using microbial Biosensors.
PAPER TH-V RECE TRENDS IN VIROLOGY	NT • Classification and Morphology of Viruses
	Cultivation and assay of viruses
	Viral Multiplication, Pathogenesis of Viruses
	Control of Viruses and Emerging Viruses
PAPER TH-VI MOLECULAR IMMUNOLOGY	• Immune System
	Antigens and Immunoglobulins

	• Antigen – Antibody reactions, Expressions and Regulation of Immune Response
	Immunity and Immunoassays
PAPER TH-VII MICROBIAL PHYSIOLOGY	Bacterial photosynthesis
	Bacterial Respiration
	Bacterial Permeation, Bacterial Sporulation
	Bacterial Chemolithotrophy
PAPER TH-VIII : MICROBIAL DIVERSITY AND EXTREMOPHILES	Biodiversity
	Characteristics and classification of Archaebacteria.
	Alkalophiles and Acidophiles, Halophiles and Barophiles
	Space Microbiology
PRACTICAL PAPER - P-V RECENT TRENDS IN VIROLOGY	One step growth curve for determination of virus titre
	Phage typing of E.coli bacteriophages
	• Induction of lambda lysogen by UV radiations
	Amplification of lambda DNA by PCR
	Cultivation and assay of viruses using embryonated eggs and Tissue culture Technique
PRACTICAL PAPER P-VI MOLECULAR IMMUNOLOGY	Diagnostic immunologic principles and methods
	Separation of serum protein by submerged agarose gel electrophoresis
	Purification of human immunoglobulins from serum and confirmation of its antigenicity Identification of Styphi by sereturing
	Identification of S.typhi by serotyping
	• Clinical diagnosis of Rheumatoid arthritis by purifying immunoglobulins

	Demonstration of Western blotting
	Clinical diagnosis of viral diseases by PCR, ELISA
PRACTICAL PAPER P-VII MICROBIAL PHYSIOLOGY	Isolation of Photosynthetic bacteria
MICROBINETITIOLOGI	Glucose uptake by E. coli / Saccharomyces cerevisiae
	• Effect of UV, gamma radiations, pH, disinfectants, chemicals and heavy metal ions on spore germination of Bacillus SP
	• Determination of Iron Oxidation Rate of Thiobacillusferrooxidans
	• Estimation of calcium ions present in sporulating bacteria by EDTA method
	Biogenic methane production using different wastes
PRACTICAL PAPER- P- VIII MICROBIAL DIVERSITY AND EXTREMOPHILES	Isolation of thermophiles from hot water spring
	Studies on halophiles isolated from seawater
	• Studies on alkalophiles isolated from lonar water/sea water
	Demostration of utilization of sugars by oxidation and fermentatio
PAPER TH-IX ENZYME TECHNOLOGY	Extraction and purification of microbial enzymes
	Enzyme inhibition and Co-factors
	• Immobilization of microbial enzymes,
	Enzyme Engineering
	•Applications of microbial enzymes
PAPER -TH X BIOPROCESS ENGINEERING AND TECHNOLOGY	•Bioreactors
	•Mass transfer in reactors
	•Fermentation process
	•Down stream processing
	•Microbial strain improvement
PAPER TH-XI MICROBIAL GENETICS	•DNA Structure and Mutagenesis
	•Prokaryotic Transcription and Translation
	•Regulation of gene expression in prokaryotes
	•Genetic recombination
	•Phage Genetics

PAPER TH-XII : ENVIRONMENTAL MICROBIAL TECHNOLGY	•Environment and Ecosystems
	•Eutrophication
	•Effluent treatment techniques
	•Bioremediation of Xenobiotics
	•Global environmental problems
PRACTICAL PAPER -P-IX ENZYME TECHNOLOGY	Microbial production , Extraction , purification and Confirmation
	• Determination of efficiency of enzyme purification by measuring specific activity at various stages viz. Salt precipitation, dialysis, electrophoresi
	 Studies on enzyme Activation and Inhibition of extracted alpha amylase /Lipase .Effect of Heavy metal ions, Chelating agents activators and inhibitors Immobilization of cells and enzyme using Sodium alginate
	Studies on impact of immobilization on enzyme activity in terms Temperature tolerance and Vmax and Km using various forms Of alpha amylase/Lipase
	Determination of molecular weight of enzymes using PAGE technique
PRACTICAL PAPER -P-X : BIOPROCESS ENGINEERING AND TECHNOLOGY	•Isolation of industrially important microorganisms for microbial processes
	•Determination of Thermal Death Point (TDP) and Thermal Death Time (TDT)
	Determination of growth curve of a supplied microorganism
	Monitoring of dissolved oxygen during aerobic fermentation
	•Preservation of industrially important bacteria by lyophilization
	Cell disruption for endoenzymes by sonication
PRACTICAL PAPER - P-XI MICROBIAL GENETICS	•Purification of chromosomal / plasmid DNA and study of DNA profile
	• Effect of UV radiations to study the survival pattern of E. coli
	•Isolation of antibiotic resistant mutants by chemical mutagenesis
	•Study of conjugation in E. coli
	•Restriction digestion and agarose gel electrophoresis of DNA
	Generalized transduction in E. coli using P1 phage.
DD ACTICAL DADED DAW	
PRACTICAL PAPER - P-XII ENVIRONMENTAL	• Physical analysis of sewage/industrial effluent by measuring total

MICROBIAL TECHNOLOGY	solids, total dissolved solids
	Determination of indices of pollution by measuring BOD/COD of different effluents
	Bacterial reduction of nitrate from ground waters
	Isolation and purification of degradative plasmid of microbes
	growing in polluted environments
	Recovery of toxic metal ions of an industrial effluent by immobilized cells
	•Reduction of distillery spent wash (or any other industrial effluent) BOD by bacterial cultures.
	Microbial dye decolourization/adsorption
Service course-Applied Agricultural Microbiology	•Introduction to biofertiliser
	•Microorganism as biofertiliser
	•Nitrogenous biofertiliser,Biopesticide
	•Plant pathology
M.Sc.II PAPER TH - XIII RECOMBINANT DNA TECHNOLOGY	•Techniques and enzymes in genetic recombination
	• Plasmids
	•Specialized cloning strategies
	PCR methods and Applications
	•Molecular mapping of genome
PAPER TH-XIV: FERMENTATION TECHNOLOGY	•Microbial Fermentations
	•Microbial production of therapeutic compounds
	•Modern trends in microbial production
	•Biofuels
	•Immobilization techniques , IPR and Patents
PAPER TH-XV BIOINFORMATICS, MICROBIAL GENOMICS AND PROTEOMICS.	•Bioinformatics and its applications
	Whole genome analysis
	Sequence analysis

	DNA Microarray
	Proteome analysis
PAPER TH –XVI PHARMACEUTICAL MICROBIOLOGY	Antibiotics and synthetic antimicrobial agents
	•Mechanism of action of antibiotics
	•Microbial production and Spoilage of pharmaceutical Products
	•Regulatory practices, biosensors and applications in Pharmaceuticals
	Quality Assurance and Validation
PRACTICAL Paper - P-XIII RECOMBINANT DNA TECHNOLOGY	•Isolation of genomic DNA and its confirmation by southern blotting
	• Isolation of plasmid DNA and its restriction digestion
	DNA sequencing by Sangers method
	• RFLP analysis
	Amplification of DNA by PCR.
PRACTICAL PAPER P- XIV FERMENTATION TECHNOLOGY	Production and characterization of citric acid using A. Niger
	Microbial production of glutamic acid
	•Production of rifamycin using Nocardia strain
	•Comparison of ethanol production using various Organic wastes
	•Production and extraction of thuricide
	•Microbial production of dextran by Leuconostocmesenteroides
	Microbial production of hydrogen gas by algae/bacteria
PRACTICAL PAPER- P-XV BIOINFORMATICS, MICROBIAL GENOMICS AND PROTEOMICS.	•Studies of public domain databases for nucleic acid and protein sequences
	•. Determination of protein structure (PDB)
	•Genome sequence analysis
PRACTICAL PAPER P- XVI PHARMACEUTICAL MICROBIOLOGY	•Spectrophotometric / Microbiological methods for the determination of Griesofulvin
	•Bioassay of chloremphenicol by plate assay method or turbidiometric Assay method.
	• Treatment of bacterial cells with cetrimide, phenol
	•To determine MIC, LD 50 of Beta-lactum/aminoglycoside tetracycline/ansamycins
	Sterility testing by Bacillus stearothermophilus

	• Determination of D value, Z value for heat sterilization in pharmaceuticals
	•Determination of antimicrobial activity of a chemical compound (Phenol, resorcinol, thymol, formaldehyde) to that of phenol under Standardized experimental conditions
Laboratory course (Project Dissertation)	• principles and methods
	Collection and compilation of literature
	Designing of experiment with objectivity

	Compilation and interpretation of results
	Presentation of research data in report form

DEPARTMENT OF HISTORY

B.A. History

On completion of the BA (History) special, students will be able to

- Understand the basic themes, concepts, chronology and the Scope of Indian History.
- Acquaint with range of issues related to Indian History that span distinct eras.
- Understand the history of countries other than India with comparative approach.
- Think and argue historically and critically in writing and discussion.
- Prepare for various types of Competitive Examinations
- Critically recognise the Social, Political, Economic and Cultural aspects of History.

M.A. History

On completion of the MA (History) special, students will be able to

- Understand and evaluate the complexities of historical developments of various nations, societies and cultures.
- Acquaint with research skills, methodologies, philosophy of history and historiography as being a professional historian and researcher.
- Prepare themselves for the competitive carriers in fields like civil services and teaching.
- Recognise history of the man in the context of universal as well as national perspective.
- Learn to evaluate the historical narratives withthe approach of comparative methods.
- Think and argue historically and critically.
- Critically analyse the various sources of history.
- Understand Indian history and world history with the scientific, critical and rational approach.
- Understand values of unity in diversity, multiculturalism, multi-religiosity, secularism and humanism which are inherited in Indian Culture and upheld by our Constitution.
- Identify how the Indian culture had been contributed to the world human civilisation through the Ages.

DEPARTMENT OF B.VOC MULTIMEDIA & ANIMATION

After successful completion of three years degree course in B.Voc Multimedia & Animation, student will be well versed with laboratory skills and transferable skills.

Laboratory Skills:

- Laboratory safety practices
- Accurate weighing and reagent preparation
- Skillful handling of basic and advanced instruments
- Calibration of basic instruments like Computer & Animation Software etc
 - Adavanced techniques like
 - Basic Computer Skills
 - Adobe Software Skills
 - Autodesk Software Skills
 - Camera handeling Skills
 - Drawing Skills

Transferable Skills

During the course student will develop skills other than laboratory skills that are transferable across the number of career areas. These are:

- 2D animation
- 3D Animation
- Graphic Designing
- Roto Artist
- Background Artist
- Video Editor
- Composition Artist
- Art Director
- Live Action Director

Programme Outcomes (Undergraduate Level)

Faculty – Humanities (Department of English)

After completing the graduation in the faculty of humanities the student should have:

- Acquired knowledge with facts and figures related concerned with subjects such Languages.
- Understood the basic concepts, fundamental principles, and various theories in the above mentioned subjects.
- Realized the importance literature in creating aesthetic, mental, moral, intellectual development of an individual and increasing a healthy society.
 - Gained the analytical ability to analyze critically the literature and social issues, appreciate the strength and suggest the improvements for better results.
 - Convinced himself/herself that study of literature and social sciences not only help to evolve better individual and better society but also help to make the life of an individual more happy and meaningful.
 - Participated in various social and cultural activities voluntarily.
 - Written articles, novels, stories to spread the message of equality, nationality, social harmony, etc.
 - Emerged as a multifaceted personality who is self dependant; earning his own bread and butter and also creating opportunities to do so.
 - Realized that pursuit of knowledge is a lifelong process and in combination with untiring efforts and positive attitude are necessary qualities for leading a successful life.
 - Developed various communication skills such as reading, listing, speaking, etc., which will help in expressing ideas and views clearly and effectively.

Programme Outcomes (Post Graduate Level)

Faculty – Humanities (Department of English)

After completion the Post Graduation in Humanities, the student should have -

- Acquired a deep knowledge as possible in the subject concerned by making use of reference books, research journals, periodicals and internet facilities.
- Known in detail how the subject matter has developed from ancient time till this date with important landmarks, theories and people have contributed to achieve these.
- Critically evaluated the works of various authors or social scientists by considering the strength and weakness and suggestions probable modifications for improvement.

- Understood how the developments in the field of Humanities have improves the quality of life and how they have satisfied the aspirations, intensions likes and dislikes and how they could modify them.
- Realized how the studies in Humanities have led to various social, economical, political changes over last few centuries.
- Predicted the future course of the developments in the subject and the various factors that are likely to influence them and how they will change the life of common man.
- Taken up an independent research project, plan and execute it and present the results and conclusions systematically at the end.
- Taken up independent creative writing or various aspects in literature, social, economic political, environmental issues in the form of story, poetry, research articiles, reports, etc in various periodicals & journals.
- Recognized the areas where there is no further research work or areas which are not yet explored.
- Developed a strong belief that study of humanities will lead to development of soul, giving immense pleasure & satisfaction for any individual.
- Recognized that studies in humanity will dissolve differences & inequalities due to caste, creed and religion, social status etc leading to human dignity which will help to create social & national integration.
- Participated & led various activities related to literature & social issues in order to create social awareness and harmony.

Programme Specific Outcomes

Department of English

UG

On completion of B.A (English), students are able to:

- Use correct English in oral as well as written form.
- Inculcate of human values for one's transformation of behavior.
- Interpret the literary works by critical analysis.
- Compare literary works of the great philosophers using their logic and literary capacity.
- Develop Attitude of Literary Forms. (English Poetry & Fiction)
- Develop Reading, Writing & Communication Skills of Students.
- Get information about the history of ancient, medieval and modern English Literature.
- Learn the literary works on the basis of the foundation laid by the scholars.
- Get information about Literary Theory.
- Develop Approach of English Linguistics & Grammar.

PG

On completion of M.A (English), students are able to:

- Understand and learn the literary works on the basis of the foundation laid by the scholars.
- Strengthen their language capacity.
- Assist them in understanding of extended frontiers of language and literature.
- Applications of Literature and Language concepts.
- The literary works on the basis of the foundation laid by the scholars.
- The basic need for strengthening the language capacity.
- The latest development of literary works in the world and within the country.

DEPARTMENT OF GEOGRAPHY

On Completion of the BA (Geography) Students are able to:

- Study the land forms and processes.
- Understand the structure, composition of different spheres of the earth and its
- Atmosphere. Understand importance of oceans, rivers and water and find ways of their conservation.
- Understand the Function and types of Biogeography.
- Understand the science of Remote Sensing.

DEPARTMENT OF PSYCHOLOGY B. A.

On completion of the BA Psychology Programme, students are able to:
☐ Understand the basic concepts and modern trends in Psychology.
☐ Make the students aware of the applications of Psychological concepts.
☐ Understand the relationship between theoretical andpractical principals of psychology.
☐ Make the students aware of the various concepts in Social Psychology of the Indian context.
☐ Understand the psychological measurements to help to understand theclient.
□ Understand the students how to follow up thebehavioral problem and solve it with the behavior
and other therapies.
☐ Administer psychological measurements and their interpretation

Programe Specific Outcomes Subject Zoology

On Completion of the B.Sc (Zoology)students are able to

- ➤ Understand the nature and basic concepts of cell biology
- ➤ Understand the basic concepts about chordates and non-chordates
- ➤ Understand the various Applications of Biotechnology
- ➤ Understand the Lamarkism, Neo-Lamarkism and Darwinism.
- Understand the term ELISA technique and DNA finger printing.
- > Understand the process of evolution.
- ➤ Understand Ecology and importance of Biodiversity
- ➤ Understand the importance of insects and pest management
- Acquainted current trends in conservation biology, wildlife biology and management.

On Completion of the M.Sc Zoology, students are able

- ➤ Understand Ecology and importance of BiodiversityUnderstand the various microbial, bacterial as well as viral diseases and pathogenicity.
- ➤ Understand the Organization And Life: Homology and Analogy, Diversity of invertebrates, Phylogeny of invertebrates.
- > Understand the larval forms of the invertebrates.
- > Understand the colonial and social life in invertebrates.
- ➤ Understand the structure and function of the cell and its organelles
- ➤ Understand the Applications and uses of Statistics in Zoology.
- Acquainted current trends in conservation biology, wildlife biology and management.