



पुष्पं पुष्पं विचिन्वीत मूलच्छेदं न कारयेत्

Pick the Flowers, do not uproot the plants



GOVERNMENT INSTITUTE OF SCIENCE
AURANGABAD

M. Sc. Botany Program and Coures Outcome

On completion of program students will be able to

1. Think Critically - Get ability to apply the process of science by formulating hypotheses and design experiments based on the scientific method.
2. Analyze and interpret results generated through studies in botany, taxonomical treatments, field studies, excursion tours and laboratory techniques used in the subject.
3. Use quantitative reasoning by using mathematical calculations and graphing skills to solve problems in plant science (Botany)
4. Effective Communication and collaborate with other disciplines by effectively communicating the fundamental concepts of Botany in written and oral format.
5. Identify credible scientific sources to interpret and evaluate the evidences
6. Understand the relationship between science and society by recognizing and discussing logical, scientific and ethical issues in Botany subject.
7. Environment and Sustainability: Understand the issues of environmental contexts and sustainable development with respect to assessment, conservation and utilization of floral diversity

Program specific outcomes

On completion of program students will be specifically able to

1. Identify classify the plants by using the key characters.
2. Prepare and view specimens for examination using light microscopy
3. Use pure culture and selective techniques to isolate fungi, plant pathogens, algae and identify them growing on media.
4. Qualitative and quantitative estimate the number of floral components by using enumeration and suitable sampling and techniques.
5. Use appropriate plant molecular techniques and use of instrumentation realated to it.
6. Practice safe laboratory procedures, using appropriate protective, biosafety and emergency procedures.
7. Documentation and report writing on experimental protocols, results and conclusions, study tours and filed visits etc.

BOT 401 CELL BIOLOGY

COURSE OBJECTIVES

The main objective of the course is to make students aware of -

- **Prokaryotic and eukaryotic Cell:** The ultra-structural details and comparative assessment.
- **Plasma membrane:** Molecular organization, current models and functions. Cell wall architecture, biosynthesis, assembly, growth and cell expansion.
- **Plasmodesmata:** Structure and role in movement of molecules and macromolecules.
- **Cytoskeleton:** Organization and role of microtubules and microfilaments. Implications in flagellate and other movements.
- **Plant vacuole:** Tonoplast membrane, ATPases, transporters, as storage organelle.
- **Chloroplast and Mitochondria:** Ultrastructure, function and biogenesis. The organization of genome and patterns of gene expression.
- **Nucleus:** Microscopic and submicroscopic organization. Structure and function of nuclear envelope. The ultrastructure of nucleolus and its role in rRNA biosynthesis.
- **Ribosomes:** Structure and site of protein synthesis. Mechanism of translation, details of initiation, elongation and termination. The structure and role of RNA.

COURSE OUTCOMES

After successful completion of this course, students will be able to understand :

- The cell structures in relation to function of cells the fundamental unit of life, are concerned in this course along with molecules present in cells.
- Apply the principles of cell biology in designing experiment, statistical analysis, and interpretation of results
- Operate and solve exercise using computation statistics software.
- Get acquainted with basic approach in the research methodology.

BOT 402 MOLECULAR BIOLOGY

COURSE OBJECTIVES

- To understand the concepts in prokaryotic, eukaryotic Plant system with respect to-
- To study the central dogma of molecular biology (replication, transcription, and translation)
- **Cell signaling**
- **Protein sorting**
- **Cell Cycle and its molecular aspects**
- **Molecular Cytogenetics**
- **Restriction mapping**
- **Laboratory Techniques:**

COURSE OUTCOMES

- After successful completion of this course, students will be able to:
- Acquaint with concepts in prokaryotic, eukaryotic, and viral genetics
- Explain central dogma of molecular biology (replication, transcription, and translation)
- Enlist and explain types of mutation, gene regulation and transposable element
- **Conversant with Laboratory Techniques** viz. Microscopy, SEM & TEM, Ultracentrifugation, fractionation, Electrophoresis, PCR, GISH, FISH and Immunochemical techniques. The flow cytometry and confocal microscopy in karyotype analysis.
- Isolation of plant DNA and its quantification.
- Isolation of RNA and its quantitation
- Estimation of seed proteins

BOT 403 BIOLOGY AND DIVERSITY OF VIRUS, PHYTOPLASMA, BACTERIA, ALGAE AND FUNGI

COURSE OBJECTIVES

- To understand the phycology with special reference to Indian work.
- Algae in diversified habitats (Terrestrial, fresh water, marine) Criteria used in classification of algae, Role of algae in human welfare
- General account of thallus organization, reproduction and life history of algae.
- Study of important groups of algae **Cyanophyta** , **Chlorophyta**, **Xanthophyta** , **Bacillariopyta**, **Phaeophyta & Rhodophyta**
- **Fungi:** General Characters, Classification., Economic importance of fungi in medicine, Agriculture (Biopesticide an biofertilizer), food (SCP Mushrooms)
- Fungi as plant pathogen – General account of different groups and type study of fungi as pathogen. **Mastigomycotina** , **Zygomycotina**, **Ascomycotina**, **Basidiomycotina** & **Deuteromycotina**
- **Bacteria:** General characters, ultrastcture, classification, Role of bacterium in crop improvement and bacterial disease of plants.
- **Phytoplasma:** General characters, economic uses, classification, role and disease of plants.
- **Viruses:** General account, ultrasturcture and economic importance of viruses.

COURSE OUTCOMES

- Comprehend the diversity of lower cryptogams (Algae, Fungi, Bacteria, Phytoplasma and viruses. Collection and study of algae, fungi, bacteria from different localities, Identification up to generic level.
- Recognize the morphology, anatomy , physiology, reproduction and lifecycle pattern.
- Their diversification and familiarize with various ecological niche.
- Positive and negative values.

BOT 404 TAXONOMY OF ANGIOSPERMS**COURSE OBJECTIVES**

- Deals with naming and classification of plants their interrelationships and evolution.
- Deals with recent developments in plant systematic and phylogenetics
- Criteria used for classification; phases of plant classification and brief history on account
- Botanical Nomenclature: Concept of nomenclature, Binomial nomenclature and its advantages.
- Taxonomic literatures and Use of computers in angiosperms taxonomy.
- Taxonomic evidences: Morphology, anatomy, embryology, palynology, cytology, phytochemistry and numerical taxonomy
- Angiosperm Families: Nymphaeaceae, Hydatellaceae, Magnoliaceae, Papaveraceae, Malvaceae, Sapotaceae, Apiaceae, Asteraceae, Arecaceae and Poaceae

COURSE OUTCOMES

After successful completion of this course, students will be able to:

- Study plant morphology
- Description of a plant specimen.
- Study of at least 20 locally available families of flowering plants.
- Identification of genus and species of locally available wild plants.
- Preparation of botanical keys at generic level by locating key characters.
- Knowledge of at least 10 medicinal plant species.
- Knowledge of secondary metabolites and its use in taxonomy.

BOT 405 CYTOLOGY AND GENETICS

COURSE OBJECTIVES

To understand the concepts and details of heredity and variation at molecular and cellular levels.

Deals with more recent development which have taken place in the field of genetics besides providing introduction to methods of plant breeding of improvement of crop plants with respect to --

- Genetics of prokaryotic and eukaryotic organelles
- Chromatin organization
- Structural and Numerical alterations in chromosomes
- Mutation
- DNA Damage and repair mechanism
- Cytogenetics of aneuploids and structural heterozygotes:

COURSE OUTCOMES

After successful completion of this course, students will be able to:

- Know about the induction of polyploidy in plants using colchicines, methods of application of colchicine.
- Isolation of biochemical mutants following physical and chemical mutagenic
- Isolation of chlorophyll mutants following physical and chemical mutagenic treatments.
- Isolation of morphological mutants following physical and chemical mutagenic treatments.
- Karyotype analysis , Meiosis of complex translocation heterozygotes.
- Meiotic behaviour of monosomy, trisomy in plants and its effect.
- Chromosomal behaviour in mutagen treated plants.
- Chromatin organization, Structural and Numerical alterations in chromosomes

BOT 406 PLANT DEVELOPMENT AND REPRODUCTION

COURSE OBJECTIVES

Deals with regulation of growth and development of plant as affected by various growth regulations, thus cross talk and extrinsic biotic and abiotic factors.

To know the various structural and anatomical components of plant tissue and reproductive parts *viz.*

- **Meristems:** Organization of shoot and root apical meristem its structure and function,
- **Tissue systems:** Differentiation and functions of epidermis, parenchyma, chlorenchyma, sclerenchyma, laticifers and glands.
- **Vascular tissues:** Origin, structure and functions its taxonomic significance, development of wood in relation to environment.
- **Leaf:** Growth and differentiation, differentiation of epidermis (with special reference to stomata and trichomes) and mesophyll.
- **Root:** Initiation and development
- **Structure and development of** Flower, Male gametophyte, Female gametophyte , Seed development and fruit growth
- Mechanism of pollination

COURSE OUTCOMES

After successful completion of this course, students will be able to:

- Know about plants anatomical structure, their developmental patterns.
- Plant reproductive parts development of male, female gametophytes and fruits.
- Vascular tissues and its constituents by sections and maceration, wood anatomy, TS, TLS and RLS
- Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem) , Secretary tissues (Mucilage Canals, Resin canals, Nectaries, and oil glands), laticifers (Latex cells and Vessels).
- Normal and abnormal secondary growth etc.

BOT 407 BIOTECHNOLOGY

COURSE OBJECTIVES

Provides a detailed view of the visualizing concepts and technique for genetic engineering and biotechnology.

Deals mainly with science, methodology and applications of plant tissue culture methods in

- Cell and organ culture
- Practical approaches of single cell culture
- Applications of tissue culture
- Somatic embryogenesis, protoplast isolation, regeneration of protoplasts and protoplasts fusion, Synthetic seeds, generation of cybrid and hybrids.
- Cryopreservation technique.
- Recombinant DNA technology Gene cloning, Vectors, Role of *Agrobacterium*, Gene cloning techniques.

COURSE OUTCOMES

After successful completion of this course, students will be able to:

- Know about Equipment's required in Tissue culture Lab
- Media preparation techniques for different plants
- Sterilization techniques for media as well as for explants
- Explant Culture.- Anther culture Pollen culture, Micropropagation. Embryo rescue technique.
- Somaclonal variation. *In vitro* mutation. Isolation of plant protoplasts and viability testing.
- Protoplast fusion techniques.
- Tissue culture of important Horticultural, medicinal plants

BOT 408 PLANT PHYSIOLOGY AND METABOLISM

COURSE OBJECTIVES

Deals with selected topics of high important plant Physiology and Biochemistry.

- Plant water relations
- Enzyme
- Photosynthesis
- Respiration
- Nitrogen Metabolism
- Lipid Metabolism
- Plant Growth
- Plant Development

COURSE OUTCOMES

- After completion of the course the students are familiar with various physiological aspects involved in the plant development.
- Also the role of enzymes in it and mechanism of photosynthesis, respiration, nitrogen and lipid metabolism.
- The students are able to isolate starch, pectine and various nutritive products from the plants.
- Qualitative and quantification of the plant contents and its biochemistry and mode /mechanism of synthesis etc.

BOT 501 BIOLOGY AND DIVERSITY OF BRYOPHYTES, PTERIDOPHYTES AND GYMNOSPERMS

COURSE OBJECTIVES

- Highlights advances made in diversity analysis, developmental biology, reproductive biology and phylogenetics of the lower plants with female organ being archegoniuous present in bryophytes, pteridophytes and some most gymnosperms.
- Adaptive mechanism of the lower plant.
- Economic importance of the bryophytes, pteridophytes and gymnosperms

COURSE OUTCOMES

After successful completion of this course, students will be able to:

- To know about morphological, anatomical and developmental patterns in the bryophytes, pteridophytes and gymnosperms.
- To know about the reproductive parts their development and mechanism of reproduction and life cycle pattern.
- Thallus and wood anatomy, Mechanical tissues (Collenchyma, Sclerenchyma, Stone cells and Xylem) , Secretary tissues (Mucilage Canals, Resin canals, Nectaries, and oil glands), laticifers (Latex cells and Vessels).
- Economic values of the lower plants.

BOT 502 ECOLOGY AND CONSERVATION

COURSE OBJECTIVES

Strategies adopted by the organisms under changing environment in relation to their biogeographic distribution. The students are made conversant with the following topics-

- **Structure of ecosystem:**
- **Functions of ecosystem:**
- **Community ecology:**
- **Biogeography:**
- Environmental pollution in relation to air, water and soil. Use of fertilizer, pesticides and other chemicals in agriculture and hygiene and their disposal.
- **Climate change:** Greenhouse gases, their sources, trends and role, Ozone layer and its depletion (Global warming, Sea level rise, UV radiation) acid rain, Bioindicator and biomarkers of environmental health.
- **Biodiversity:** Concept, types and situation in India. IUCN categories. Strategies of conservation: *In situ* conservation & *Ex situ* conservation measures.
- Various act related to Bio Diversity conservation and protection and international conventions.

Knowledge on ecology, and ecological dynamics CO2 Ability to correlate ecological dynamics and regulation of vital processes on earth as biogeochemical cycles CO3 Ability to interpret ecosystem services, ecological resilience, ecological economics, and landscape ecology CO4 Set up experiments to appreciate concepts of Ecology CO5 Critically examine the forces impacting ecosystems viz., climate change, stress, population, consumerism, globalization, land use change

COURSE OUTCOMES

- On completion of this course the students are able to analyze various types of ecosystems, correlate different ecosystems.
- To analyze the threat and suggest conservative measures.
- The students are also trained in the environmental impact analysis
- Students are able to analyze, monitor various physical, chemical and biological properties of soil water and air.

BOT 521 E APPLIED MYCOLOGY –I

COURSE OBJECTIVES

- Understanding the concept of fermentation and various fermentation techniques.
- Use of fungi in food feed and various industrial products.
- Various types of Mushroom cultivation practices and its importance and economics.
- Screening techniques of the fungi for various industrial application.

COURSE OUTCOMES

- Describe the microorganisms that participate in fermentation – production & processes.
- Evaluate the impact of different types of microorganisms on the final characteristics of the product.
- Identify the origin of the principal microorganisms of importance in the industrial environment.
- Know procedures and strategies for mushroom cultivation.
- Know the role of microorganisms in different production processes in order to improve these processes and ensure their success.

BOT 522E APPLIED MYCOLOGY –II

COURSE OBJECTIVES

- Detection and assay of fermentation products
- Principal and working process of instruments used in fermentation industry.
- Role of fungi in cheese production, its types and process

COURSE OUTCOMES:

After completion of the course the students are able to –

- Handle instruments related to fermentation
- Conversant with Spectroscopic, Chromatographic, techniques, HPLC, HPTLC, and various techniques,
- Screening of fungi for acid, alcohol, cellulose, amylase and various organic acid production

BOT 521 F BIODIVERSITY –I

COURSE OBJECTIVES

- Biodiversity concept, Origin and evolution of diversity, Types of biodiversity, Estimation of known floras and faunas, Importance of Biodiversity, Revision of ecosystem: organization, structure, function and energetics.
- **Genetic Diversity:** Definition, Concept and importance, Nuclear centre and regional centres of origin, Germ-plasm,
- **Species diversity:** Species concept and definition, estimation and plant global status and with India, taxonomic procedure, taxa delimitation.
- **Ecological Diversity:** Types ecosystem diversity (Terrestrial and aquatic), Forest ecosystem types (Tropical, Subtropical, temperate and alpine).
- **Agricultural and cropland diversity:** Agricultural and cropland diversity concept, Crop domestication, India's status for primary and secondary agricultural crops.

COURSE OUTCOMES

- Systematically understand biodiversity and its vital role in ecosystem function
- Identify the importance of biodiversity in natural environments Critically examine biodiversity and human linkages, and help policy formulating for conservation Application of knowledge in general communication for public extension

BOT 522 F BIODIVERSITY –II

COURSE OBJECTIVES

- **Diversity Distribution:** Mega diversity regions, Endemism concept and its types, World Hots spots, Western Ghats and Eastern Himalayas.
- **Modern methods in taxonomy:** Comparative morphology, Cytological methods, dermal studies, root and stem anatomy, vessel study, Chemotaxonomy, Embryology And Palynology.
- **Numerical Taxonomy:** Numerical treatment data generation: Similarity concept, matrix building, assessment, correlation, distance calculation duster method, dendrograms, computer programs.
- **Cladistics and Phenetics:** Introduction, definition of Cladistics and phenetics, methodology of genetics, diversity concept and importance of gene mapping, DNA finger printing and its applications.

COURSE OUTCOMES

- Appreciate the need of biodiversity conservation in the context of various developmental pathways and policy framework that the mankind has been undergoing
- Concepts of Hotspots, megadiversity regions of the world.
- Use of modern methods in plant taxonomy viz. Cytological, chemical, embryological pollen characters along with micromorphological features.
- Concept of numerical taxonomy
- Concept and use of cladistics, phenetics, and molecular tool in biodiversity studies.

BOT 525/ BOT 526 SERVICE COURSE

- This course is an optional but compulsory for completion of the degree.
- The students are supposed to take any one of the course of their interest other than the course offered in their Principle subject (Botany) subject.
- This is to learn addition subject other than the principle subject.

COURSE OUTCOMES

- The students can correlate the knowledge gain in this subject with his principle subject .
- This gives an opportunity to learn other subjects of his interest which is not offered in his principle subject

BOT 503 BIOPROSPECTING AND PLANT RESOURCE UTILIZATION

COURSE OBJECTIVES

: Is to apprise students of conventional and non-conventional plant resources being used by human, their effective and sustainable utilization and improvement by biotechnological tools.

- **Medicinal Plants:** Bioprospecting/ Pharmaceutical Bioprospecting: for new drugs, assays in Bioprospecting, Antioxidant assay – NO free radical scavenging assay, Antigenotoxicity assay – MTT assay, Antiviral activities of plants – SRB assay.
- **Marine Bioprospecting:** Sources of marine planktons and their bioprospecting, Isolation and cultivation of marine bioresources, Isolation of Marine Yeast and its industrial applications, bioactive chemicals from seaweeds and their applications. Understand the common cultivation methods of microalgae including photobioreactors and open ponds.
- Analyze the major cultivation methods of seaweeds, along with detailed life history of selected high-value seaweed species from India
- **Microbial Bioprospecting:** Isolation of microbial metabolites and their bio-activity, endophytic microbial products as antibiotics.
- **Origin, evolution, cultivation and uses** - food, fodder, fibers, oil yielding crops, wood and timber (at least 5 examples each), Non-wood forest products (NWFPS): Bamboos, Gums, Dyes, Resins, Fruits etc.
- **Medicinal and Aromatic plants:** Morphological peculiarities, chemical properties and uses (at least 5 examples each)
- **Phytochemistry:** Separation techniques – column chromatography and HPLC technique, secondary metabolites, pharmacognostic procedures, authentication of specimens, Preservation of plants and plants products.

COURSE OUTCOMES

On completion of this course, the students will be able to:

- Understand core concepts of Economic Botany and relate with environment, populations, communities, and ecosystems
- Develop critical understanding on the evolution of concept of organization of apex new crops/varieties, importance of germplasm diversity, issues related to access and ownership.
- Develop a basic knowledge of taxonomic diversity and important families of useful plants.
- Understand the common cultivation methods of microalgae including photobioreactors and open ponds, Seaweed bioresources etc.
- Appreciate the diversity of plants and the plant products in human use.
- Understand the concept of IPR, various legal issues related to IPR.
- Exploring the potential of Marine bioresources, Microbial, medicinal plants etc.
- Various phytochemical techniques, industrial process, pharmacognostic procedures, authentication of specimens, Preservation of plants and plants products

BOT 504 GENETIC ENGINEERING AND BIOINFORMATICS

COURSE OBJECTIVES

Deals with fundamentals of bioinformatics tools, computational biology and statistical methods utmost necessary for contemporary research in plant science.

- To get introduced to the basic concepts of genetic engineering
- To get introduced to Bioinformatics and its significance in Biological data analysis.
- Describe the history, scope and importance of Genetic Engineering, Bioinformatics and role of internet in Bioinformatics.
- Explain about the methods to characterize and manage the different types of Biological data.
- Classify different types of Biological Databases. Introduction to the basics of sequence alignment and analysis.
- Explain about different types of protein and other organism specific databases.

COURSE OUTCOMES

On completion of this course, the students will be able to:

- To use genetic engineering tools in crop improvement
- Use the Bioinformatics tool in Biological data analysis.
- Able to explain the methods used for characterizing and managing Biological data.
- Classify different types of Biological Databases.

BOT 523€ APPLIED MYCOLOGY –III

COURSE OBJECTIVES

- Deals with all microbes especially fungi and the technologies for their effective uses in industry and mitigation of environmental concerns.
- Introduction to fungi & their significance to human
- Cultivation of Food related, fermentation, SCP and other microbial products
- Fermentation of Alcohol - Microorganism, Alcohol as fuel Source, Use of ethanol in vehicles as fuel, Sugar containing raw material, Starch raw materials

COURSE OUTCOMES

- Ideas about use of fungi and exploring the fungal organisms for their valuable products
- Cultivation of fungi for food, fermentation, SCP and other microbial products
- Familiar with Fermentation technology

BOT 523 (F) BIODIVERSITY –III

COURSE OBJECTIVES

- **Introduction of Angiosperms:** Definition, scope, salient features of Angiosperms, Comparative study with Gymnosperms. Concept of Taxonomy, Origin and evolution in relation to Geological time scale.
- **Plant Systematics:** Concept of Artificial, Natural and Phylogenetic systems of classifications. Systems of Classifications A.P.de Candolle, Hutchinson and Cronquests's and its merits and demerits.
- **Study of Families:** Ranunculaceae, Papavaraceae, Malvaceae, Fabaceae, Rubiaceae, Asteraceae, Solanaceae, Verbenaceae, Euphorbiace, Liliaceae and Orchicaceae.
- **Taxonomic tools in Angiosperms:** Keys, Plant inventory and exploration, Herbarium techniques, Cryo preservation, Botanical Garden , Major herbaria of the World and India.

COURSE OUTCOMES

The course will empower the students by:

- Gaining in-depth knowledge salient features of angiosperms, comparative studies of Gymnosperms, concept of origin and evolution of angiosperms.
- Understanding various systems of classifications
- Detailed studies on commonly growing families
- Development of taxonomic tools in plants systematics.

BOT 524 (E) APPLIED MYCOLOGY –IV

COURSE OBJECTIVES

- Fermentation Media - Media Composition, Growth Factors, Precursors, Antifoaming Agents, Inoculums Media, Media Economics
- Scaleup-Off Fermentation- Fermentation tank, Laboratory fermenters, Pilot-Plant fermenters, Designing of fermenters
- Industrial Effluent- Application of Industrial waste, Management of Industrial waste, Management of Industrial waste disposal
- Biological waste management -Objectives of Biological treatment, Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Imhoff-tanks, Sludge-Digestion tanks
- Culture Maintenance - Slants and broths, Freezing liquid Nitrogen, Importance of Culture maintenance with reference to R&D laboratories

COURSE OUTCOMES

After completion of the course the students are able to-

- Design the media for fermentation.
- Maintain the interested fungal organism in the proper condition.
- Pilot to large scale production techniques.
- Application and management of industrial effluents

BOT 524 (F) BIODIVERSITY -IV

COURSE OBJECTIVES

- **Ecological Aspects:** Role of Ecological parameters, Concept of estimation of quadrat methods, density, abundance, frequency concept and estimation.
- **Analysis of Characters:** Characters weighing: Concept and definition, primitive and advanced characters, good vs bad characters, qualitative vs quantitative characters.
- **RET categorisation:** Impacts on Diversity depleting resources: RET, Threatened species and their impacts, global warming impact, Red data book IUCN and Species extinction.
- **Biodiversity Conservations:** Causes and consequences of loss of Biodiversity, Biodiversity its commercial value campaign, awareness, conservation methods, role of pollution control board, Public awareness, NGOs and Industries in conservation.

COURSE OUTCOMES

- In-depth studies on ecological parameters in biodiversity studies.
- Concept of characters and character weighing
- Identification of Rare, Endangered and Threatened species from the region
- Developing critical thinking for the conservation of biodiversity and strategies used for the conservation of plant diversity
- Developing critical thinking for shaping strategies viz. scientific, social, economic and legal issues; for environmental protection and conservation of biodiversity, social equity and sustainable development.
- Adopting sustainability as a practice in life, society and industry

BOT 525 PROJECT WORK

COURSE OBJECTIVES

- Each student complete a dissertation on a topic mutually agreed between him/her and a faculty member, who acts as a mentor.
- The objective is to train students in basics of research, literature recession, analysis and expression of their understanding of the topic in their own words.
- To create research oriented thought process and basic training

COURSE OUTCOMES

On completion of the research project the students will be able to-

- Design the experiments of his interest and execute it
- Trained in handling of the basic and advance instruments
- Generate the data, compile and analyze and interpret the data.
- Presentation skill is developed in the students
- The student is ready to work in any R&D setup