

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
DEPARTMENT OF BIOTECHNOLOGY**

B. TECH – BIOTECHNOLOGY, CBCS - A17 COURSE STRUCTURE

**B. TECH - BIOTECHNOLOGY
I YEAR I SEMESTER COURSE STRUCTURE**

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6H101	English-I	2	-	-	2	25	75
2	6H112	Fundamentals of Mathematics	3	2	-	3	25	75
	6G101	or Fundamentals of Biology						
3	6H121	Engineering Physics – I	3	1	-	3	25	75
4	6H131	Engineering Chemistry	2	1	-	2	25	75
5	6F101	Computer Programming	3	1	-	3	25	75
6	6B101	Engineering Drawing - I	1	1	4	3	25	75
7	6H171	English Language Communication skills Lab	-	-	2	1	25	75
8	6H181	Engineering Physics Lab-I	-	-	2	1	25	75
9	6H186	Engineering Chemistry Lab	-	-	2	1	25	75
10	6F171	“C” Programming Lab	-	-	4	2	25	75
11	6B171	Engineering Workshop-I	-	-	2	1	25	75
12	6F172	IT Workshop - I	-	-	2	1	25	75
13	6G191	Seminar on Current Affairs/Technical Topic	-	-	2	1	100	-
Total			14	6	20	24	400	900

**L – Lecture, T- Tutorial, P/D – Practical /Drawing, C-Credit,
CIE – Continuous Internal Evaluation,
SEE – Semester End Examination**

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
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**B. TECH - BIOTECHNOLOGY
I YEAR II SEMESTER COURSE STRUCTURE**

S. No	Subject Codes	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6H202	English - II	2	2	-	2	25	75
2	6H214	Mathematics for Biotechnology-1	3	2	-	3	25	75
3	6AC41	Elements of Electrical Engineering	3	1	-	3	25	75
4	6E201	Data Structures	3	1	-	3	25	75
5	6B202	Engineering Drawing – II	1	1	2	2	25	75
6	6H232	Environmental and Applied Chemistry	2	1	-	2	25	75
7	6BC04	Elements of Mechanical Engineering	3	1	-	3	25	75
8	6ZC03	Gender Sensitization, Values, Ethics and Yoga	1	1	-	1	25	75
9	6E271	Data structure lab (C, C++)	-	-	4	2	25	75
10	6AC91	Electrical Engineering Lab	-	-	2	1	25	75
11	6F273	IT Workshop – II	-	-	2	1	25	75
12	6G292	Seminar on Science and its impact / Technical topic	-	-	2	1	100	-
Total			18	10	10	24	375	825

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
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B. TECH - BIOTECHNOLOGY

II YEAR I SEMESTER COURSE STRUCTURE

S. No	Subject code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6G302	Biochemistry	3	1	-	3	25	75
2	6G303	Microbiology	3	1	-	3	25	75
3	6G304	Cell Biology	3	1	-	3	25	75
4	6G305	Momentum and Heat Transfer	3	1	-	3	25	75
5	6CC09	Elements of Electronics Engineering	3	1	-	3	25	75
6	6H317	Mathematics for Biotechnology-II	3	2	-	3	25	75
7	6H373	Functional and Communicative English (FCE)	1	2	-	1	25	75
8	6G371	Biochemistry Lab	-	-	3	2	25	75
9	6G372	Microbiology and Cell Biology Lab	-	-	3	2	25	75
10	6CC76	Electronics Engineering Lab	-	-	2	1	25	75
11	6G393	Seminar on Technology and its impact / Technical topic	-	-	2	1	100	-
Total			19	9	10	25	350	750

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B. TECH - BIOTECHNOLOGY

II YEAR II SEMESTER COURSE STRUCTURE

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6G406	Genetics and Molecular Biology	3	2	-	3	25	75
2	6ZC01	Managerial Economics and Financial Analysis	2	1	-	2	25	75
3	6G407	Process Engineering Calculations	3	2	-	4	25	75
4	6G408	Analytical Techniques in Biotechnology	3	1	-	3	25	75
5	6EC70	Java programming	2	2	-	2	25	75
6	6HC18	Probability and Statistics	3	1	-	3	25	75
7	6G473	Analytical Techniques in Biotechnology Lab	-	-	4	2	25	75
8	6EC74	Java programming lab	-	-	2	1	25	75
9	6G474	Comprehensive Viva-voce - I	-	-	-	1	25	75
10	6G494	Technical Seminar	-	-	2	1	100	-
Total			16	9	8	22	325	675

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
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B. TECH - BIOTECHNOLOGY

III YEAR I SEMESTER COURSE STRUCTURE

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6G509	Thermodynamics for Biotechnologists	3	1	-	3	25	75
2	6G510	Genetic Engineering	3	1	-	3	25	75
3	6G511	Bioinformatics	3	1	-	3	25	75
4	6G512	Biochemical Reaction Engineering	3	1	-	2	25	75
5		Professional Elective-I	3	1	-	3	25	75
6		Open Elective – I	2	1	-	2	25	75
7	6H576	Quantitative Aptitude	-	-	2	1	25	75
8	6HC74	Effective English Communication and Soft Skills (EECSS)	1	-	-	1	25	75
9	6G575	Bioinformatics Lab	-	-	4	2	25	75
10	6G576	Molecular Biology and Genetic Engineering Lab	-	-	4	2	25	75
11	6G577	Group Project	-	-	2	1	25	75
12	6G595	Technical Literature Review and Seminar -I	-	-	2	1	100	-
Total			17	7	16	24	375	825

**L – Lecture, T- Tutorial, P/D – Practical /Drawing, C-Credit,
CIE – Continuous Internal Evaluation,
SEE – Semester End Examination**

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B. TECH - BIOTECHNOLOGY

III YEAR II SEMESTER COURSE STRUCTURE

S. No	Subject code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6G618	Plant Biotechnology	3	1		3	25	75
2	6G619	Immunology	3	1	-	3	25	75
3	6G620	Bioprocess Engineering	3	1	-	3	25	75
4		Professional Elective-II	3	1	-	2	25	75
5		Open Elective – II	2	1	-	2	25	75
6		Open Elective-III	2	1	-	2	25	75
7	6H677	Logical Reasoning	-	-	2	1	25	75
8	6G678	Plant Biotechnology Lab	-	-	4	2	25	75
9	6G679	Immunology lab	-	-	4	2	25	75
10	6G680	Bioprocess Engineering Lab	-	-	4	2	25	75
11	6G681	Comprehensive Viva Voce-II	-	-	-	1	25	75
12	6G696	Technology Literature Review & Seminar II	-	-	2	1	100	-
Total			18	6	16	24	375	825

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
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B. TECH - BIOTECHNOLOGY

IV YEAR I SEMESTER COURSE STRUCTURE

S. No	Subject code	Subject	L	T	P/D	C	Max Marks	
							CIE	SEE
1	6G726	Industrial and Environmental Biotechnology	3	1	-	3	25	75
2	6G727	Downstream Processing	3	1	-	3	25	75
3	6G728	Animal Biotechnology	3	1	-	3	25	75
4	6G729	Mass Transfer and Separations	3	1	-	3	25	75
5		Professional Elective-III	3	1	-	3	25	75
6		Professional Elective-IV	3	1	2	3	25	75
7	6G782	Downstream Processing Lab	-	-	4	2	25	75
8	6G783	Animal Biotechnology Lab	-	-	4	2	25	75
9	6G784	Project Phase - I	-	1	4	3	100	-
10	6G785	Industry Oriented Mini Project	-	-	-	2	25	75
11	6G797	Technical Literature Review and Seminar -III	-	-	2	1	100	-
Total			18	7	16	28	425	675

IV YEAR II SEMESTER COURSE STRUCTURE

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	6ZC02	Management Science	3	-	-	3	25	75
2		Professional Elective – V	3	-	-	3	25	75
3	6G886	Project Phase – II	-	-	20	12	50	150
4	6G887	Comprehensive Viva-voce- III	-	-	-	1	25	75
5	6G898	Technical Literature Review and Seminar -IV	-	-	2	1	100	-
Total			6	-	22	20	225	375

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
DEPARTMENT OF BIOTECHNOLOGY**

List of Open Electives

Minor Stream	Subject Code	Open Elective –I	Subject Code	Open Elective - II	Subject Code	Open Elective -III
Computer stream	6FC32	Data Base Systems (DBS)	6FC35	Python Programming for Biotechnology	6FC33	Data Analytics
Entrepreneurship Stream	6ZC22	Basics of Entrepreneurship	6ZC24	Innovations and Design Thinking	6ZC23	Advanced Entrepreneurship
Finance Stream	6ZC05	Banking Operations, Insurance and Risk Management	6ZC19	Entrepreneurship Project Management and Structured Finance	6ZC15	Financial Institutions, Markets and Services
Technology Entrepreneurship	6ZC20	Product and Services	6ZC24	Innovations and Design Thinking	6ZC21	General Management and Entrepreneurship

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
DEPARTMENT OF BIOTECHNOLOGY**

List of Professional Electives

Professional Elective-I			
S. No.	Stream	Subject Code	Subject Name
1	Medical Biotechnology	6G513	Molecular Pathogenesis
2	Plant Biotechnology	6G514	Plant Metabolic Engineering
3	Environmental Biotechnology	6G515	Biosafety, Bioethics, IPR
4	Bioprocess Engineering	6G516	Instrumentation and Bioprocess control
5	Nanobiotechnology	6G517	Nanomaterials synthesis and characterization
Professional Elective-II			
1	Medical Biotechnology	6G621	Molecular Toxicology
2	Plant Biotechnology	6G622	Phytochemicals & Herbal medicine
3	Environmental Biotechnology	6G623	Green Manufacturing Technology
4	Bioprocess Engineering	6G624	Optimization and numerical methods in biotechnology
5	Nanobiotechnology	6G625	Biosensors and Bioelectronics
Professional Elective-III			
1	Medical Biotechnology	6G730	Applied Virology
2	Plant Biotechnology	6G731	Food Biotechnology
3	Environmental Biotechnology	6G732	Enzyme Engineering
4	Bioprocess Engineering	6G733	Advanced Bioprocess Control
5	Nanobiotechnology	6G734	Nanomaterials in medical applications
Professional Elective-IV			
1	Medical Biotechnology	6G735	Cancer Biology
2	Plant Biotechnology	6G736	Molecular Markers and crop Improvement
3	Environmental / Genomics	6G737	Computational Molecular Biology
4	Bioprocess Engineering	6G738	Bioprocess economics and plant design
5	Nanobiotechnology	6G739	Nanotoxicology
Professional Elective-V			
1	Medical Biotechnology	6G840	Clinical Trials & Regulatory Affairs
2	Plant Biotechnology	6G841	Biopharmaceutical technology
3	Environmental Biotechnology	6G842	Bioremediation and metagenomics
4	Bioprocess Engineering	6G843	Advanced Mass transfer separations
5	Nanobiotechnology	6G844	Nanoelectronics MEMS and NEMS

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B. TECH – BIOTECHNOLOGY, CBCS - A15 COURSE STRUCTURE

B. TECH - BIOTECHNOLOGY

III YEAR I SEMESTER COURSE STRUCTURE

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	5ZC01	Managerial Economics and Financial Analysis	2	1	-	2	25	75
2	5G511	Genetic Engineering	3	1	-	3	25	75
3	5G512	Bioinformatics	3	1	-	3	25	75
4	5G513	Mass Transfer and Separations	3	2	-	4	25	75
5		Professional Elective-I	3	1	-	3	25	75
6		Open Elective – I	2	1	-	2	25	75
7	5HC75	Quantitative Aptitude	-	-	2	1	25	75
8	5G576	Bioinformatics Lab	-	-	4	2	25	75
9	5G577	Genetics, Molecular Biology and Genetic Engineering Lab	-	-	4	2	25	75
10	5G578	Group Project	-	-	2	1	25	75
11	5G595	Technical literature review and Seminar -I	-	-	2	1	100	-
Total			16	7	14	24	350	750

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III YEAR II SEMESTER COURSE STRUCTURE

S. No	Subject code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	5G619	Plant Biotechnology	3	1	-	3	25	75
2	5G620	Immunology	3	1	-	3	25	75
3	5G621	Biochemical Reaction Engineering	3	2	-	4	25	75
4		Professional Elective-II	3	1	-	3	25	75
5		Open Elective – II	2	1	-	2	25	75
6		Open Elective-III	2	1	-	2	25	75
7	5HC77	Logical Reasoning	-	-	2	1	25	75
8	5G679	Plant Biotechnology Lab	-	-	4	2	25	75
9	5G680	Immunology lab	-	-	4	2	25	75
10	5G681	Comprehensive Viva Voce-II	-	-	-	1	50	50
11	5G696	Technology Review & Seminar II	-	-	2	1	100	-
Total			18	7	10	24	375	725

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B. TECH - BIOTECHNOLOGY

IV YEAR I SEMESTER COURSE STRUCTURE

S. No	Subject code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	5ZC02	Management Science	3	-	-	3	25	75
2	5G728	Downstream Processing	3	1	-	3	25	75
3	5G729	Animal Biotechnology	3	1	-	3	25	75
4	5G730	Momentum and Heat Transfer	3	2	-	3	25	75
5		Professional Elective-III	3	1	-	3	25	75
6		Professional Elective-IV	3	1	-	3	25	75
7	5G782	Downstream Processing Lab	-	-	4	2	25	75
8	5G783	Animal Biotechnology Lab	-	-	4	2	25	75
9	5G784	Project Phase - I	-	1	3	3	100	-
10	5G785	Industry Oriented Mini Project	-	-	-	2	25	75
11	5G797	Technology Review and Seminar -III	-	-	2	1	100	-
Total			18	7	13	28	425	675

IV YEAR II SEMESTER COURSE STRUCTURE

S. No	Subject Code	Subject	L	T	P/D	C	Max Marks	
							Int	Ext
1	5G840	Industrial biotechnology	3	-	-	3	25	75
2		Professional Elective – V	3	-	-	3	25	75
3	5G886	Project Phase – II	-	-	20	12	50	150
4	5G887	Comprehensive Viva-voce- III	-	-	-	1	50	50
5	5G888	Technology Review and Seminar -IV	-	-	2	1	100	-
Total			6	-	22	20	250	350

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
DEPARTMENT OF BIOTECHNOLOGY**

List of Open Electives

Subject code	Open Elective – I	Subject code	Open Elective – II	Subject code	Open Elective – III
5FC32	Data Base Systems (DBS)	5EC04	Fundamentals of Operating Systems	5FC17	Big Data Analytics
5EC26	SAP-I: SAP ABAP Workbench Fundamentals	5EC27	SAP-II: SAP ABAP Workbench Concepts	5ZC08	Enterprise Resource Planning
5ZC03	Banking Operations, Insurance and Risk Management	5ZC19	Entrepreneurship, project management and structure finance		
5ZC20	Product and Services	5ZC06	General Management Entrepreneurship		

List of Professional Electives

Professional Elective-I

**SREENIDHI INSTITUTE OF SCIENCE AND TECHNOLOGY,
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S. No.	Stream	Subject Code	Subject Name
1	Medical Biotechnology	5G514	Molecular Pathogenesis
2	Plant Biotechnology	5G515	Metabolic Engineering
3	Environmental Biotechnology	5G516	Environmental Biotechnology
4	Bioprocess Engineering	5G517	Instrumentation and Bioprocess control
5	Nanobiotechnology	5G518	Nanobiotechnology
Professional Elective-II			
1	Medical Biotechnology	5G622	Molecular Toxicology
2	Plant Biotechnology	5G623	Phytochemicals & Herbal medicine
3	Environmental Biotechnology	5G624	Green Manufacturing Technology
4	Bioprocess Engineering	5G625	Optimization and numerical methods in biotechnology
5	Nanobiotechnology	5G626	Biosensors and Bioelectronics
Professional Elective-III			
1	Medical Biotechnology	5G731	Applied Virology
2	Plant Biotechnology	5G732	Computational Biology
3	Environmental Biotechnology	5G733	Enzyme Engineering
4	Bioprocess Engineering	5G734	Advanced Bioprocess Control
5	Nanobiotechnology	5G735	Nanomaterials : synthesis and characterization
Professional Elective-IV			
1	Medical Biotechnology	5G736	Cancer Biology
2	Plant Biotechnology	5G737	Molecular Markers and crop Improvement
3	Environmental / genomics	5G738	Food Biotechnology
4	Bioprocess Engineering	5G739	Bioprocess economics and plant design
5	Nanobiotechnology	5G740	Nanotoxicology
Professional Elective-V			
1	Medical Biotechnology	5G841	Clinical Research & Regulatory Affairs
2	Plant Biotechnology	5G842	Biopharmaceutical technology
3	Environmental / Genomics	5G843	Bioethics, Biosafety and IPR
4	Bioprocess Engineering	5G844	Advanced Mass transfer separations
5	Nanobiotechnology	5G845	Tissue Engineering