

SANT GADGE BABA AMRAVATI UNIVERSITY, AMRAVATI



THREE YEAR UNDERGRADUATE PROGRAMME

B.Sc. BIOCHEMISTRY

FACULTY: SCIENCE AND TECHNOLOGY

(Courses effective from Academic Year 2026-2027 Under Uniform NEP 2020)

**Scheme of
Teaching-Learning-Evaluation,
Credit Distribution, Workload Calculation and Examination**

Credit Distribution

Three/Four-year UG Degree Programme (Level 4.5 to 5.5)

Vertical	Vertical Type	I	II		III	IV	V	VI	Total Credits	Grand Total
	(i) Three-year UG Degree Programme (Level 4.5.to 5.5)									
A	Major DSC (60–64) (Minimum 50% of Total Credits)	4	4	Major	6	8	8	8	38	48
				IKS	2				2	
		0	0	Elective	0	0	4	4	8	
B	Minor (from same faculty of DSC) (18–24)	4	4		4	4	4	4	24	24
C	Generic/Open Elective (OE) (Faculty-wise basket other than Major/Minor faculty) (10–12)	4	4		2	2	0	0	12	12
D(i)	Vocational Skill Courses (VSEC) corresponding to Major/Minor (8–10)	0	2		2	2	2	2	10	16
D(ii)	Skill Enhancement Courses (SEC)	2	2		0	0	2	0	6	
E(i)	Ability Enhancement Courses (AEC) (English + Modern Indian Language)	1+1	1+1		1+1	1+1	0	0	8	14
E(ii)	Indian Knowledge System (IKS) 2 Generic	2	0		0	0	0	0	2	
E(iii)	Value Education Courses (VEC) (Understanding India, EVS, Digital & Technological Solution) 4	2	2		0	0	0	0	4	
F(i)	Internship / Apprenticeship corresponding to Major 8 (OJT)	0	0		0	0	0	4	4	18
F(ii)	Field Projects / Community Engagement & Service (CEP) corresponding to Major 4-6	0	0		2	2	2	0	6	
F(iii)	Co-curricular Courses (CC) (health & wellness, yoga education, sports, fitness, cultural activities, NSS/ NCC & Fine/ Applied/ Visual/ Performing Arts 8	2	2		2	2	0	0	8	
	Total Credits per Semester	22	22		22	22	22	22	132	132

(ii) Four-year UG Degree programme (Level 6.0) Honors Degree in Major or Minor						
A. Honors Degree in Major or Minor						
	Vertical Type			Semester VII	Semester VIII	
	Major (Offered at Three-year UG Programme)	Mandatory		12-14(2*4+2*2 or 3*4+2)	12-14(2*4+2*2 or 3*4+2)	28
		Elective		4	4	8
	Research Methodology (RM)			4	0	8
	On the Job Training (OJT)			0	4	4
	Total			22	22	44
	Cumulative			(132+44) 176		
(ii) Four-year UG Degree Programme (Level 6.0)						
B. Honors with Research Degree in Major or Minor						
	Major (Offered at Three-year UG Programme)			Semester VII	Semester VIII	
		Mandatory		8-10 (24+2 or 24)	8-10 (24+2 or 24)	20
		Elective		4	4	8
	Research Methodology (RM)			4	0	4
	Research Project (RP)			4	8	12
	Total			22	22	44
	Cumulative			(132+44) 176		

Teaching and Learning Scheme: for the Degree of Bachelor of Biochemistry as Major
Sant Gadge Baba Amravati University, Amravati
FACULTY: SCIENCE AND TECHNOLOGY
Teaching and Learning Scheme: for the Degree of Bachelor of Biochemistry as Major and as Minor
TLE Scheme for FIRST YEAR: SEMESTER – I (Biochemistry) (Level 4.5)

The Vertical	Type of Course	Course Code	Course Title	Credits	Workload	Theory/Practical				Theory/Practical (Total)	
						External		Internal		Max. Marks	Min. Marks
						Max. Marks	Min. Marks	Max. Marks	Min. Marks		
Major / Minor	Theory 1	103200	Biomolecules	2	2	30	9	20	6	50	20
	Lab/Practical 1	103201	Practicals in Basic Biochemistry	2	4	25	10	25	10	50	20
Minor / Major	Theory 1	-	-	2	2	30	9	20	6	50	20
	Lab/Practical 1	-	-	2	4	25	10	25	10	50	20
Generic/Open Elective	Theory 1	103202	Biochemistry in Health and Disease	2	2	30	9	20	6	50	20
	Theory 2	103203	Plant Biotechnology	2	2	30	9	20	6	50	20
VSC	-	-	-	-	-	-	-	50	20	50	20
SEC	Lab/Practical 3	103204	Application Based Practicals in Biochemistry	2	4	-	-	50	20	50	20
AEC - English	Theory		Refer University basket	1	1						
AEC –MIL	Theory		Refer University basket	1	1						
IKS-Generic	Theory		Refer University basket	2	2						
VEC	Theory		Refer University basket	2	2						
CC	Outdoor		Separate SOP will be released	2	4						
TOTAL				22	30						

TLE Scheme for FIRST YEAR: SEMESTER – II

The Vertical	Type of the Course	Course Code	Course Title	Credits	Workload	Theory/Practical				Theory/Practical	
						External		Internal		(Total)	
						Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks
Major / Minor	Theory	103205	Biophysical and Biochemical techniques	2	2	30	9	20	6	50	20
	Lab/Practical	103206	Quantitative analysis of Biomolecules	2	4	30	9	20	6	50	20
Major / Minor	Theory		-	2	2	25	10	25	10	50	20
	Lab/Practical		-	2	4	30	9	20	6	50	20
Generic/ Open Elective	Theory	103207	Nutritional Biochemistry	2	2	25	10	25	10	50	20
	Theory	103208	Biochemical Toxicology	2	2	30	9	20	6	50	20
VSC	Lab/Practical	103209	Biochemical and Cell Biology Techniques	2	4	-	-	50	20	50	20
SEC	Lab/Practical	103210	Extraction , Separation and Purification of Biomolecules	2	4	-	-	50	20	50	20
AEC - English			Refer University basket	1	1	-	-	50	20	50	20
AEC –MIL			Refer University basket	1	1	-	-	50	20	50	20
VEC			Refer University basket	2	2						
CC			Separate SOP will be released	2	4						
TOTAL				22	32						

*** Important:**

- VSC Should be Complementary to Major/Minor
- SEC has to be selected from the Basket Provided by University, from the same Faculty/Discipline of the Major/Minor

TLE Scheme for SECOND YEAR: SEMESTER – III (Level 5.0)

Vertical	Type of the Course	Course Code	Course Title	Credits	Workload	Theory/Practical				Theory/Practical (Total)	
						External		Internal			
						Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks
Major	Major-T	103211	Metabolism I	2	2	30	9	20	6	50	20
Major	Major-T	103212	Metabolism II	2	2	30	9	20	6	50	20
Major	Major-P	103213	Practical Aspects in Metabolic Biochemistry	2	4	30	9	20	6	50	20
IKS	IKS-T	103214	IKS in Biochemistry	2	2	30	9	20	6	50	20
Minor	Minor-T	103215	Basic Metabolism	2	2	30	9	20	6	50	20
Minor-	Minor-P	103216	Practical Applications of Metabolism	2	4	25	10	25	10	50	20
GOEC	GOEC-T	103217	Human Reproductive health and Blood Components	2	2	30	9	20	6	50	20
VSC	VSC-P	103218	Metabolic Biochemistry in Laboratory Diagnostics	2	4	-	-	50	20	50	20
FP/CES	FP/CES	103219	(FP/ CEP in Biochemistry - I)	2	4	-	-	50	20	50	20
CC	CC			2	4	-	-	50	20	50	20

Important: * VSC Should be Complementary to Major ** SEC has to be selected from the Basket Provided by University, from the same Faculty/Discipline of the Major/Minor

TLE Scheme for SECOND YEAR: SEMESTER – IV (Level 5.0)

Vertical	Type of the Course	Course Code	Course Title	Credits	Workload	Theory/Practical				Theory/Practical (Total)	
						External		Internal			
						Max. Marks	Min. Marks	Max. Marks	Min. Marks	Max. Marks	Min. Marks
Major	Major-T	103220	Basic enzymology	2	2	30	9	20	6	50	20
Major	Major-T	103221	Advanced enzymology	2	2	30	9	20	6	50	20
Major	Major-T *	103229	Endocrinology	2	2	30	9	20	6	50	20
Major	Major-P	103222	Enzyme Technology: Laboratory Methods	2	4	25	10	25	10	50	20
Minor	Minor-T	103223	General enzymology	2	2	30	9	20	6	50	20
Minor	Minor-P	103224	Practical enzymology	2	4	25	10	25	10	50	20
GOEC	GOEC-T	103225	Biochemistry of food Digestion	2	2	30	9	20	6	50	20
VSC	VSC-P	103226	Practicals in Applied Enzyme Technology	2	4	-	-	50	20	50	20
SEC	SEC-P [#]	103227	Techniques in isolation and characterization of enzymes	2	4	-	-	50	20	50	20
FP/CES	FP/CES	103228	(FP/ CEP in Biochemistry - II)	2	4	-	-	50	20	50	20
CC	CC			2	4	-	-	50	20	50	20

* To be implemented w.e.f. academic session 2026-27

- Only applicable up to academic session 2025-26

Important:

- VSC Should be Complementary to Major
- SEC has to be selected from the Basket Provided by University, from the same Faculty/Discipline of the Major/Minor

TLE Scheme for THIRD YEAR: SEMESTER – V (Level 5.5)

Vertical	The Vertical	Course Code	Course Title	Credits	Workload	Theory/Practical Marks				Theory/Practical (Total) Marks	
						External		Internal			
						Max.	Min.	Max.	Min.	Max.	Min.
Major	Major-T	103230	Inheritance Biology	2	2	30	9	20	6	50	20
Major	Major-T	103231	Molecular Biology	2	2	30	9	20	6	50	20
Major	Major-T	103232	Biotechnology	2	2	30	9	20	6	50	20
Major	Major-P	103233	Laboratory Techniques in Genetics, Molecular Biology and Biotechnology	2	4	25	10	25	10	50	20
Major	Major-Elective T	103234	Fundamentals of Plant Biochemistry	2	2	30	9	20	6	50	20
	Major-Elective P	103235	Basic practicals in Plant Biochemistry	2	4	25	10	25	10	50	20
	OR										
	Major-Elective T	103236	Biostatistics and Bioinformatics	2	2	30	9	20	6	50	20
	Major-Elective P	103237	Basic practicals in Biostatistics and Bioinformatics	2	4	25	10	25	10	50	20
Minor	Minor-T	103238	Molecular Biology and Biotechnology	2	2	30	9	20	6	50	20
Minor	Minor-P	103239	Practicals in Molecular Biology and Biotechnology	2	4	25	10	25	10	50	20
VSC	VSC-P	103240	Applied Techniques in Biotechnology	2	4	-	-	50	20	50	20
SEC	SEC-P	103241	Analytical Techniques in Molecular Biology and Genetics	2	4	-	-	50	20	50	20
FP/CEP	FP/CEP	103242	(FP/ CEP in Biochemistry)	2	4	-	-	50	20	50	20
CC	CC		Outdoor	-	-			30+20	9+6	50	20

Important:

- **VSC Should be Complementary to Major**
- **SEC must be selected from the Basket Provided by University, from the same Faculty/Discipline of the Major/Minor**
- As per Sant Gadge Baba Amravati University, Amravati Extra-Ordinary Notification No. No. 241/2025 Dated 24/12/2025 “Foundation of Artificial Intelligence” is the Mandatory **Non Credit Course** compulsory course for all the UG students in fifth semester of all undergraduate programs of all faculties in Sant Gadge Baba Amravati University, Amravati to earn their degree
- NC is Non Credit Course
- Students must select **Any One** of the Major-Elective Courses (T1 to T2) with respective Practical Course in Semester V and **same shall be continued** for Semester VI

TLE Scheme for THIRD YEAR: SEMESTER – VI (Level 5.5)

Vertical	Type of the Course	Course Code	Course Title	Credits	Workload	Theory/Practical Marks				Theory/Practical (Total) Marks	
						External		Internal			
						Max.	Min.	Max.	Min.	Max.	Min.
Major	Major-T	103243	Fundamental Immunology	2	2	30	9	20	6	50	20
Major	Major-T	103244	Basic Clinical Biochemistry	2	2	30	9	20	6	50	20
Major	Major-T	103245	Cell Biology	2	2	30	9	20	6	50	20
Major	Major-P	103246	Integrated Immunology and Clinical biochemistry Laboratory	2	4	25	10	25	10	50	20
Major	Major-Elective T	103247	Introduction to Bacteriology and Microbial Biochemistry	2	2	30	9	20	6	50	20
	Major-Elective P	103248	Microbiological Techniques and Biochemical Analysis	2	4	25	10	25	10	50	20
	OR										
	Major-Elective T	103249	Nutritional Biochemistry	2	2	30	9	20	6	50	20
	Major-Elective P	103250	Biochemical Analysis and Food Chemistry Laboratory	2	4	25	10	25	10	50	20
Minor	Minor-T	103251	Immunology and Clinical Biochemistry	2	2	30	9	20	6	50	20
Minor	Minor-P	103252	Clinical Biochemistry and Immunology laboratory	2	4	30	9	20	6	50	20
VSC	VSC-P	103253	Analysis of Food Antinutritional Factors and Toxicants	2	4	-	-	50	20	50	20
Intern/Apprenticeship	Intern/Apprenticeship	103254	OJT (On the Job Training)	4	8	-	-	50	20	50	20

Important: VSC Should be Complementary to Major and SEC has to be selected from the Basket Provided by University, from the same Faculty/Discipline of the Major/Minor

SWAYAM/NPTEL Courses under NEP 2020

Sr. No.	Semester	Course Title	Course Code*	Credits**	Institution	Agency	Enrollment Ends	Link to Enroll
1	I	Biochemistry and Cell Biology	CEC26_CY12	4	School of Biotechnology, Devi Ahilya Vishwavidyalaya (DAVV), Indore	CEC	31 Aug 2026	https://onlinecourses.swayam2.ac.in/e-learning/preview/cec26_cy12
2	II	Analytical Techniques in Biochemistry	CEC26_CY11	4	AIIMS, New Delhi	NPTEL	31 Aug 2026	https://onlinecourses.swayam2.ac.in/e-learning/preview/cec26_cy11
3	III	Overview and integration of cellular metabolism	NOC26_CY71	3	IIT Kharagpur	NPTEL	27 Jul 2026	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cy71
4	IV	Cell and Molecular Biology	NOC26_BT91	3	IIT Guwahati	NPTEL	27 Jul 2026	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_bt91
5	IV	Basic concepts in Enzymology	CEC26_CY08	4	St. Mary's College Thrissur	CEC	31 Aug 2026	https://onlinecourses.swayam2.ac.in/e-learning/preview/cec26_cy08
6	V	Molecular Biology and cell Signaling	INI26_HC09	4	Aligarh Muslim University	INI	31 Aug 2026	https://onlinecourses.swayam2.ac.in/e-learning/preview/ini26_hc09
7	VI	Immunology	NOC26_BT85	3	IIT Kharagpur	NPTEL	27 Jul 2026	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_bt85

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* Course codes may vary according to the year and session of enrollment

** Credits will be awarded as per provisions of the SWAYAM/NPTEL at the time of actual enrollment.

Instructions for Enrollment in SWAYAM/NPTEL Courses under NEP 2020

All students of **B.Sc. with Biochemistry as Major or Minor** of all semesters are encouraged to enroll in suitable SWAYAM/NPTEL online courses to enhance their academic knowledge, practical skills, and employability.

General Instructions

1. Students may choose any course of their interest listed in table above for specific semester.
2. Before enrollment, students must ensure that they have an active Academic Bank of Credits (ABC) ID. The same ABC ID should be used while registering for the selected SWAYAM/NPTEL course so that earned credits can be deposited in the Academic Bank of Credits.
3. Students should carefully read the course details including duration, eligibility, syllabus, examination schedule, and credit structure before enrolling.
4. Merely enrolling in a course does not make a student eligible for academic credits. Students must:
Complete the course requirements, Appear for the proctored examination, and Successfully pass the examination as per the norms prescribed by SWAYAM/NPTEL.
5. Credits will be awarded only after successful completion and certification of the course by the concerned agency.
6. Every student must submit the details of the enrolled course to the Department of Biochemistry immediately after registration.
7. Submission of enrollment details to the Department is mandatory to facilitate record maintenance and compliance with University requirements regarding credit transfer and academic documentation.
8. Students are advised to preserve all course-related documents, including Enrollment confirmation, Course progress records, Examination registration receipt, Score card, Final certificate.
9. Students shall be responsible for timely registration for the examination, payment of examination fees (if applicable), and completion of all course requirements within the stipulated period.
10. The Department of shall not be responsible for missed deadlines, incomplete registrations, examination non-appearance, or failure to satisfy the certification requirements of the concerned SWAYAM/NPTEL course.
11. After successful completion of the course, students must submit a copy of the course certificate and score card to the Department of Biochemistry for further processing and reporting to the University.