



Vel Tech
Rangarajan Dr. Sagunthala
R&D Institute of Science and Technology
(Deemed to be University Estd. u/s 3 of UGC Act, 1956)



SCHOOL OF ELECTRICAL AND COMMUNICATION
DEPARTMENT OF BIOTECHNOLOGY
VTR UGE REGULATION 2021

PROGRAM CORE COURSES VTR UGE 2021						
BASIC SCIENCES						
Course Code	Course Name	L	T	P	C	
1	10211BT101	Microbiology	3	0	0	3
2	10211BT102	Cell Biology	3	0	0	3
3	10211BT115	Analytical and Instrumentation Engineering	3	0	0	3
4	10211BT301	Microbiology Lab	0	0	2	1
5	10211BT302	Biochemistry Lab	0	0	2	1
6	10211BT303	Cell Biology Lab	0	0	2	1
7	10211BT118	Biochemistry	3	0	0	3
GENETIC ENGINEERING / MOLECULAR BIOLOGY						
8	10211BT104	Molecular Biology: Concepts and Techniques	3	0	0	3
9	10211BT105	Genetic Engineering	3	0	0	3
10	10211BT304	Molecular Biology & Genetic Engineering Lab	0	0	2	1
CHEMICAL ENGINEERING						
11	10211BT106	Chemical Reaction Engineering	3	0	0	3
12	10211BT107	Mass Transfer Operations in Biotechnology	3	0	0	3
13	10211BT108	Principles of Chemical Engineering	3	1	0	4
14	10211BT112	Unit Operations in Biotech Industry	3	0	0	3
INDUSTRIAL BIOTECHNOLOGY						
15	10211BT110	Bioprocess Engineering	3	0	0	3
16	10211BT111	Downstream Processing	3	0	0	3
17	10211BT113	Metabolic Engineering	3	0	0	3
18	10211BT114	Green Biotechnology & Pollution Abatement	2	0	0	2
19	10211BT117	Plant and Animal Biotechnology	3	0	0	3
20	10211BT305	Bioprocess Engineering Lab	0	0	2	1
21	10211BT306	Downstream Processing Lab	0	0	2	1
PHARMACEUTICAL & MEDICAL BIOTECHNOLOGY						
22	10211BT202	Bioinformatics	2	0	2	3
23	10211BT116	Immunology and Immunotechnology	3	0	0	3
24	10211BT307	Immunology Lab	0	0	2	1

PROGRAM ELECTIVE COURSES VTR UGE 2021						
INDUSTRIAL DOMAIN						
Course Code	Course Name	L	T	P	C	
1	10212BT101	Fluid Mechanics and Transport phenomena	3	0	0	3
2	10212BT102	Bioenergy	3	0	0	3
3	10212BT103	Food Processing Technology	3	0	0	3
4	10212BT104	Agricultural Biotechnology	3	0	0	3
5	10212BT105	Algal Biotechnology	3	0	0	3
6	10212BT106	Nanobiotechnology and application	3	0	0	3
7	10212BT107	Fermentation Technology	3	0	0	3
8	10212BT108	Protein Engineering	3	0	0	3
9	10212BT109	Process Instrumentation and dynamic control	3	0	0	3
10	10212BT110	Bioreactor design and Instrumentation control	3	0	0	3
11	10212BT111	Valorisation	3	0	0	3
12	10212BT112	Environmental Biotechnology	3	0	0	3
13	10212BT113	Enzyme technology and Biotransformation	3	0	0	3
14	10212BT114	Synthetic Biology	3	0	0	3
MEDICAL DOMAIN						
15	10212BT115	Cancer Biology	3	0	0	3
16	10212BT116	Molecular Pathogenesis	3	0	0	3
17	10212BT117	Biopharmaceutical Technology	3	0	0	3
18	10212BT118	Stem cell Technology	3	0	0	3
19	10212BT119	Biosensor and Instrumentation	3	0	0	3
20	10212BT120	Biomaterials	3	0	0	3
21	10212BT121	Biochips and Microarray technologies	3	0	0	3

22	10212BT122	Plant Biotechnology	3	0	0	3
23	10212BT123	Animal Biotechnology	3	0	0	3
24	10212BT124	Tissue Engineering	3	0	0	3
25	10212BT125	Herbal and Phytochemical Engineering	3	0	0	3
26	10212BT126	Medical Genomics and Proteomics	3	0	0	3
27	10212BT127	Cellular Engineering	3	0	0	3
28	10212BT128	Bioprinting	3	0	0	3
29	10212BT129	Augmented Reality & Virtual Reality	3	0	0	3
30	10212BT130	Precision Agricultural Biotechnology	3	0	0	3
31	10212BT143	Computational Biology: Techniques and Application	3	0	0	3
32	10212BT144	Advanced Biochemistry	3	0	0	3
FOOD BIOTECHNOLOGY						
33	10212BT131	Principles of Functional Food and Applications	3	0	0	3
34	10212BT132	Nutraceuticals	3	0	0	3
35	10212BT133	Food Preservation and Packaging Technologies	3	0	0	3
36	10212BT134	Marine Biotechnology and Aquaculture	3	0	0	3
37	10212BT135	Food Safety, Quality and Regulation	3	0	0	3
38	10212BT136	Storage Engineering	3	0	0	3
INDEPENDENT LEARNING						
39	10214BT501	Community service project	0	0	2	1
40	10214BT601	Minor Project I	0	0	4	2
41	10214BT602	Minor Project II	0	0	4	2
42	10214BT701	Major Project	0	0	18	9

OPEN ELECTIVE COURSES						
S. No.	Course Code	Course Name	L	T	P	C
1	10213BT101	Biochips	3	0	0	3
2	10213BT102	Biosensors	3	0	0	3
3	10213BT103	Biomaterials Engineering	3	0	0	3
4	10213BT104	Bio-Inspired Design: Principles and Practice	3	0	0	3
5	10213BT105	Engineering Advances in Food Preservation	3	0	0	3

Specializations: Food and Precision Agriculture

S.No	Course Code	Course Name	L	T	P	C
1	10212BT131	Principles of Functional Food and Applications	3	0	0	3
2	10212BT135	Food Safety, Quality and Regulation	3	0	0	3
3	10212BT133	Food Preservation, Packaging Technologies	3	0	0	3
4	10212BT132	Nutraceuticals	3	0	0	3
5	10212BT130	Precision Agricultural Biotechnology	3	0	0	3
6	10212BT104	Agricultural Biotechnology	3	0	0	3

Specializations: Regenerative Medicine, Health Diagnostics and Disease control

S.No	Course Code	Course Name	L	T	P	C
1	10212BT117	Biopharmaceutical Technology	3	0	0	3
2	10212BT125	Herbal and Phytochemical Engineering	3	0	0	3
3	10212BT115	Cancer Biology	3	0	0	3
4	10212BT118	Stem Cell Technology	3	0	0	3
5	10212BT126	Medical Genomics and Proteomics	3	0	0	3
6	10212BT116	Molecular Pathogenesis	3	0	0	3

Minor in Bioprocess control and devices

S.No	Course Code	Course Name	L	T	P	C
1	10213BT107	Bioprocess Control components	3	0	0	3
2	10213BT108	Advanced Analytical and Instrumentation bioprocess applications	3	0	0	3
3	10213BT109	Biosensors	3	0	0	3
4	10213BT110	Biochips	3	0	0	3
5	10213BT111	Biomaterials	3	0	0	3
6	10213BT112	Computational applications in Bioprocess	3	0	0	3

Honors in Bioengineering

S.No	Course Code	Course Name	L	T	P	C
1	10212BT137	Instrumentation and Process Control	3	0	0	3
2	10212BT138	Biomolecular Modelling	3	0	0	3
3	10212BT139	Biomechanics	3	0	0	3
4	10212BT140	Bionanotechnology	3	0	0	3
5	10212BT141	Biochemical Engineering	3	0	0	3
6	10212BT142	OMICS Technologies	3	0	0	3