DEPARTMENT OF BIOTECHNOLOGY

COURSES TAUGHT IN THE YEAR 2018-19

Course Title: Biochemistry and Metabolism

Course Code: UBTTC-101

Course Credits: 06

Learning outcomes

i. The Course aims to make students familiar with the basics of Biochemistry and various biochemical processes with a special emphasis on metabolism of various biomolecules like carbohydrates, Proteins, Lipids and Nucleic acids.
ii. The students get an overview of various metabolic pathways and cycles involved in cellular metabolism and how an imbalance or anomaly in functioning of these pathways can prove to be of clinical significance.
iii. The course aims at priming the students towards understanding deeper concepts of cellular functioning in the coming semesters.

Course Title: General and Applied Microbiology

Course Code: UBTTC-201

Course Credits: 06

Learning Outcomes

i. General and Applied Microbiology course is designed to provide the student with strong theoretical base of microbiology.
ii. The course is designed to introduce the student with the principles and practical considerations of microbiology.

iii. It also includes the concept, principles and methods used in microbial biotechnology and the possibilities of production of various products from microbial source.

Course Title: Cell and Molecular Biology

Course Code: UBTTC-301

Course Credits: 06

Learning Outcomes

i. The course aims to make students well versed with structural and functional information about the cell.
ii. The students will be educated about various concepts of genetics and important cellular processes like replication, transcription and translation.
iii. Various aspects of the course like gene regulatory mechanisms and applied genetics are of importance for the students.

Course Title: Enzymology and Bioprocess Technology

Course Code: UBTTC-301

Course Credits: 06

Learning Outcomes

i. The course deals with the study and understanding of enzymes as biological catalysts and their biological significance.
ii. The students learn about various aspects of enzymology like enzyme kinetics, characteristics and structural organization of enzymes and various enzyme catalyzed reactions.
iii. The students are given an insight into various biophysical and biochemical techniques currently being employed.

Course Title: Plant Biotechnology and Genetic Engineering

Course Code: UBTTC-501

Course Credits: 06

Learning Outcomes

i. This course is intended to introduce the student with the theoretical information and practical experience in plant tissue culture. Special emphasis is placed on setting up and operating a plant tissue culture laboratory.
ii. The course also familiarize the students with the techniques employed in genetic engineering and Recombinant DNA technology.
iii. Focuses on the course work that prepares the student for immediate employment in plant tissue culture industry.

Course Title: Immunology and Animal Biotechnology

Course Code: UBTTC-601

Course Credits: 06

Learning Objectives

i. The Course aims to educate students on how the body defends itself from pathogenic invasions; the different strategies and players involved in body's response to various antigenic encounters.
ii. The students also get to know about animal tissue culture strategies and how animal cell culture is different from microbial and plant tissue culture.
iii. The students learn about various techniques of clinical and diagnostic significance and how these techniques are useful in diagnosing and identifying various conditions arising in the body.

Skill Enhancement Course (SEC) –I

Course Title: Environmental Biotechnology

Course Code: UBTTS-301

Course Credits: 04

Learning Outcomes

i. Environment Biotechnology aims at providing the students with an understanding of various issues related to environment.
ii. The focus is on the scope and importance of environmental biotechnology and recent biotechnological advances.
iii. Additionally, the focus is also on the adverse health effect of Xenobiotics which plays an important role in addressing public health challenge.

Skill Enhancement Course (SEC)-II

Course Title: Food Biotechnology

Course Code: UBTTS-401

Course Credits: 04

Learning Outcomes

i. The course deals with the understanding of various components of food, their composition and Biochemistry.
ii. The various flavours added to our daily dietary food is due to trifling in various components of food besides it maintaining the natural nutrition of various low shelf life foods.
iii. Minimal processing of food and manufacture of fruit juices, jams etc is the main component of food industry, providing job opportunities.

Course Title: Biotechnology for Human Welfare

Course Code: UBTTDSE-502

Course Credits: (06)

Learning Outcomes

i. Biotechnology for human welfare aims to provide introduction of various fields of biotechnology e.g. Agricultural, pharmaceutical and industrial biotechnology and their contribution for human welfare.
ii. It aims at gaining an understanding of current experimentation in biotechnology and genetic engineering.
iii. The course imparts knowledge regarding benefits of biotechnology in forensic science and crime detection by employing various molecular biology techniques.

Course Title: Intellectual Property Rights

Course Code: UBTTS-501

Course Credits: 04

Learning outcomes

i. The Course will ensure that students understand the concept of Intellectual Property and the need to protect IP.
ii. Various Intellectual property rights and their applicability in different spheres including biology will make students aware of piracy related issues.
iii. The students will learn about various organizations which are authorized to grant IPR and various case studies.

Course Title: Industrial Fermentations

Course Code: UBTTDSE-602

Course Credits: (06)

Learning Outcomes

i. The course is designed to provide the basic know how of bioreactors. It provides the insight of various types of fermentation techniques and the product development.
ii. Process of production of industrial chemicals, purification of proteins and downstream processing is also included for providing students a deeper knowledge of fermentation.
iii. Metabolic engineering of secondary metabolic products for gaining highest productivity of the product is also included in the curriculum. The course intends to provide the significance of biotechnology in industry.

Course Title: Clinical Biochemistry

Course Code: UBTTS-601

Course Credits: 0 4

Learning Objectives

i. The Course aims to impart basic knowledge of clinical biochemistry involving techniques ranging from collection, handling and processing of clinical samples.
ii. The students will be demonstrated the importance of various different diagnostic tools and techniques useful in clinical diagnostics.