

## **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 of mushrooms
- 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  $\beta$ -amylase activity in germinating seeds.
- 3.5 Effect of salinity on seed germination.
- 4. Stress Physiology-
  - 4.1 Plant responses against salinity and metal stress
  - 4.2 Radioisotope methodology and its principles (GM Counter and Scintillation counter)

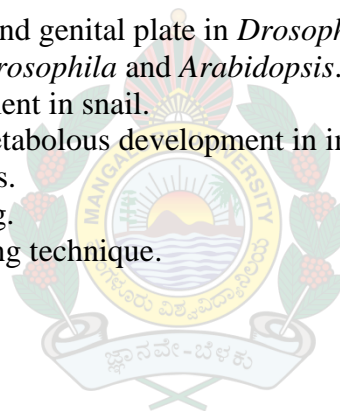
### **BSP 556 DEVELOPMENTAL BIOLOGY LAB**

**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