PRACTICAL COURSES
BSP 554 BIOTECHNOLOGY LAB

Course Outcomes:

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

CO 1. Develop laboratory skills in biotechnology
CO 2. Use solid surface fermentation technique for production of antibiotics.
CO 3. Carry out PCR and do the analysis
CO 4. Do vermicomposting and mushroomcultivation.
CO 5. Perform plant tissue culture techniques and check the nutritional and anti-nutritional qualities of edible seeds.

1. Production and analysis of vermicompost
2. Identification, collection and cultivation ofmushrooms
3. Submerged and solid-substrate fermentation.
4. Production and assessment of enzymes, mycotoxins, organic acids and antibiotics.
5. Isolation and induction of root nodules by rhizobia
6. Isolation and mass production of arbuscular mycorrhizal spores.
7. Plant tissueculture
8. Evaluation of nutritional and antinutritional qualities of edible seeds.
9. Evaluation of soil qualities (e.g. texture, bulk density and water holding capacity)
10. Evaluation of soil components (e.g. nitrogen, phosphorus, organic carbon)
11. Pattern of decomposition of organic matter (e.g. leaf and woody litter)
12. Biogasproduction
13. Functional properties of food (e.g. water absorption capacity, gelation, foaming and emulsion)
14. DNA extraction methods and PCR /RT PCR confirmation
15. Analysis of RT PCR data in terms of copy number or quantification.
16. Analysis of DNA and protein sequences.

BSP 555 ENVIRONMENTAL PHYSIOLOGY LAB

Course Outcomes:

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

CO 1. Conduct experiments in environmental physiology
CO 2. Determine blood indices, blood pressure and thermal stress.
CO 3. Demonstrate rate of transpiration, effect of temperature on the rate of respiration and plant responses to salinity and metal stress.
CO 4. Know how to check the seed health and effect of salinity on seed germination.
CO 5. Check viability of seeds, inducers and inhibitors of germination.

1. Haematology-
   1.1 Determination of blood indices
   1.2 Determination of blood pressure.
2. Respiration-
   2.1 Estimation of oxygen consumption by the organism under stressed condition (thermal stress).
   2.2 Demonstration of rate of transpiration by photometry.
   2.3 Effect of temperature on the rate of respiration.
3. Seed physiology–
   3.1 Seed health testing.

3.2 Determination of percent viability of seeds by germination method.
3.3 Germination inducers and inhibitors
3.4 Determination of β-amylase activity in germinating seeds.
3.5 Effect of salinity on seed germination.

4. Stress Physiology-
4.1 Plant responses against salinity and metalstress
4.2 Radioisotope methodology and its principles (GM Counter and Scintillation counter)

BSP 556 DEVELOPMENTAL BIOLOGY LAB

Course Outcomes:

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

CO 1. Develop practical skills using model organisms in developmental biology
CO 2. Gain the skills to isolate and mount the imaginal discs, sex comb, genital plate.
CO 3. Carry out practicals on developmental mutants in Drosophila and Arabidopsis.
CO 4. Carry out staining techniques for gametes and embryo.

1. Study of model organisms used in developmental Biology.
2. Isolation and mounting of imaginal discs.
3. Structure of sperms and eggs.
4. Isolation and mounting of sex comb and genital plate in *Drosophila.*
5. Study of developmental mutants in *Drosophila* and *Arabidopsis*.
6. Spiral cleavage and general development in snail.
7. Study of hemimetabolous and holometabolous development in insects.
8. Life cycle and metamorphosis in frogs.
9. Structure of *Drosophila* and chick egg.
10. Study of chick embryo by vital staining technique.
11. Developmental stages in frog.
12. Developmental stages in chick.
13. Study of spermatogenesis in rat.

BSP 557 NUTRITIONAL BIOLOGY LAB

Course Outcomes:

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

CO 1. Understand and prepare meal plans using food exchange lists for different age groups and physiological conditions
CO 2. Create awareness about low-cost nutritional rich food for children.
CO 3. Describe different adulteration tests for foods.
CO 4. Understand the food spoilage microorganisms.

1. Adulteration tests (3 samples- cereal/sugar products, milk/milk products, spices and condiments)
2. Planning balanced diet for reference man and woman using ICMR RDA
3. Planning and preparing two different low-cost weaning foods
4. Planning a diet for PEM and Nutritional anaemia
5. Planning a diet for: Adolescent child, Pregnant woman, Lactating woman, Elderly
6. Estimation of total microbial count of yeast and molds from spoiled food samples