

## **Proposed BS in Biological Sciences Curriculum (4 year program)**

### **Semester 1**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	BT1000	Introduction to Biological Sciences and Engineering	3	0	0	0	6	9	S
2	CY1001	Chemistry I	3	1	0	0	6	10	S
3	CS1100	Introduction to Programming	3	0	0	3	6	12	E
4	MA1101	Functions of Several Variables	3	1	0	0	6	10	S
5	PH1010	Physics 1	3	1	0	0	6	10	S
6	PH1030	Physics Lab	0	0	0	3	1	4	S
7	GN1101	Life Skills	0	0	0	0	2	0	
8	ID1200	Ecology and Environment	0	0	0	0	2	0	
		<b>Total Credits</b>						<b>55</b>	

### **Semester 2**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	MA	Mathematics Elective^	3	1	0	0	6	10	S
2	PH1020	Physics 2	3	1	0	0	6	10	S
3	CY1051	Chemistry 2	3	0	0	0	6	9	S
4	PH2070	Introduction to Biological Physics	3	0	0	0	6	9	S
5	BT2030	Biochemistry	3	0	0	0	6	9	P
6	CY1002	Chemistry Lab	0	0	0	3	0	3	S
7	GN1102	Life Skills	0	0	0	0	1	0	
8		NCC (NC1010)/NSS (NS1020)/NSO (NS1030)	0	0	0	0	2	0	
		<b>Total Credits:</b>						<b>50</b>	

**^Restricted elective:** Students choose between MA1102 Series and Matrices, MA2020 Differential Equations, MA2040 Probability, Statistics and Stochastic Process, MA2130 Basic Graph Theory

### **Semester 3**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	HSE1	Humanities 1	3	0	0	0	6	9	H
2	BT2010	Microbiology	3	0	0	0	6	9	P
3	BT2042	Fundamentals of Biophysical Chemistry	3	0	0	0	6	9	P
4	BT2082	Cell Biology	3	0	0	0	6	9	P
5	BT2012	Genetics	3	0	0	0	6	9	P
6	BT2122	Biochemistry Lab	0	0	0	6	2	8	P
		<b>Total Credits:</b>						<b>53</b>	

L: Lecture, T: Tutorial, E: Extended tutorial, P: Practical, O: Outside class hours, C: Credits

**Semester 4**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	HSE2	Humanities 2	3	0	0	0	6	9	H
2	BT3012	Molecular Biology	3	0	0	0	6	9	P
3	BT2020	Numerical Methods for Biology	2	1	0	0	6	9	P
4	BT2022	Biostatistics	3	1	0	0	6	10	P
5	BT5330	Human Physiology	3	0	0	0	6	9	P
6	BT2112	Microbiology Lab	0	0	0	6	2	8	P
		<b>Total Credits:</b>						<b>54</b>	

**Semester 5**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	BT3020	Structural Biology	3	0	0	0	6	9	P
2	BT3072	Immunology	3	0	0	0	6	9	P
3	BT3122	Molecular Biology Lab	0	0	0	6	2	8	P
		<b>Total Credits:</b>						<b>26</b>	

**Semester 6**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	BT3040	Bioinformatics	2	0	0	3	6	11	P
2	BT5240	Computational Systems Biology	3	0	0	1	8	12	P
3	BT3022	Genomics and Proteomics	3	0	0	0	6	9	P
		<b>Total Credits:</b>						<b>32</b>	

**Summer**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	BT3900	Summer Internship (Optional)	0	0	0	0	20	0	P
		<b>Total Credits:</b>						<b>0</b>	

**Semester 7**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	HSE3	Humanities 3	3	0	0	0	6	9	H
		<b>Total Credits:</b>						<b>9</b>	

**Semester 8**

S.No	Course No	Course Name	L	T	E	P	O	C	Cat
1	HS3050	Professional Ethics	2	0	0	0	0	0	H
		<b>Total Credits:</b>						<b>9</b>	

### Semester-wise distribution of credits

Semester	I	II	III	IV	V	VI	Sum	VII	VIII	Total
Core Credits	55	50	44*	45*	26*	32*	0	0*	0*	252
Elective Credits#	0	0	9	9	27	27	0	54	54	180
<b>Total</b>	<b>55</b>	<b>50</b>	<b>53</b>	<b>54</b>	<b>53</b>	<b>59</b>	<b>0</b>	<b>54</b>	<b>54</b>	<b>432</b>

\*Credits indicated are only for the core program. In addition to the indicated credits, students are required to earn 180 elective credits during semesters III - VIII, with at least 81 of those credits from the Department of Biotechnology. The remaining 99 credits can be from any department, including Biotechnology

# Suggested Elective credits: Semesters III- 9 credits; IV- 9 credits; V- 27 credits; VI- 27 credits; VII- 54 credits; VIII- 54 credits, subject to maximum of 60 credits per semester.

### Category-wise credit requirements for BS

Category	Abbr.	Required	Share of Electives	Total (Core +Elective)
Basic Sciences	S	84	0	84
Basic Engineering	E	12	0	12
Professional (Core + Elective, not including Project)	P	237	81	156+81
Humanities	H	27	27	27
Unallotted	S/E/P/H	72	72	72
<b>Total</b>		<b>432</b>	<b>180</b>	<b>432</b>

**Project:** An optional BS project can be taken in any department in lieu of 27 elective credits. These 27 credits can be counted against 27 Professional elective credits mentioned below only if the project is carried out in the Department of Biotechnology.

**BS (Honours):** (Total credit requirement: 432 + 27 = 459)

**Eligibility:** Minimum CGPA of 8.5 at the end of 5th semester without U or W grade in any course. These conditions are to be maintained until graduation.

For semesters marked with '\*', students should credit appropriate number of electives in consultation with the faculty advisor.

Honors students may exceed the 60-credit limit per semester, after discussing with the faculty advisor.

#### *Extra credit requirement:*

- Additional 27 credits must be earned from 5000 level or above courses from Biotechnology.
- BS project (27 credits) must be completed in the Department of Biotechnology.

### Category-wise credit requirements for BS (Honors)

Category	Abbr.	Required	Share of Electives	Total (Core +Elective)
Basic Sciences	S	84	0	84
Basic Engineering	E	12	0	12
Professional (Core + Elective+ Project)	P	264	108	156+108\$
Humanities	H	27	27	27
Unallotted	S/E/P/H	72	72	72
<b>Total</b>		<b>459</b>	<b>207</b>	<b>459</b>

\$27 out of these 108 credits must be must be earned from 5000 level or higher courses from Biotechnology