First semester 2017-2018 **Date: 02.08.2017**

COURSE HANDOUT (PART-II)

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

Course No. : **BIO F110**
Course Title : **BIOLOGY LABORATORY**
Instructor-in-charge : **SHILPI GARG**

Team of Instructors : B. Vani, Meghna Taare, Shyamantak Mazumdar, Vishalakshi, Aastha Mittal, Sandeep Poonia, Vikas Lamba, Abhilasha Srivastava, Zaiba Hasan Khan, Leena Fageria, Poonam Singh, Nidhi Bub, Subhra Das, Monika M., Monika Paul, Tripti Misra, Neelam Mahala, Pinky, Heena Saini, Vidushi Asati

Course Description:

Analysis and estimation of biomolecules, preparation of temporary slides for microscopic analysis, study of cell structure and division, investigation of catalytic activity of enzyme, physiology of plant and animal systems, diversity of living systems.

Scope and Objective of the course:

The major objective of this course is to offer a hands-on experience on fundamental aspects of practical biology. The student would observe and understand various biological phenomena and also be equipped with some simple techniques which form the basis of research in biology.

Text Book/Manual: Laboratory Manual for Biology, BITS Pilani 2014.

Reference Book: Simon, E.J. et al: Campbell Essential Biology with Physiology (5th Edition, BITS Pilani custom edition). Noida: Perason India Education Services Pvt. Ltd., 2015

Experiment Plan:

Experiment No.	Name of the Experiment	Learning Outcome
Experiment – 1:	Measurement of glucose concentration in the given sample by Folin-Wu's method.	Properties of carbohydrates, their importance to living organisms and associated pathology. Various methods to detect these molecules in pathological samples
Experiment – 2:	Measurement of total protein content in the given sample by Lowry's method.	Proteins: the building blocks; their role in humans; methods to quantify proteins in different samples.
Experiment – 3:	To extract total genomic DNA from banana pulp and learn about	Basic knowledge about the genetic material, principle of its isolation; basic principle of

	agarose gel electrophoresis	separation of macromolecules by electro-phoresis.
Experiment – 4:	Separation of chlorophyll pigments by paper chromatography	Chlorophyll types and structures. Their separation by chromatographic technique.
Experiment – 5:	Measurement of mitotic index and duration of mitosis in the given plant tissue. Observation of various stages of mitosis through readymade slides.	Understanding different phases of cell division, different factors affecting it and preparation of slides to view mitosis in a plant meristematic tissue.
Experiment – 6:	Measurement of haemoglobin content in the human blood and determination of blood group and Rh status.	Blood group incompatibility, genetics behind blood group inheritance, hemoglobin and its importance; Blood typing
Experiment – 7:	To study the effect of the enzyme lactase on milk	Properties of an enzyme and chromogenic detection methods
Experiment – 8:	To study the phenomenon of plasmolysis in onion peel.	Effect of tonicity of a solution on different cell types; osmosis & osmoregulation
Experiment – 9:	Preparation of temporary mount of leaf epidermis to study the structure of stomata and measurement of transpiration rate using Ganong’s potometer.	Understanding the role of stomata in controlling transpiartion in plants. Transpiration rate and factors affecting it.
Experiment –10:	Identify and write characteristic features of the given sample slides.	Permanent/ temporary mounts to understand the relationship between structure and function.

Evaluation Scheme:

S. No.	Evaluation component	Duration	Date, time and Venue	Weightage (%)	Nature of component
1.	Day to day Evaluation (Attendance + Performance)	-	Daily Lab	20%	OB
2.	Quiz/ Viva	30 min	TBA	30%	CB
3.	Record	-	Daily Lab	10%	OB
4.	Mid Sem		<TEST_1>		
5.	Comprehensive Exam	2 hrs	<TEST_C>	40%	CB

Note: The order of experiments listed above may change depending on the availability of chemicals, enzymes, and other requirements for a specific experiment.

Notices: Notices will be displayed on Biological Sciences Departmental Notice Board and on Nalanda.

Make up Policy: Make up will be granted only with prior permission in genuine cases such as hospitalization upon production of the relevant documents as proof.

Instructor-in-Charge