BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
INSTRUCTION DIVISION
SECOND SEMESTER 2015-16
Course Handout (Part II)

Date: 11.01.2016

In addition to part -I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : **BIO F411**
Course Title : **LABORATORY**
Instructor-in-Charge : **JITENDRA PANWAR**
Instructors: Ashish Runthala, B. Vani, Lalita Gupta, Sanjeev Kumar

1. Course Description:

Specially designed laboratory course aims to impart practical training in different areas of biology. Experiments related to areas like Cell and Tissue culture, Genetics, Cell Biology, Developmental Biology, Plant and Animal Physiology, Ecology, Biophysics etc. will be done to acquaint students with the practical aspects of these courses.

2. Scope and Objective of the Course:

Familiarize students with the experimental techniques in major areas of biology.

3. Text Book: Experimental write-ups will be provided.

4. Course Plan:

Exp. No.	Area	Learning objective
1.	Cell Biology	Membrane permeability of a beet root
2.	Cell Biology	Basic handling of cells
3.	Cell Biology	DAPI staining and blood cell counting
4.	Integrated Biology	Phylogeny analysis
5.	Biological Chemistry	Differential NH_4SO_4 fractionation of plant extract and Bradford protein assay
6.	Ecology & Envtl. Science	Study of quantitative characteristics in plant communities/ Population growth kinetics
7.	Ecology & Envtl. Science	To calculate analysis of variance (ANOVA)
8.	Bioinformatics	Functional and structural aspects of protein sequences
9.	Genetics	Bacterial conjugation
10.	Genetics	Mutational studies
11.	Genetics	Detection of micronuclei
12.	Genetics	Understanding gene/genome structure
13.	Plant Physiology	Induction of callus using plant growth regulators
14.	Plant Physiology	Quantification of oxido-reductase enzymes
15.	Plant Physiology	Quantification of stress responsive proteins
16.	Animal Physiology	Histological analysis of human tissue
17.	Biophysics	Protein folding kinetics using spectrometer
18.	R-DNA	Restriction fragment length polymorphism (RFLP)

	Technology	
19.	Dev. Biology	Study of morphogenetic movement in chick
20.	Dev. Biology	Identification of disease vectors and studying their developmental stages
21.	Immunology	Heamagglutination assay

Note: 1. Out of this list, a minimum of 17 experiments will be conducted in the semester.
2. Experiments may also be subject to change as per the availability of the consumables.

5. Guide to write Lab Record:

- The report must have to be written in hard bound practical file.
- It should include the following:
  (a) Objective of the experiment.
  (b) Theory/ Principle on which the experiment is based.
  (c) Steps in experimental procedure (Methodology)
  (d) Results including all observations
  (e) Precautions

6. Evaluation Scheme:

Component	Duration	Weightage (%)	Date, Time & Venue	Remarks
Mid Semester Exam				Close Book
Quiz	30 min.	15		
Lab Performance		10		
Viva		10		
Lab Record		5		
End Semester Exam				Close Book
Quiz	30 min.	15		
Lab Performance		10		
Viva		10		
Lab Record		5		
Comprehensive		20		

7. Chamber Consultation Hours: To be announced in the class.

8. Notice: Notice for tests and quizzes will be displayed on the notice board of Department of Biological Sciences.

9. Make-up Policy: Make-up decisions will be made on a case-by-case basis and only genuine cases as determined by the team and validated by Wardens and/or medical officer will be considered.

Instructor-in-Charge
BIO F411