

**COURSE SCHEME**

**FOR**

**BTECH – BIOTECHNOLOGY**

**2020**

### FIRST SEMESTER 1ST YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UMA005	INTRODUCTORY MATHEMATICS-I (for NEET students)	3	1	0	3.5
	UMA010	MATHEMATICS-I (for JEE students)				
2	UTA003	COMPUTER PROGRAMMING	3	0	2	4.0
3	UPH004	APPLIED PHYSICS	3	1	2	4.5
4	UHU003	PROFESSIONAL COMMUNICATION	2	0	2	3.0
5	UTA015	ENGINEERING DRAWING	2	4	0	4.0
6	UBT003	INTRODUCTION TO BIOTECHNOLOGY (for NEET students)	2	0	0	2.0
	UBT007	INTRODUCTION TO BIOLOGY (for JEE students)				
		<b>TOTAL</b>	<b>15</b>	<b>6</b>	<b>6</b>	<b>21.0</b>

### SECOND SEMESTER 1ST YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UTA027	ARTIFICIAL INTELLIGENCE	3	0	2	4.0
2	UMA006	INTRODUCTORY MATHEMATICS-II (for NEET students)	3	1	0	3.5
	UMA004	MATHEMATICS-II (for JEE students)				
3	UBT004	BIOCHEMISTRY-I	3	0	2	4.0
4	UBT005	CELL BIOLOGY AND GENETICS	3	0	2	4.0
5	UBT006	DEVELOPMENTAL BIOLOGY	3	0	0	3.0
6	UCB008	APPLIED CHEMISTRY	3	1	2	4.5
7	UBT301	MICROBIOLOGY	3	0	2	4.0
		<b>TOTAL</b>	<b>21</b>	<b>2</b>	<b>10</b>	<b>27.0</b>

### THIRD SEMESTER 2ND YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UCH301	MATERIAL AND ENERGY BALANCES	3	1	0	3.5
2	UBT302	FOOD SCIENCE	3	0	2	4.0
3	UBT504	IMMUNOTECHNOLOGY	3	0	2	4.0
4	UBT303	BIOCHEMISTRY II	3	0	2	4.0
5	UBT304	MOLECULAR BIOLOGY	3	1	2	4.5
6	UPH305	BIOPHYSICS	3	1	0	3.5
		<b>TOTAL</b>	<b>18</b>	<b>3</b>	<b>8</b>	<b>23.5</b>

#### FOURTH SEMESTER 2ND YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT501	BIOANALYTICAL TECHNIQUES	3	0	2	4.0
2	UBT503	GENETIC & METABOLIC ENGINEERING	3	0	2	4.0
3	UBT404	INDUSTRIAL BIOTECHNOLOGY	3	0	2	4.0
4	UCH407	UNIT OPERATIONS	3	1	2	4.5
5	UEN002	ENERGY AND ENVIRONMENT	3	0	0	3.0
6	UBT801	BIOSAFETY, BIOETHICS & IPR	2	1	0	2.5
		<b>TOTAL</b>	<b>17</b>	<b>2</b>	<b>8</b>	<b>22.0</b>

#### FIFTH SEMESTER 3RD YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT601	ANIMAL BIOTECHNOLOGY	3	0	2	4.0
2	UBT602	BIOINFORMATICS & BIOSTATISTICS	3	0	2	4.0
3	UBT603	BIOPROCESS ENGINEERING	3	1	2	4.5
4	UBT605	PLANT BIOTECHNOLOGY	3	0	2	4.0
5	UBT508	TRANSDUCERS AND BIOSENSORS	3	1	2	4.5
6	UTA025	INNOVATION AND ENTREPRENEURSHIP	1	0	2#	3.0
		<b>TOTAL</b>	<b>16</b>	<b>2</b>	<b>12</b>	<b>24.0</b>

#Alternate week

#### SIXTH SEMESTER 3RD YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UHU005	HUMANITIES FOR ENGINEERS	2	0	2	3.0
2	UBT606	DOWNSTREAM PROCESSING	3	1	2	4.5
3	UBT607	STEM CELL TECHNOLOGY	3	1	0	3.5
4	UBT608	FOOD PROCESSING	3	0	2	4.0
5	UBT609	MEDICAL BIOTECHNOLOGY	3	1	2	4.5
6	UBT604	PHARMACEUTICAL TECHNOLOGY	3	0	2	4.0
7		ELECTIVE-I	3	1	0	3.5
8	UBT891	CAPSTONE PROJECT (STARTS)	1#	0	2	0.0
		<b>TOTAL</b>	<b>20</b>	<b>4</b>	<b>10</b>	<b>27.0</b>

# Alternate week

### SEVENTH SEMESTER 4TH YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT796	PROJECT SEMESTER	0	0	0	15.0
OR						
1	UBT797	PROJECT	0	0	0	8.0
2	UBT702	INDUSTRIAL WASTE MANAGEMENT	3	1	0	3.5
3	UBT704	TRENDS IN FOOD BIOTECHNOLOGY	3	1	0	3.5
OR						
1	UBT798	START UP SEMESTER*	0	0	0	15.0
		<b>TOTAL</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>15.0</b>

\*Based on hands on work on Innovation & Entrepreneurship

### EIGHTH SEMESTER 4TH YEAR

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT802	NANOBIOTECHNOLOGY	3	1	0	3.5
2	UBT822	ENVIRONMENTAL BIOTECHNOLOGY	3	0	2	4.0
3	UBT832	CONCEPTS IN BIOMEDICAL INSTRUMENTATION	3	0	2	4.0
4		ELECTIVE-II	3	1	0	3.5
5		ELECTIVE-III	3	0	2	4.0
6		GENERIC ELECTIVE	2	0	0	2.0
7	UBT891	CAPSTONE PROJECT	1#	0	2	8.0
		<b>TOTAL</b>	<b>17</b>	<b>2</b>	<b>8</b>	<b>29.0</b>

#Alternate week

Semester	EL Activity**
I	Milk Adulteration detection kit
II	Comparative evaluation of nutrient contents in fruits
III	Palindromic sequences in DNA and their implication
IV	SNP based genotyping for disease trait
V	Prediction and validation of protein secondary structure

\*\* These EL activities can be changed in subsequent years, if required.

**ELECTIVE-I**

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT621	COMPUTATIONAL BIOLOGY	3	1	0	3.5
2	UBT622	CELL AND TISSUE ENGINEERING	3	1	0	3.5
3	UBT623	PROTEIN ENGINEERING AND ENZYME TECHNOLOGY	3	1	0	3.5

**ELECTIVE-II**

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT834	BIOPROCESS EQUIPMENT DESIGN	3	1	0	3.5
2	UBT835	DRUG DESIGN AND DEVELOPMENT	3	1	0	3.5
3	UBT836	CANCER BIOLOGY AND INFECTIOUS DISEASES	3	1	0	3.5

**ELECTIVE-III**

S. NO.	COURSE NO.	COURSE NAME	L	T	P	Cr
1	UBT823	GENOMICS AND PROTEOMICS	3	0	2	4.0
2	UBT841	MOLECULAR DIAGNOSTICS	3	0	2	4.0
3	UBT842	ADVANCES IN FOOD TECHNOLOGY	3	0	2	4.0

**GENERIC ELECTIVE**

S. NO.	COURSE NO.	TITLE	L	T	P	Cr
1	UHU016	INTRODUCTORY COURSE IN FRENCH	2	0	0	2.0
2	UCS002	INTRODUCTION TO CYBER SECURITY	2	0	0	2.0
3.	UTD002	EMPLOYABILITY DEVELOPMENT SKILL	2	0	0	2.0
4.	UHU017	INTRODUCTION TO COGNITIVE SCIENCE	2	0	0	2.0
5.	UHU018	INTRODUCTION TO CORPORATE FINANCE	2	0	0	2.0
6.	UEN006	TECHNOLOGIES FOR SUSTAINABLE DEVELOPMENT	2	0	0	2.0
7.	UPH064	NANO SCIENCE AND NANO-MATERIALS	2	0	0	2.0
8.	UMA069	GRAPH THEORY AND APPLICATIONS	2	0	0	2.0
9.	UMA070	ADVANCED NUMERICAL METHODS	2	0	0	2.0
10.	UBT510	BIOLOGY FOR ENGINEERS	2	0	0	2.0

**TOTAL NUMBER OF CREDITS: 188.5***Approved in 102<sup>th</sup> meeting of the Senate held on November 27, 2020*