



Progressive Education Society's

**Modern College of Arts, Science and Commerce, Ganeshkhind, Pune**  
**(Autonomous)**

[www.moderncollegegk.org](http://www.moderncollegegk.org)

**Three Year Degree Program in Biotechnology**  
**(Faculty of Science & Technology)**

**Skeleton of**  
**B.Sc. (Biotechnology)**  
**Choice Based Credit System Syllabus**  
**To be implemented from Academic Year 2022-2023**



Progressive Education Society's  
**Modern College of Arts, Science and Commerce,**  
**Ganeshkhind, Pune 16**

Department of Biotechnology

**Title of the Course: B.Sc. Biotechnology (Three years Degree course)**  
**Total Credits to get B. Sc. Degree =132 Credits+ 8 compulsory extra non CGPA Credit**  
**Total Semester in B.Sc. = 6 (22 Credits/Semester)**

**SEMESTER: I                      F.Y. B.Sc. Biotechnology**

**Theory**

Subject Code	Name of Subject	Credits	Total Number of Lectures	Marks
22BBT-101	Fundamentals of Chemistry-I	2 Credits	30	50 (35 External +15 Internal)
22BBT -102	Fundamentals of Physics	2 Credits	30	50 (35 External +15 Internal)
22BBT -103	Biochemistry I	2 Credits	30	50 (35 External +15 Internal)
22BBT -104	Biophysics I	2 Credits	30	50 (35 External +15 Internal)
22BBT -105	Animal Sciences I	2 Credits	30	50 (35 External +15 Internal)
22BBT -106	Plant Sciences I	2 Credits	30	50 (35 External +15 Internal)
22BBT -107	Microbiology I	2 Credits	30	50 (35 External +15 Internal)
22BBT -108	Mathematics and Biostatistics I	2 Credits	30	50 (35 External +15 Internal)

**PRACTICALS**

22BBT -109	Practical In Chemistry and Biochemistry	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT -110	Practical In Plant and animal science	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT -111	Practical In Microbiology	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT -112	Practical In Physics and Biophysics	1.5 Credits	12 P	50 (35 External +15 Internal)
<b>Total Credits (Theory + Practical)</b>			<b>22 Credits</b>	

**SEMESTER II****F.Y. B.Sc. Biotechnology**

<b>Subject code</b>	<b>Name of Subject</b>	<b>Credits</b>	<b>Total Number of Lectures</b>	<b>Marks</b>
22BBT-201	Fundamentals of Chemistry II	2 Credits	30	50 (35 External +15 Internal)
22BBT-202	Biochemistry II	2 Credits	30	50 (35 External +15 Internal)
22BBT-203	Bioinstrumentation	2 Credits	30	50 (35 External +15 Internal)
22BBT-204	Animal Sciences II	2 Credits	30	50 (35 External +15 Internal)
22BBT-205	Plant Sciences II	2 Credits	30	50 (35 External +15 Internal)
22BBT-206	Microbiology II	2 Credits	30	50 (35 External +15 Internal)
22BBT-207	Mathematics and Biostatistics-II	2 Credits	30	50 (35 External +15 Internal)
22BBT-208	Basics of Computer	2 Credits	30	50 (35 External +15 Internal)

**PRACTICALS**

22BBT-209	Practical In chemistry & Biochemistry II	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT-210	Practical In Plant and animal science	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT-211	Practical In Microbiology & Bioinstrumentation	1.5 Credits	12 P	50 (35 External +15 Internal)
22BBT-212	Practical In Computer & Biostatistics	1.5 Credits	12 P	50 (35 External +15 Internal)
<b>Total Credits (Theory + Practical)</b>		<b>22</b>		

## B. Sc. Biotechnology (CBCS Semester Pattern)

### S. Y. B. Sc. Biotechnology

#### Semester III

Subject code	Name of Subject	Credits	Total Number of Lectures	Marks
23BBT-301	Cell Biology I	2 Credits	30	50 (35 External +15 Internal)
23BBT-302	Molecular Biology I	2 Credits	30	50 (35 External +15 Internal)
23BBT-303	Genetics	2 Credits	30	50 (35 External +15 Internal)
23BBT-304	Metabolism	2 Credits	30	50 (35 External +15 Internal)
23BBT-305	Environmental Biotechnology	2 Credits	30	50 (35 External +15 Internal)
23BBT-306	Bio analytical Techniques	2 Credits	30	50 (35 External +15 Internal)
23BBT-307	AECC-I (Environment)	2 Credits	30	50 (35 External +15 Internal)
23BBT-308	AECC-II (Language Communication)	2 Credits	30	50 (35 External +15 Internal)

#### PRACTICALS

23BBT-309	Practical in Cell Biology and Genetics	2 Credits	12 P	50 (35 External +15 Internal)
23BBT-310	Practical in Bio analytical Techniques	2 Credits	12 P	50 (35 External +15 Internal)
23BBT-311	Practical in Molecular Biology and Environmental Biotechnology	2 Credits	12 P	50 (35 External +15 Internal)
<b>Total Credits (Theory + Practical)</b>		<b>22</b>		

## Semester IV

Subject code	Name of Subject	Credits	Total Number of Lectures	Marks
23BBT-401	Cell Biology II	2 Credits	30	50 (35 External +15 Internal)
23BBT-402	Molecular Biology II	2 Credits	30	50 (35 External +15 Internal)
23BBT-403	Immunology	2 Credits	30	50 (35 External +15 Internal)
23BBT-404	Animal Development	2 Credits	30	50 (35 External +15 Internal)
23BBT-405	Plant Development	2 Credits	30	50 (35 External +15 Internal)
23BBT-406	Microbial Biotechnology	2 Credits	30	50 (35 External +15 Internal)
23BBT-407	AECC-III (Environment)	2 Credits	30	50 (35 External +15 Internal)
23BBT-408	AECC- IV (Language Communication)	2 Credits	30	50 (35 External +15 Internal)

### PRACTICALS

23BBT-409	Practical in Molecular Biology and Microbial Biotechnology	2 Credits	12 P	50 (35 External +15 Internal)
23BBT-410	Practical in Animal and Plant Development	2 Credits	12 P	50 (35 External +15 Internal)
23BBT-411	Practical in Cell biology and immunology	2 credit	12 P	50 (35 External +15 Internal)
<b>Total Credits (Theory + Practical)</b>		<b>22</b>		

## B. Sc. Biotechnology (CBCS Semester Pattern)

### T. Y. B. Sc. Biotechnology

#### Semester V 22 Credit / Semester

Subject code	Name of Subject	Credits	Total Number of Lectures	Marks
24BBT-501	Industrial Microbiology	2 Credits	30	50 (35 External +15 Internal)
24BBT-502	R- DNA technology	2 Credits	30	50 (35 External +15 Internal)
24BBT-503	Plant Tissue Culture	2 Credits	30	50 (35 External +15 Internal)
24BBT-504	Animal Tissue Culture	2 Credits	30	50 (35 External +15 Internal)
24BBT-505	Applied biotechnology I	2 Credits	30	50 (35 External +15 Internal)
24BBT-506	Research Methodology	2 Credit	30	50 (35 External +15 Internal)
24BBT-507	SEC – I : Review writing/ Start up Design or Case study Report	2 Credits	30	50 (35 External +15 Internal)
24BBT-508	SEC – II : Project formulation	2 Credits	30	50 (35 External +15 Internal)

#### PRACTICALS

24BBT-509	Practical in Industrial Microbiology	2 Credits	12 P	50 (35 External +15 Internal)
24BBT-510	Practical in Plant Tissue Culture and Animal Tissue Culture	2 Credits	12 P	50 (35 External +15 Internal)
24BBT-511	Practical in R- DNA technology	2 Credit	12 P	50 (35 External +15 Internal)
<b>Total Credit (Theory + Practical)</b>		<b>22</b>		

## T. Y. B. Sc. Biotechnology

### Semester VI

Subject code	Name of Subject	Credits	Total Number of Lectures	Marks
24BBT-601	Enzyme and Enzyme Technology	2 Credits	30	50 (35 External +15 Internal)
24BBT-602	Agriculture Biotechnology	2 Credits	30	50 (35 External +15 Internal)
24BBT-603	Applied Biotechnology II	2 Credits	30	50 (35 External +15 Internal)
24BBT-604	Microbial Biotechnology II	2 Credits	30	50 (35 External +15 Internal)
24BBT-605	Bioinformatics	2 Credits	30	50 (35 External +15 Internal)
24BBT-606	Biodiversity and Systematics	2 Credits	30	50 (35 External +15 Internal)
24BBT-607 & 608	SEC – III & SEC – IV : Project	4 Credit	60	100 (70 External +30 Internal)

### PRACTICALS

24BBT-609	Practical in Enzyme Technology	2 Credits	12 P	50 (35 External +15 Internal)
24BBT-610	Practical in Agriculture Biotechnology and Bioinformatics	2 Credits	12 P	50 (35 External +15 Internal)
24BBT-611	Practical in Microbial Biotechnology II	2 Credits	12 P	50 (35 External +15 Internal)
<b>Total Credit(Theory + Practical)</b>		<b>22</b>		