

**DEPARTMENT OF BIOSCIENCES AND BIOENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE**

Program Code : **XXX M.Sc. (Biosciences and Bioengineering)**
 Department : **Department of Biosciences and Bioengineering**
 Year : **I**
 Model : **1-A**

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	BEC-521	Advanced Biochemistry	PCC	3	3	0	0	3	0
2.	BEC-523	Cell and Molecular Biology	PCC	3	3	0	0	3	0
3.	BEC-525	Applied Microbiology	PCC	3	3	0	0	3	0
4.	BEC-527	Genetics	PCC	3	3	0	0	3	0
5.	BEC-529	Developmental Biology	PCC	3	3	0	0	3	0
6.	BEC-531	BSBE Laboratory-I	PCC	4	0	0	8	0	4
7.		Social Science Course	SSC	2	-	-	-	-	-
		Total		21					
Semester-II (Spring)									
1.	BEC-522	Immunology	PPI	3	3	0	0	3	0
2.	BEC-524	Genetic Engineering	PPI	3	3	0	0	3	0
3.	BEC-526	Animal Biotechnology	PPI	3	3	0	0	3	0
4.	BEC-528	Plant Biotechnology	PPI	3	3	0	0	3	0
5.	BEC-530	BSBE Laboratory-II	PPI	4	0	0	8	0	4
6.		Science, Technology, and Advanced Research-tools	STAR	3	-	-	-	-	-
7.	BEC-700	Seminar	SEM	2	-	-	-	-	-
		Total		21					

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Program Code : **XXX M.Sc. (Biosciences and Bioengineering)**
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Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
Semester-I (Autumn)									
1.	BEC-691	Internship Social Activity	ISA	3	-	-	-	-	-
2.	BEC-533	Gene Regulation	PPI	3	3	0	0	3	0
3.	BEC-535	Biophysical Techniques	PPI	3	3	0	0	3	0
4.		Program Elective-I	PPI	3	-	-	-	-	-
5.		Program Elective-II	PPI	3	-	-	-	-	-
6.		Program Elective-III	PPI	2	-	-	-	-	-
7.		Program Elective- IV	PPI	2	-	-	-	-	-
8.	BEC-601	Minor Project	PROJECT	2	-	-	-	-	-
		Total		21					
Semester-II (Spring)									
1.		Program Elective-V	PEC	3	-	-	-	-	-
2.	BEC-602	Major Project	PROJECT	12	-	-	-	-	-
		Total		15					

Summary				
Semester	1	2	3	4
Semester-wise Total Credits	21	21	21	15
Total Credits	78			

M.Sc. (Biosciences and Bioengineering)

Program Elective Courses

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	BEL-516	Advanced Cell and Tissue Engineering	PEC	2	2	0	0	2	0
2.	BEL-517	Genomics, Proteomics and Metabolomics	PEC	3	3	0	0	3	0
3.	BEL-518	Neuroscience	PEC	3	3	0	0	3	0
4.	BEL-519	Translational Bioinformatics	PEC	2	2	0	0	2	0
5.	BEL-520	Bioprocess Engineering	PEC	3	3	0	0	3	0
6.	BEL-521	Molecular Diagnostics	PEC	2	2	0	0	2	0
7.	BEL-522	Cancer Cell Signaling	PEC	3	3	0	0	3	0
8.	BEL-523	Drug Discovery and Development	PEC	3	3	0	0	3	0
9.	BEL-524	Biomedical Engineering	PEC	3	3	0	0	3	0
10.	BEL-525	Nano-biotechnology	PEC	3	3	0	0	3	0
11.	BEL-528	IPR, Biosafety and Bioethics	PEC	2	2	0	0	2	0
12.	BEL-529	Bio-entrepreneurship	PEC	2	2	0	0	2	0

Science, Technology, and Advanced Research-tools Basket

Teaching Scheme					Contact Hours/Week			Exam Duration	
S.No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical
1.	BET-501	Bioinformatics	STAR	3	2	0	2	3	0