

Program Outcome for Experiential Learning

-UNDERGRADUATE ARTS (B.A.)

B.A. I [CERTIFICATE IN DRAWING AND PAINTING]

SEMESTER 1

COURSE TITLE: HISTORY OF ART-1 (THEORY)

COURSE OUTCOME

- Students will recognize and understand major monuments, artists, methods and theories, and be able to assess the qualities of works of art and architecture in their historical and cultural settings. How the then social problems should become subjects of Art

COURSE TITLE: DRAWING AND COLOUR STUDIES (PRACTICAL)

COURSE OUTCOME

- Sketch and render objects (fruits, vegetables, leaf, geometrical shapes etc.) with various medium like Pencil, Pen, ink, water colour, Poster colour, Oil Pastel colour, Dry Pastel, Charcoal Pencil, Colour Pencils etc. Exhibit understanding of (properties of s, wheel & value) and use it judiciously in the creation of visual work.

SEMESTER 2

COURSE TITLE: FUNDAMENTALS OF ART (THEORY)

COURSE OUTCOME

- Students get information about Definition of art. The art language is based on concepts called the ELEMENTS and PRINCIPLES of Design”. Introduction to the basics elements of art, 5 Elements of art : Line Shape Texture Value

COURSE TITLE: DRAWING AND SKETCHING (PRACTICAL)

COURSE OUTCOME

- Sketch and render objects (fruits, vegetables, leaf, geometrical shapes etc.) with various medium like Pencil, Pen, ink, water , Poster , Oil Pastel , Dry Pastel, Charcoal Pencil, Pencils etc. Exhibit understanding of (properties of s, wheel & value) and use it judiciously in the creation of visual work.

SEMESTER 3

COURSE TITLE: HISTORY OF ART: PALA TO PANDYA & NAYAKA PERIOD (THEORY)

- Course Outcome: Students will recognize and understand major monuments, methods and theories, and be able to assess the qualities of works of art and architecture in their historical and cultural settings. How the then social problems should become subjects of Art.

COURSE TITLE: STILL LIFE (PRACTICAL)

Course Outcome: A still life painting is pretty self-explanatory... it's a painting of objects that sit still. These objects can be inanimate things, like fruits or vases; they can also be things that are no longer alive, like animals or flowers

SEMESTER 4

COURSE TITLE: AESTHETICS (THEORY)

COURSE OUTCOME

It will develop a careful investigation of the qualities belonging to the objects and events. Students will be able to response the objects and event aesthetically. Thoughts and feeling coloured in an aesthetic response will enrich the knowledge of the students to the realm of art.

COURSE TITLE: PHOTOGRAPHY / LETTERING (PRACTICAL)

COURSE OUTCOME

The artwork will be produced in the studio of the department under the direction of the teacher.

Recognize the concepts of photography & its applications. Practice the handling of the camera and its functions such as aperture, shutter speed and ISO. Explore different camera angles, camera movements and camera shots. Understand the indoor and outdoor lighting by using photographic concepts. Explore the use of photographic concepts in the fields of advertising, animation, art direction. /Students will be able to understand the basics of creating letters. Learning the basics of lettering, they will be able to create new experimental fonts.

3.

B.A. I [CERTIFICATE IN FUNDAMENTALS OF HOME SCIENCE]

PROGRAM SPECIFIC OUTCOMES (PSOS)

At the end of program following outcomes are expected from students:

- Learn about the discipline of Home Science as a holistic field of study covering multiple facets and requirements of human beings in day to day living, for example, achievement of appropriate milestones in personal development; awareness, need and use of family resources; access to adequate nutrition for wholesome development; clothing fundamentals. May have capabilities to start earning by enhancing their skills in the field of Nutrition and Textiles.

SEMESTER I HOME SCIENCE PAPER 1

COURSE TITLE: FUNDAMENTALS OF NUTRITION AND HUMAN DEVELOPMENT (THEORY)

COURSE OUTCOME

The student at the completion of the course will be able to:

- Prepare the students to understand physiology based courses
- Students will get familiar with different methods of cooking
- Acquaint students with practical knowledge of nutrient rich foods
- Explain the need and importance of studying human growth and development across life span
- Identify the biological and environmental factors affecting human development.
- Learn about the characteristics, needs and developmental tasks of infancy & early childhood years

SEMESTER I HOME SCIENCE PAPER 2

COURSE TITLE: COOKING SKILLS AND HEALTHY RECIPE DEVELOPMENT (PRACTICAL)

COURSE OUTCOME

- Students will get familiar with different methods of cooking
- Acquaint students with practical knowledge of nutrient rich foods

SEMESTER 2 HOME SCIENCE PAPER 1

COURSE TITLE: INTRODUCTION TO CLOTHING & TEXTILES & FAMILY RESOURCE MANAGEMENT (THEORY)

COURSE OUTCOME

- Learn about scope of textile and clothing
- Understanding why fabrics are different
- Learn how fabrics can be manufactured
- Understand basic clothing concepts and garment making
- Learn the family resource management as a whole.
- Understand the Decision making and use of resources throughout the Family life cycle.
- Gain knowledge about Time, Money & Energy as a Resource.
- Appreciate Household Equipments for work simplification

SEMESTER 2 HOME SCIENCE PAPER 2

COURSE TITLE: CLOTHING & TEXTILES (PRACTICAL)

COURSE OUTCOME

- Ability to identify fibers and fabrics
- Understanding why fabrics are different
- Learning basic Sewing skills
- Learn how garments are stitched

B.A. II: DIPLOMA IN INTERIOR DESIGN & HUMAN DEVELOPMENT

PROGRAM SPECIFIC OUTCOMES (PSOS)

- At the end of program following outcomes are expected from students: Develop sensitivity, resourcefulness, and competence to render service to enhance development of individuals, families, communities, and the nation at large.
- Enhance abilities involved in acting as proactive agents of change in promoting the discipline of Family and Community Sciences .
- Explore and decide upon viable avenues of self-employment and entrepreneurship. Learn more about human and community & relationship.

SEMESTER 3

COURSE TITLE: ADVANCE NUTRITION AND HUMAN DEVELOPMENT (THEORY)

COURSE OUTCOME:

The student at the completion of the course will be able to:

- Create an awareness about importance of healthy meal at various stages of life cycle
- Inculcate healthy eating practices among students
- Develop skill of meal planning for different physiological groups•
- Explain the Physical & Psychological changes during middle childhood, adolescent and adulthood stage.
- Identify the biological and environmental factors affecting personality.
- Learn about the characteristics, needs and developmental tasks of Middle childhood years,
- Adolescent & Adulthood stage.

COURSE TITLE: ADVANCE HUMAN DEVELOPMENT (PRACTICAL)

COURSE OUTCOMES

- Learn to cope up with adolescent and adulthood problems.
- Understand and handle development related issues more efficiently.
- Able to know human behaviour.
- Understand individual differences

SEMESTER 4

COURSE TITLE: HOUSING & EXTENSION EDUCATION (THEORY)

COURSE OUTCOMES

- Grasp knowledge of Housing need selection of site in real life situations.
- Comprehending Housing plans for residential purpose.
- Appreciate principles of design and the contributing factors to refine personal aesthetic senses.
- Learn the widening concepts of Extension Education.
- Develop understanding for Effective teaching and learning.
- Comprehend the various effective communication methods.
- Gain skills to use technologically advanced Audio-visual aids.

COURSE TITLE: RESOURCE PLANNING AND DECORATION (PRACTICAL)

COURSE OUTCOMES

- Developing skills for making time plan for effective balance of work & leisure.
- Plan & prepare budget for the family.
- Incorporate appropriate work simplification in using household equipments.
- Develop understanding for house planning & decoration.

B.A. I [CERTIFICATE IN MUSIC VOCAL]

PROGRAM SPECIFIC OUTCOMES (PSOS)

At the end of program following outcomes are expected from students:

- Learn about the fundamental aspects of Indian Music.
- Learn about the historical development of Indian Music and cultural development of India.
- Students will be able to get acquainted with various Ragas and different Taals. They will be able to get acquainted with other genres beside classical and will also be able to perform.
- May have capabilities to start earning by enhancing their skills in the field of Music vocal and Indian Music.

SEMESTER 1

COURSE TITLE: INTRODUCTION TO INDIAN MUSIC (THEORY)

COURSE OUTCOME

- On the successful completion of Introduction to Indian Music students will develop a strong foundation on the basic understanding of the Indian Music.

SEMESTER 1

COURSE TITLE: CRITICAL STUDY OF RAGAS AND TAALS (PRACTICAL)

COURSE OUTCOME

- This paper focuses on the practical fundamentals of perform a Raag on stage with Vilambt and Drut Khayal. They will be able to perform Tarana, Bhajan, Geet and gazal also. Students will understand the concept of Lay and Layakari.

SEMESTER 1I

COURSE TITLE: HISTORY OF INDIAN MUSIC (THEORY)

COURSE OUTCOME

- This paper focuses on the practical fundamentals of perform a Raag on stage with Vilambt and Drut Khayal. They will be able to perform Tarana, Bhajan, Geet and gazal also. Students will understand the concept of Lay and Layakari

SEMESTER 1I

COURSE TITLE: CRITICAL STUDY OF RAAGAS AND TAALS (PRACTICAL)

COURSE OUTCOME

- The focus of this paper is the student will have acquainted with rich cultural heritage of Indian music. This course will help the students to know the rich history of Indian music from the Vedic age.

B.A. II : DIPLOMA IN MUSIC VOCAL

PROGRAM SPECIFIC OUTCOMES (PSOS):

At the end of program following outcomes are expected from students:

- Learn about the Indian Scholars of Ancient, Medieval and Modern period.
- Built knowledge about notation system and Scales.
- Student will be able to get acquainted with various new Ragas and Taals. They will be able to perform Classical and other Light and Folk music styles.

- May have capabilities to start earning by enhancing their skills in the field of composer, music writer and as performer.

SEMESTER 3

COURSE TITLE: CONTRIBUTION OF ANCIENT, MEDIEVAL & MODERN SCHOLARS TO INDIAN MUSIC (THEORY)

COURSE OUTCOMES:

The paper focuses on the contribution of scholars to Indian Music from Ancient to Modern period. Students will be able to understand development of Indian Music

COURSE TITLE: CRITICAL STUDY OF RAGAS AND TAALS (PRACTICAL)

COURSE OUTCOMES:

The focus of this paper, is the student will get know how to perform raagmala with alap and taan, They will get an idea to perform a raag more beautifully with different alap-taan. They also will have acquainted with semi classical style dadra

SEMESTER 4

COURSE TITLE: NOTATION SYSTEM, SCALES AND TIME SIGNATURE (THEORY)

COURSE OUTCOMES:

On the successful completion of this paper student will get a brief idea about Dhamar gayan shaili. They will able to perform Dhrupad with Layakaries as well as Kajri, Chaiti and Dadra.

COURSE TITLE: CRITICAL STUDY OF RAAGAS AND TAALS

COURSE OUTCOMES:

The paper focuses on the notation system of Indian and western music. Student will able to understand time signature and how to write Hindustani taal in staff notation.

B.A. I [CERTIFICATE PHYSICAL EDUCATION]

PROGRAMME SPECIFIC OUTCOMES

- Physical Education is a very wide subject in which biological, psychological, physical, health and functional aspects of sports and body are studied. It is noteworthy that it is such a subject with the help of which human body both internally and externally can be kept healthy. Students will definitely be able to discharge duties towards themselves and society through this subject. Under this subject, the students can demonstrate excellently their skills and perfection particularly in sports ability, management, leadership, health plan, event management, sports budgeting, physiology, teaching methods, sports psychology and research along with getting information regarding to the importance of Physical Education for DIVYANG

SEMESTER I

COURSE TITLE: ELEMENTALS OF PHYSICAL EDUCATION (THEORY)

COURSE OUTCOME

- Physical education is very wide concept and this subject teaches about introduction and Sociological concept of Physical Education and this also teaches about historical development of physical education in India and other countries. Its introduce a general concept of good health and wellness. This program will also help a student to promote healthy way of living and they will also be able to make fitness and health plan.

SEMESTER I

COURSE TITLE: FITNESS AND YOGA (PRACTICAL)

COURSE OUTCOME

- Yoga is very helpful in prevention of many diseases and students will learn about it. This subject deals with basic knowledge about and Aerobics and Gymnasium classes which will help students to excel in the fitness industry.

SEMESTER II

COURSE TITLE: SPORTS ORGANIZATION AND MANAGEMENT (THEORY)

COURSE OUTCOME

- This course is designed to give real time exposure to students in the area of organising an event/ sports. The students will also learn about store management, purchasing and budget making.

SEMESTER II

COURSE TITLE: SPORTS EVENT AND TRACK & FIELD (PRACTICAL)

COURSE OUTCOME

- To make a plan for organizing an event.
- To organize an Interclass Competition of any games with in the wall.
- To prepare a budget plane for interclass competition within the wall
- Make a Sample Time Table for college.
- Prepare the list of Consumable and Non-Consumable items.
- Prepare a Biodata/ Vita/ curriculum vitae.

B.A. II [DIPLOMAN IN PHYSICAL EDUCATION]

SEMETER 3

COURSE TITLE: ANATOMY AND EXERCISE PHYSIOLOGY (THEORY)

COURSE OUTCOMES:

Students can be able to understand human structure and function as well as effects of exercise on various human body systems

COURSE TITLE: HEALTH AND PHYSIOLOGY (PRACTICAL)

SEMESTER 4

COURSE TITLE: SPORTS PSYCHOLOGY AND RECREATIONAL ACTIVITIES (THEORY)

COURSE OUTCOMES:

Students can be able to understand various aspects of psychology apply to sports person and how to organize sports and recreational activities.

COURSE TITLE: RECREATIONAL GAMES & THEIR PSYCHOLOGICAL BENEFITS (PRACTICAL)

B.A. I [CERTIFICATE POLITICAL SCIENCE]

SEMESTER I

COURSE TITLE: INDIAN NATIONAL MOVEMENT & CONSTITUTION OF INDIA (THEORY)

COURSE OUTCOME

- Acquaintance to Indian National Movement & Constitution is indispensable for a student to make a sense of Indian Political System. The course is designed to provide a overview of Indian freedom Struggle and key concepts of the Indian constitution to the student, which would evolve him into a conscientious citizen.

SEMESTER I

COURSE TITLE: AWARENESS OF RIGHTS & LAWS (PRACTICAL)

COURSE OUTCOME

- This paper intends to arm the student with basic digital and legal awareness where by the student can leverage this in the job market. It also intends to make the student aware of his basic legal rights which would help him to stand up and help others.

SEMESTER II

COURSE TITLE: POLITICAL THEORY & CONCEPTS

COURSE OUTCOME

- Understanding Political theory is integral and indispensable for a comprehensive and critical study of political science. The course is designed to train a student in the foundational issues of political theory, which is relevant for any in depth study and research.

B.A. I [CERTIFICATE IN PSYCHOLOGY]

PROGRAM SPECIFIC OUTCOMES

The learning outcomes that a student should be able to exhibit on completion of a degree level program in Psychology are as follows:

- Comprehension about the discipline, its research methods, related theories and models.
- Knack to link up theory with individual experiences and varied applied settings.
- Capacity to practice professional skills in the area of psychological testing, assessment and counselling.
- Development of skills in specific areas related to specific specialization (e.g. psycho diagnostics, counselling, learning disability, health, community mental health and organizational behaviour).
- A general understanding about how knowledge of psychology can be applied to benefit the management and/or amendment of problems of mankind.
- Capability to articulate ideas in appropriate manner, with scientific writing and authentic reporting.
- Sensitivity towards diverse contexts, ethnic groups, minorities, marginalized groups and gender issues
- Development of skills and attributes of empathy, team work, coordination, cooperation, conflict resolution, and congruence.

SEMESTER I

COURSE TITLE: BASIC PSYCHOLOGICAL PROCESSES (PAPER 1 THEORY)

COURSE OUTCOME

- The students will learn about the fundamental processes and core psychological concepts, models, classical theories, varied perspectives, and will be able to apply them in their own and in others lives. It will also give the learner a clear understanding of the concepts like intelligence, motivation, emotion and personality. It will develop critical analytical skills regarding these individualistic traits

SEMESTER I

COURSE TITLE: LAB WORK (PAPER 2 PRACTICAL)

COURSE OUTCOME

- Students will be imparted a variety of skills to design and conduct psychological experiments ensuring controlled conditions, report writing and interpretations of the report.

SEMESTER II

COURSE TITLE: BASIC RESEARCH METHODOLOGY AND STATISTICS (PAPER 1 THEORY)

COURSE OUTCOME

- The learners will be able to comprehend psychological data and can put them on appropriate scaling method. Moreover, they will be getting hold of essentials of psychological testing along with various kinds of tests implemented.

SEMESTER II

COURSE TITLE: LAB WORK/ PSYCHOLOGICAL TESTING (PAPER 2 PRACTICAL)

COURSE OUTCOME

- Students will be conferred an array of skills to carry out experiments in lab settings, design and conduct psychological experiments ensuring controlled conditions, report writing and interpretations of the report.

B.A. II [DIPLOMA IN PSYCHOLOGY]

SEMESTER III

COURSE TITLE: PSYCHOLOGY OF SOCIAL BEHAVIOR (THEORY)

COURSE OUTCOME:

- By the end of the course, students will be able to summarize general information, through in-class discussion and assignments, pertaining to social psychological theories and an opportunity to apply social psychological theories to their lives. Critically evaluate research to understand and explain distressing human social behavior and relate social psychological concepts and theories to the context of historic and current world, national, and local events.

COURSE TITLE: LAB WORK AND MEASUREMENT OF SOCIAL BEHAVIOR (PRACTICAL)

COURSE OUTCOME:

- Students will be exposed to the mixture of skills such as how to conduct a psychological experiment for understanding social behavior as well as psychological measurements and scientific reporting of the data

SEMESTER IV**COURSE TITLE: ABNORMAL PSYCHOLOGY (THEORY)****COURSE OUTCOME:**

- The students will be able to understand criteria of abnormality and one's own behavior and behavior of others. By applying the knowledge of assessment, diagnosis, classification system and DSM categories, the learners' will develop the sensitivity towards individual diversity and various approaches to the diagnosis and treatment of psychological disorders. Summarize clinical features of symptoms, etiology and valid and reliable treatment of diagnostic categories of mental health disorders.

COURSE TITLE: SCREENING AND ASSESSMENT (PRACTICAL)**COURSE OUTCOME:**

- At the end of the course, the students will be imparted a variety of proficiency to conduct the screening and assessment of psychological tools for examining developmental issues and disorders. The practicum of case study will let the students learn and execute an in depth investigation of a single person, group, event or community.

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B.A. I [CERTIFICATE IN GEOGRAPHY]**PROGRAMME SPECIFIC OUTCOMES (PSOS)**

- This course provides the basic ideas and concepts of Physical & Human aspect of Geography.
- This course intends to orient the learner with the Approaches to the broader discipline of Geography.
- It will help in developing analytical and critical thinking based on the themes and issues of geography.

- It eventually prepares the students to understand the development of the subject and delve around issues suited to the needs of the contemporary world. e) It will help in exhaustive understanding of the basic concepts of Geography and an awareness of the emerging areas of the field.
- Acquisition of in-depth understanding of the applied aspects of Geography as well as interdisciplinary subjects in everyday life.
- Improvement of critical thinking and skills facilitating.
- The application of knowledge gained in the field of Geography in the classroom to the practical solving of societal problems.
- The programme orients students with tradition geographical knowledge along with advance contemporary skills like remote sensing and GIS

SEMESTER I

COURSE TITLE: PHYSICAL GEOGRAPHY (THEORY)

COURSE OUTCOMES:

- Students will be able to understand the Earth geomorphic transition from beginning to present day.
- Plate tectonics and related movements
- Landforms carved by various agents of erosion
- Earth's climate and that factors that influence it
- Oceans system and biogeography of the world.

SEMESTER I

COURSE TITLE: ELEMENTS OF MAP AND SURVEYING (PRACTICAL)

COURSE OUTCOME:

On completion of this course, learners will be able to:

- Understand the basic idea of Map, Scale and Topographic sheets

SEMESTER II

COURSE TITLE: HUMAN GEOGRAPHY (THEORY)

COURSE OUTCOME:

On completion of this course, learners will be able to:

- To understand the Concept, Nature, Meaning and Scope of Human Geography
- To understand the natural and Cultural Changes in and around the Human Environs and their interrelationship.

COURSE TITLE: THEMATIC MAPPING AND SURVEYING (PRACTICAL)

COURSE OUTCOME:

On completion of this course, learners will be able to:

- Understand the basic idea of Map, Scale and Topographic sheets

B.A. II [DIPLOMA IN GEOGRAPHY]

SEMESTER III

COURSE TITLE: ENVIRONMENT, DISASTER MANAGEMENT AND CLIMATE CHANGE (THEORY)

COURSE OUTCOMES:

- The course aim is to give basic understanding of concept Environment, Climate Change and Disaster Management.
- Understanding of the concept of appraisal and conservation of Environment and Natural Resources. It will help in developing understanding about various Impacts of Climate Change.
- This course shall introduce the basic concepts related to disaster Management.
- This paper shall help in understanding Global effort in field of disaster management.

COURSE TITLE: STATISTICAL TECHNIQUES (PRACTICAL)

COURSE OUTCOMES:

- Students will be able to understand
- To differentiate between qualitative and quantitative information.
- To understand the nature of various data.
- To understand sampling methods for data collection.
- To present data through graphical and diagrammatic formats.
- To use the concept of probability mainly the normal distribution.

SEMESTER IV

COURSE TITLE: ECONOMIC GEOGRAPHY (THEORY)

COURSE LEARNING OUTCOMES

- On completion of this course, learners will be able to:
- Define Meaning, concepts and approaches of Economic Geography
- Understand the nature of Economic activities, Resource Distribution
- Understand the Effect of globalization on developing countries.

COURSE TITLE: SURVEYING (PRACTICAL)

COURSE LEARNING OUTCOMES

- On completion of this course, learners will be able to:
- Identify the various Survey Operations and Survey Instruments
- To understand the idea of Basic and applied Instrumental surveying

UNDERGRADUATE SCIENCE (B.SC.)

1

B.SC. IN SCIENCE

CERTIFICATE COURSE IN MICROBIAL TECHNOLOGY & APPLIED BOTANY

PROGRAMME OUTCOMES (POS):

Transformed curriculum shall develop educated outcome-oriented candidature, fostered with discovery learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

- ❖ PO 1 CBCS syllabus with a combination of general and specialized education shall introduce the concepts of breadth and depth in learning
- ❖ PO2 Shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development.

- ❖ PO 3 Will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, enhance communication skill, social interaction, increase awareness in judicious use of plant resources by recognizing the ethical value system.
- ❖ PO 4 The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.
- ❖ PO 5 Certificate and diploma courses are framed to generate self- entrepreneurship and selfemployability, if multi exit option is opted. PO 6 Lifelong learning be achieved by drawing attention to the vast world of knowledge of plants and their domestication.

PROGRAMME SPECIFIC OUTCOMES (PSOS):

B.SC. I BOTANY [CERTIFICATE COURSE IN MICROBIAL TECHNOLOGY & CLASSICAL BOTANY]

This Programme imparts knowledge on various fields of plant biology through teaching, interactions and practical classes. It shall maintain a balance between the traditional botany and modern science for shifting it towards the frontier areas of plant sciences with applied approach. This syllabus has been drafted to enable the learners to prepare them for self-entrepreneurship and employment in various fields including academics as well as competitive exams. Students would gain wide knowledge in following aspects:

- Diversity of plants and microbes, their habitat, morphology, architecture and reproduction.
- Plant disease causing microbes, symptoms & control.
- Economic value of plants and their use in Human Welfare.

SEMESTER 1

COURSE TITLE: MICROBIOLOGY & PLANT PATHOLOGY (PAPER 1 THEORY)

COURSE OUTCOME

- After the completion of the course the students will be able to: 1. Develop understanding about the classification and diversity of different microbes including viruses, Algae, Fungi & Lichens & their economic importance.
- Develop conceptual skill about identifying microbes, pathogens, biofertilizers & lichens.
- Gain knowledge about developing commercial enterprise of microbial products.
- Learn host –pathogen relationship and disease management.
- Learn Presentation skills (oral & writing) in life sciences by usage of computer & multimedia.
- Gain Knowledge about uses of microbes in various fields.
- Understand the structure and reproduction of certain selected bacteria algae, fungi and lichens

Gain Knowledge about the economic values of this lower group of plant community.

SEMESTER 1

COURSE TITLE: TECHNIQUES IN MICROBIOLOGY & PLANT PATHOLOGY (PAPER 2 PRACTICAL)

COURSE OUTCOME

After the completion of the course the students will be able:

- Understand the instruments, techniques, lab etiquettes and good lab practices for working in a microbiology laboratory.
- Develop skills for identifying microbes and using them for Industrial, Agriculture and Environment purposes.
- Practical skills in the field and laboratory experiments in Microbiology & Pathology.
- learn to identify Algae, Lichens and plant pathogens along with their Symbiotic and Parasitic associations.
- Can initiate his own Plant & Seed Diagnostic Clinic 6. Can start own enterprise on microbial products

SEMESTER II

COURSE TITLE: ARCHEGONIATES AND PLANT ARCHITECTURE (PAPER 1 THEORY)

COURSE OUTCOME

After the completion of the course the students will be able to:

- Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms
- Understanding of plant evolution and their transition to land habitat.
- Understand morphology, anatomy, reproduction and developmental changes therein through typological study and create a knowledge base in understanding the basis of plant diversity, economic values & taxonomy of plants
- Understand the details of external and internal structures of flowering plants.

SEMESTER II

COURSE TITLE: LAND PLANTS ARCHITECTURE (PAPER 2 PRACTICAL)

COURSE OUTCOME

- The students will be made aware of the group of plants that have given rise to land habit and the flowering plants. Through field study they will be able to see these plants grow in nature and become familiar with the biodiversity.
- Students would learn to create their small digital reports where they can capture the zoomed in and zoomed out pictures as well as videos in case they are able to find some rare structure or phenomenon related to these plants.
- Develop an understanding by observation and table study of representative members of phylogenetically important groups to learn the process of evolution in a broad sense.
- Understand morphology, anatomy, reproduction and developmental changes therein through typological study and create a knowledge base in understanding plant diversity, economic values & taxonomy of lower group of plants
- Understand the composition, modifications, internal structure & architecture of flowering plants for becoming a Botanist.

DIPLOMA IN PLANT IDENTIFICATION, UTILIZATION & ETHNOMEDICINE

SEMESTER III

COURSE TITLE: FLOWERING PLANTS IDENTIFICATION & AESTHETIC CHARACTERISTICS (THEORY)

COURSE OUTCOME:

After the completion of the course the students will be able to:

- To gain an understanding of the history and concepts underlying various approaches to plant taxonomy and classification.
- To learn the major patterns of diversity among plants, and the characters and types of data used to classify plants.
- To compare the different approaches to classification with regard to the analysis of data.
- To become familiar with major taxa and their identifying characteristics, and to develop in depth knowledge of the current taxonomy of a major plant family.
- To discover and use diverse taxonomic resources, reference materials, herbarium collections, publications.
- For the entrepreneur career in plants, one can establish a nursery, Start a landscaping business, Set up a farm Or Run a plantation consultancy firm

SEMESTER III

COURSE TITLE: PLANT IDENTIFICATION TECHNOLOGY (PRACTICAL)

COURSE OUTCOME:

After the completion of the course the students will be able:

- To learn how plant specimens are collected, documented, and curated for a permanent record.
- To observe, record, and employ plant morphological variation and the accompanying descriptive terminology.
- To gain experience with the various tools and means available to identify plants. 4. To develop observational skills and field experience.
- To identify a taxonomically diverse array of native plants.
- To recognize common and major plant families.
- To Understand aesthetic characters of flowering plants by making-landscapes, gardens, bonsai, miniatures
- Comprehend the concepts of plant taxonomy and classification of Angiosperms.

SEMESTER 1V

COURSE TITLE: ECONOMIC BOTANY, ETHNOMEDICINE AND PHYTOCHEMISTRY (THEORY)

COURSE OUTCOME:

After the completion of the course the students will be able to:

- Understand about the uses of plants –will know one plant-one employment
- Understand phytochemical analysis related to medicinally important plants and economic products produced by the plants
- know about the importance of Medicinal plants and its useful parts, economically important plants in our daily life and also about the traditional medicines and herbs, and its relevance in modern times

SEMESTER 1V

COURSE TITLE: COMMERCIAL BOTANY & PHYTOCHEMICAL ANALYSIS

COURSE OUTCOMES:

After the completion of the course the students will be able to:

- Know about the commercial products produced from plants.
- Gain the knowledge about cultivation practices of some economic crops.
- Understand about the ethnobotanical details of plants.
- Learn about the chemistry of plants &herbal preparations
- Can become a protected cultivator, aromatic oil producer, Pharmacologist or quality analyst in drug company.

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B.SC. 1 CHEMISTRY [CERTIFICATE IN BIOORGANIC AND MEDICINAL CHEMISTRY]

PROGRAM SPECIFIC OUTCOMES (PSOS)

- Certificate in Bioorganic and Medicinal Chemistry will give the student a basic knowledge of all the fundamental principles of chemistry like molecular polarity , bonding theories of molecules, Periodic properties of more than 111 elements,

mechanism of organic Reactions, Stereochemistry, basic mathematical concepts and computer knowledge, chemistry of carbohydrates, proteins and nucleic acids: medicinal chemistry, synthetic polymers, synthetic dyes

- Student will be able to do to qualitative quantitative and bio chemical analysis of the compounds in the laboratory.
- This certificate course is definitely going to prepare the students for various fields of chemistry and will give an insight into all the branches of chemistry and enable our students to join the knowledge and available opportunities related to chemistry in the government and private sector services particularly in the field of food safety, health inspector, pharmacist etc.
- Have a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective.

SEMESTER I

COURSE TITLE: FUNDAMENTALS OF CHEMISTRY (PAPER 1 THEORY)

COURSE OUTCOME

There is nothing more fundamental to chemistry than the chemical bond. Chemical bonding is the language of logic for chemists. Chemical bonding enables scientists to take the 100-plus elements of the periodic table and combine them in myriad ways to form chemical compounds and materials. Periodic trends, arising from the arrangement of the periodic table, provide chemists with an invaluable tool to quickly predict an element's properties. These trends exist because of the similar atomic structure of the elements within their respective group families or periods, and because of the periodic nature of the elements. Reaction mechanism gives the fundamental knowledge of carrying out an organic reaction in a step-by-step manner. This course will provide a broad foundation in chemistry that stresses scientific reasoning and analytical problem solving with a molecular perspective. Students will gain an understanding of Molecular geometries, physical and chemical properties of the molecules. • Current bonding models for simple inorganic and organic molecules in order to predict structures and important • bonding parameters. The chapter Recapitulation of basics of organic chemistry gives the most primary and utmost important • knowledge and concepts of organic Chemistry. This course gives a broader theoretical picture in multiple stages in an overall chemical reaction. It describes • reactive intermediates, transition states and states of all the bonds broken and formed. It enables to understand the reactants, catalyst,

stereochemistry and major and minor products of any organic reaction. It describes the types of reactions and the Kinetic and thermodynamic aspects one should know for carrying out any reaction and the ways how the reaction mechanism can be determined. The chapters Stereochemistry gives the clear picture of two-dimensional and three-dimensional structure of the molecules, and their role in reaction mechanism.

SEMESTER I

COURSE TITLE: QUANTITATIVE ANALYSIS (PAPER 2 PRACTICAL)

COURSE OUTCOME

- Upon completion of this course the students will have the knowledge and skills to: understand the laboratory methods and tests related to estimation of metals ions and estimation of acids and alkali contents in commercial products.
- Potability tests of water samples.
- Estimation of metal ions in samples
- Estimation of alkali and acid contents in samples
- Estimation of inorganic salts and hydrated water in samples

SEMESTER II

COURSE TITLE: BIOORGANIC AND MEDICINAL CHEMISTRY (PAPER 1 THEORY)

COURSE OUTCOME

- Biomolecules are important for the functioning of living organisms.
- These molecules perform or trigger important biochemical reactions in living organisms.
- When studying biomolecules, one can understand the physiological function that regulates the proper growth and development of a human body. T
- his course aims to introduce the students with basic experimental understanding of carbohydrates, amino acids, proteins, nucleic acids and medicinal chemistry.
- Upon completion of this course students may get job opportunities in food, beverage and pharmaceutical industries.

SEMESTER II

COURSE TITLE: BIOCHEMICAL ANALYSIS (PAPER 2 PRACTICAL)

COURSE OUTCOME

- This course will provide basic qualitative and quantitative experimental knowledge of biomolecules such as carbohydrates, proteins, amino acids, nucleic acids drug molecules.
- Upon successful completion of this course students may get job opportunities in food, beverage and pharmaceutical industries.

B.SC. II CHEMISTRY: DIPLOMA IN CHEMICAL DYNAMICS AND ANALYTICAL TECHNIQUES

SEMESTER III

COURSE TITLE: CHEMICAL DYNAMICS & COORDINATION CHEMISTRY (THEORY)

COURSE OUTCOMES:

- Upon successful completion of this course students should be able to describe the characteristic of the three states of matter and describe the different physical properties of each state of matter. kinetic theory of gases, laws of crystallography , liquid state and liquid crystals, conductometric, potentiometric, optical methods, polarimetry and spectrophotometer technique to study Chemical kinetics and chemical equilibrium. After the completion of the course, Students will be able to understand .metal- ligand bonding in transition metal complexes, thermodynamic and kinetic aspects of metal complexes.

SEMESTER III

COURSE TITLE: PHYSICAL ANALYSIS (PRACTICAL)

COURSE OUTCOMES:

- Upon successful completion of this course students should be able to calibrate apparatus and prepare solutions of various concentrations, estimation of components through volumetric analysis; to perform dilatometric experiments: one and two component phase equilibrium experiments.

SEMESTER IV

**COURSE TITLE: QUANTUM MECHANICS AND ANALYTICAL TECHNIQUES
(THEORY)**

COURSE OUTCOMES:

- Upon successful completion of this course students should be able to describe atomic structure, elementary quantum mechanics, wave function and its significance; Schrodinger wave equation and its applications; Molecular orbital theory, basic ideas – Criteria for forming molecular orbital from atomic orbitals, Molecular Spectroscopy, Rotational Spectrum, vibrational Electronic Spectrum: photo chemistry and kinetics of photo chemical reaction Analytical chemistry plays an enormous role in our society, such as in drug manufacturing, process control in industry, environmental monitoring, medical diagnostics, food production, and forensic surveys. It is also of great importance in different research areas. Analytical chemistry is a science that is directed towards creating new knowledge so that chemical analysis can be improved to respond to increasing or new demands. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
- Students will be able to function as a member of an interdisciplinary problem solving team.
- Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific
- Problems Students will gain an understanding of how to determine the structure of organic molecules using IR and NMR
- Spectroscopic techniques To develop basic skills required for purification, solvent extraction, TLC and column chromatography

SEMESTER IV

COURSE TITLE: INSTRUMENTAL ANALYSIS (PRACTICAL)

COURSE OUTCOMES:

- Upon completion of this course, chemistry majors are able to employ critical thinking and scientific inquiry in the performance, design, interpretation and documentation of laboratory experiments, at a level suitable to succeed at an entry-level position in chemical industry or a chemistry graduate program. Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

- Students will be able to function as a member of an interdisciplinary problem solving team. Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific
- Problems Students will gain an understanding of how to determine the structure of organic molecules using IR and
- NMR spectroscopic techniques
- To develop basic skills required for purification, solvent extraction, TLC and column chromatography

B.SC. 1 PHYSICS [CERTIFICATE -IN BASIC PHYSICS & SEMICONDUCTOR DEVICES]

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- This programme aims to give students the competence in the methods and techniques of calculations using Newtonian Mechanics and Thermodynamics.
- At the end of the course the students are expected to have hands on experience in modelling, implementation and calculation of physical quantities of relevance.
- An introduction into the field of Circuit Fundamentals and Basic Electronics which deals with the physics and technology of semiconductor devices is practically useful and gives the students an insight in handling electrical and electronic instruments.
- Experimental physics has the most striking impact on the industry wherever the instruments are used.
- The industries of electronics, telecommunication and instrumentation will specially recognize this course.

SEMESTER I

COURSE TITLE: MATHEMATICAL PHYSICS & NEWTONIAN MECHANICS (PAPER 1 THEORY)

COURSE OUTCOMES (COS)

- Recognize the difference between scalars, vectors, pseudo-scalars and pseudo-vectors.
- Understand the physical interpretation of gradient, divergence and curl.
- Comprehend the difference and connection between Cartesian, spherical and cylindrical coordinate systems.

- Know the meaning of 4-vectors, Kronecker delta and Epsilon (Levi Civita) tensors.
- Study the origin of pseudo forces in rotating frame.
- Study the response of the classical systems to external forces and their elastic deformation.
- Understand the dynamics of planetary motion and the working of Global Positioning System (GPS).
- Comprehend the different features of Simple Harmonic Motion (SHM) and wave propagation.

SEMESTER I

COURSE TITLE: MECHANICAL PROPERTIES OF MATTER (PAPER 2 PRACTICAL)

COURSE OUTCOMES (COS)

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the mechanical properties.
- Measurement precision and perfection is achieved through Lab Experiments.
- Online Virtual Lab Experiments give an insight in simulation techniques and provide a basis for modeling.

SEMESTER II

COURSE TITLE: THERMAL PHYSICS & SEMICONDUCTOR DEVICES (PAPER 1 THEORY)

COURSE OUTCOMES (COS)

- Recognize the difference between reversible and irreversible processes.
- Understand the physical significance of thermodynamical potentials.
- Comprehend the kinetic model of gases w.r.t. various gas laws.
- Study the implementations and limitations of fundamental radiation laws.
- Utility of AC bridges.
- Recognize the basic components of electronic devices.
- Design simple electronic circuits. 8. Understand the applications of various electronic instruments.

SEMESTER II

COURSE TITLE: THERMAL PROPERTIES OF MATTER & ELECTRONIC CIRCUITS (PAPER 2 PRACTICAL)

COURSE OUTCOMES (COS)

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the thermal and electronic properties.
- Measurement precision and perfection is achieved through Lab Experiments.
- Online Virtual Lab Experiments give an insight in simulation techniques and provide a basis for modeling.

B.SC. II DIPLOMA IN APPLIED PHYSICS WITH ELECTRONICS

SEMESTER III

COURSE TITLE: ELECTROMAGNETIC THEORY & MODERN OPTICS (THEORY)

COURSE OUTCOMES (COS):

- Better understanding of electrical and magnetic phenomenon in daily life.
- To troubleshoot simple problems related to electrical devices.
- Comprehend the powerful applications of ballistic galvanometer.
- Study the fundamental physics behind reflection and refraction of light (electromagnetic waves).
- Study the working and applications of Michelson and Fabry-Perot interferometers.
- Recognize the difference between Fresnel's and Fraunhofer's class of diffraction.
- Comprehend the use of polarimeters.
- Study the characteristics and uses of lasers.

SEMESTER III

COURSE TITLE: DEMONSTRATIVE ASPECTS OF ELECTRICITY & MAGNETISM (PRACTICAL)

COURSE OUTCOMES (COS)

- Experimental physics has the most striking impact on the industry wherever the instruments are used to study and determine the electric and magnetic properties. Measurement precision and perfection is achieved through Lab Experiments. Online

Virtual Lab Experiments give an insight in simulation techniques and provide a basis for modelling.

SEMESTER IV

COURSE TITLE: PERSPECTIVES OF MODERN PHYSICS & BASIC ELECTRONICS (THEORY)

COURSE OUTCOMES (COS)

- Recognize the difference between the structure of space & time in Newtonian & Relativistic mechanics.
- Understand the physical significance of consequences of Lorentz transformation equations.
- Comprehend the wave-particle duality.
- Develop an understanding of the foundational aspects of Quantum Mechanics.
- Study the comparison between various biasing techniques.
- Study the classification of amplifiers.
- Comprehend the use of feedback and oscillators.
- Comprehend the theory and working of optical fibers along with its application

SEMESTER IV

COURSE TITLE: BASIC ELECTRONICS INSTRUMENTATION (PRACTICAL)

COURSE OUTCOMES (COS)

- Basic Electronics instrumentation has the most striking impact on the industry wherever the components /instruments are used to study and determine the electronic properties. Measurement precision and perfection is achieved through Lab Experiments. Online Virtual Lab Experiments give an insight in simulation techniques and provide a basis for modelling.

B.SC. MATHEMATICS [CERTIFICATE COURSE IN APPLIED MATHEMATICS]

PROGRAMME OUTCOME

- ❖ PO1: It is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for the same.

- ❖ PO2: It is to develop enhanced quantitative skills and pursuing higher mathematics and research as well.
- ❖ PO3: Students will be able to develop solution oriented approach towards various issues related to their environment.
- ❖ PO4: Students will become employable in various govt. and private sectors
- ❖ PO5: Scientific temper in general and mathematical temper in particular will be developed in students.

PROGRAMME SPECIFIC OUTCOME

- PSO1: Student should be able to possess recall basic idea about mathematics which can be displayed by them.
- PSO2: Student should have adequate exposure to many aspects of mathematical sciences.
- PSO3: Student is equipped with mathematical modeling ability, critical mathematical thinking, and problem solving skills etc.
- PSO4: Student should be able to apply their skills and knowledge in various fields of studies including, science, engineering, commerce and management

SEMESTER I

COURSE TITLE: DIFFERENTIAL CALCULUS & INTEGRAL CALCULUS (PAPER 1 THEORY)

COURSE OUTCOMES (COS)

- CO1: The programme outcome is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for developing enhanced quantitative skills and pursuing higher mathematics and research as well.
- CO2: By the time students complete the course they will have wide ranging application of the subject and have the knowledge of real valued functions such as sequence and series. They will also be able to know about convergence of sequence and series. Also, they have knowledge about curvature, envelope and evolutes and trace curve in polar, Cartesian as well as parametric curves.
- CO3: The main objective of the course is to equip the student with necessary analytic and technical skills. By applying the principles of integral he learns to solve a variety of practical problems in science and engineering.

- CO4: The student is equipped with standard concepts and tools at an intermediate to advance level that will serve him well towards taking more advance level course in mathematics.

SEMESTER I

COURSE TITLE: : PRACTICAL (PAPER 2)

COURSE OUTCOMES (COS)

- CO1: The main objective of the course is to equip the student to plot the different graph and solve the different types of equations by plotting the graph using different computer software such as Mathematica /MATLAB /Maple /Scilab/Maxima etc.
- CO2. After completion of this course student would be able to know the convergence of sequences through plotting, verify Bolzano-Weierstrass theorem through plotting the sequence, Cauchy's root test by plotting n th roots and Ratio test by plotting the ratio of n th and $(n + 1)$ th term.
- CO3. Student would be able to plot Complex numbers and their representations, Operations like addition, subtraction, Multiplication, Division, Modulus and Graphical representation of polar form.
- CO4: Student would be able to perform following task of matrix as Addition, Multiplication, Inverse, Transpose, Determinant, Rank, Eigenvectors, Eigenvalues, Characteristic equation and verification of the Cayley-Hamilton theorem, Solving the systems of linear equations.

SEMESTER II

COURSE TITLE: MATRICES AND DIFFERENTIAL EQUATIONS & GEOMETRY

COURSE OUTCOMES (COS)

- CO1: The subjects of the course are designed in such a way that they focus on developing mathematical skills in algebra, calculus and analysis and give in depth knowledge of geometry, calculus, algebra and other theories.
- CO2: The student will be able to find the rank, eigen values of matrices and study the linear homogeneous and non-homogeneous equations. The course in differential equation intends to develop problem solving skills for solving various types of differential equation and geometrical meaning of differential equation.

- CO3: The subjects learn and visualize the fundamental ideas about coordinate geometry and learn to describe some of the surface by using analytical geometry.
- CO4: On successful completion of the course students have gained knowledge about regular geometrical figures and their properties. They have the foundation for higher course in Geometry.

B.SC.II DIPLOMA IN MATHEMATICS

SEMESTER III

COURSE TITLE: ALGEBRA & MATHEMATICAL METHODS

COURSE OUTCOMES:

- CO1: Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce students to basic concepts of Group, Ring theory and their properties.
- CO2: A student learning this course gets a concept of Group, Ring, Integral Domain and their properties. This course will lead the student to basic course in advanced mathematics and Algebra.
- CO3: The course gives emphasis to enhance students' knowledge of functions of two variables, Laplace Transforms, Fourier Series.
- CO4: On successful completion of the course students should have knowledge about higher different mathematical methods and will help him in going for higher studies and research. Credits:

SEMESTER IV

COURSE TITLE: DIFFERENTIAL EQUATIONS & MECHANICS

COURSE OUTCOMES:

- CO1: The objective of this course is to familiarize the students with various methods of solving differential equations, partial differential equations of first order and second order and to have qualitative applications.
- CO2: A student doing this course is able to solve differential equations and is able to model problems in nature using ordinary differential equations. After completing this

course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, non linear evolution equation etc. These entire courses are important in engineering and industrial applications for solving boundary value problem.

- CO3: The object of the paper is to give students knowledge of basic mechanics such as simple harmonic motion, motion under other laws and forces.
- CO4: The student, after completing the course can go for higher problems in mechanic such as hydrodynamics, this will be helpful in getting employment in

B.SC. ZOOLOGY [CERTIFICATE COURSE IN MEDICAL DIAGNOSTICS & PUBLIC HEALTH]

PROGRAMME SPECIFIC OUTCOMES (PSOS)

- PSO1 This course introduces System Biology and various functional components of an organism. Emphasis will be on physiological understanding abnormalities and anomalies associated with white blood cells and red blood cells. The course emphasizes cell identification, cell differentiation and cell morphology evaluation procedures. This will enhance hematology analytical skills along with skill of using many instruments.
- PSO 2 The students will learn the basic principles of genetics and how to prepare karyotypes to study the chromosomes.
- PSO 3 How chromosomal aberrations are inherited in humans by pedigree analysis in families.
- PSO 4 The students will have hands-on training in the techniques like microscopy, centrifugation and chromatography, and various biochemical techniques, preparation of slides which will help them in getting employment in pathology labs and contribute to health care system.
- PSO 5 The Certificate courses will enable students to apply for technical positions in government and private labs/institutes.

SEMESTER I

COURSE TITLE: CYTOLOGY, GENETICS AND INFECTIOUS DISEASES (THEORY)

COURSE OUTCOME

The student at the completion of the course will be able to:

- Understand the structure and function of all the cell organelles.
- Know about the chromatin structure and its location.
- To be familiar with the basic principle of life, how a cell divides leading to the growth of an organism and also reproduces to form new organisms. How one cell communicates with its neighbouring cells?
- Understand the basic principles of genetics and how genes (earlier called factors) are inherited from one generation to another.
- Understand the Mendel's laws and the deviations from conventional patterns of inheritance.
- Comprehend how environment plays an important role by interacting with genetic factors.
- How to detect chromosomal aberrations in humans and study the pattern of inheritance by pedigree analysis in families.

SEMESTER I

COURSE TITLE: GENETICS AND INFECTIOUS DISEASES (LAB)

COURSE OUTCOME

At the completion of the course students will learn Hands-on:

- To use simple and compound microscopes.
- To prepare slides and stain them to see the cell organelles.
- To be familiar with the basic principle of life, how a cell divides leading to the growth of an organism and also reproduces to form new organisms.
- The chromosomal aberrations by preparing karyotypes.
- How chromosomal aberrations are inherited in humans by pedigree analysis in families

SEMESTER II

COURSE TITLE: GENETICS AND INFECTIOUS DISEASES

COURSE OUTCOME

The student at the completion of the course will learn:

- To develop a deep understanding of structure of biomolecules like proteins, lipids and carbohydrates
- How simple molecules together form complex macromolecules.
- To understand the thermodynamics of enzyme catalyzed reactions.
- Mechanisms of energy production at cellular and molecular levels.
- To understand systems biology and various functional components of an organism.
- To explore the complex network of these functional components.
- To comprehend the regulatory mechanisms for maintenance of function in the body.

SEMESTER II

COURSE TITLE: PHYSIOLOGICAL, BIOCHEMICAL & HEMATOLOGY (LAB)

COURSE OUTCOME

The student at the completion of the course will be able to:

- Understand the structure of biomolecules like proteins, lipids and carbohydrates
- Perform basic hematological laboratory testing,
- Distinguish normal and abnormal hematological laboratory findings to predict the diagnosis of hematological disorders and diseases.

B.SC II DIPLOMA IN MOLECULAR DIAGNOSTICS AND GENETIC COUNSELLING

PROGRAMME SPECIFIC OUTCOMES (PSOS)

- PSO1 The student at the completion of the course will be able to have a detailed and conceptual understanding of molecular processes viz. DNA to trait. The differential regulation of genes in prokaryotes and eukaryotes leads to the development of an organism from an embryo.
- PSO 2 The students will be able to understand and apply the principles and techniques of molecular biology which prepares students for further career in molecular biology. Independently execute a laboratory experiment using the standard methods and techniques.
- PSO 3 The principles of genetic engineering, gene cloning, immunology and related technologies will enable students to play an important role in applications of biotechnology in various fields like agriculture, forensic sciences, industry and human health and make a career out of it. Students can have their own start-ups as well.

- PSO 4 The basic tools of bioinformatics will enable students to analyze large amount of genomic data and its application to evolutionary biology. Apply knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics existing software effectively to extract information from large databases and to use this information in computer modelling.
- PSO 5 The Diploma courses will ensure employability in Hospitals/Diagnostics and Pathology labs with good hands-on training. It will also enable students to take up higher studies and Research as their career and work in renowned labs in the country and abroad.

SEMESTER III

COURSE TITLE: MOLECULAR BIOLOGY, BIOINSTRUMENTATION & BIOTECHNIQUES (THEORY)

COURSE OUTCOMES:

- The student at the completion of the course will be able to have:
- A detailed and conceptual understanding of molecular processes viz. DNA to trait.
- A clear understanding of the processes of central dogma viz. transcription, translation etc. underlying survival and propagation of life at molecular level.
- Understanding of how genes are ultimately expressed as proteins which are responsible for the structure and function of all organisms.
- Learn how four sequences (3 letter codons) generate the transcripts of life and determine the phenotypes of organisms.
- How genes are regulated differently at different time and place in prokaryotes and eukaryotes.

SEMESTER III

COURSE TITLE: BIOINSTRUMENTATION & MOLECULAR BIOLOGY LAB (PRACTICAL)

COURSE OUTCOMES:

- The student at the completion of the course will be able to
- Understand the basic principles of microscopy, working of different types of microscopes

- Understand the basic techniques of centrifugation and chromatography for studying cells and separation of biomolecules
- Understand the principle of measuring the concentrations of macromolecules in solutions by colorimeter and spectrophotometer and use them in Biochemistry.
- Learn about some of the commonly used advance DNA testing methods.

SEMESTER IV

COURSE TITLE: GENE TECHNOLOGY, IMMUNOLOGY AND COMPUTATIONAL BIOLOGY (THEORY)

COURSE OUTCOMES:

The student at the completion of the course will be able to:

- Understand the principles of genetic engineering, how genes can be cloned in bacteria and the various technologies involved in it.
- Know the applications of biotechnology in various fields like agriculture, industry and human health.
- To have an in depth understanding about Immune System & its mechanisms.
- Get introduced to DNA testing and utility of genetic engineering in forensic sciences.
- Get introduced to computers and use of bioinformatics tools.
- Enable students to get employment in pathology/Hospital.
- Take up research in biological sciences.

SEMESTER IV

COURSE TITLE: GENETIC ENGINEERING AND COUNSELLING LAB (PRACTICAL)

COURSE OUTCOMES:

The student at the completion of the course will be able to:

- Understand the principles of genetic engineering with hands-on experiments in mutation detection, testing of infectious diseases like Covid 19.
- Get introduced to DNA testing and utility of genetic engineering in forensic sciences.
- Apply knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics existing software effectively to extract information from large databases and to use this information in computer modelling.

- Use bioinformatics tools to find out evolutionary/phylogenetic relationship of organisms using gene sequences.
- Get employment in Hospitals/Diagnostic and forensic labs/Counsel families with genetic disorders.
- Enable students to take up research in biological sciences.
