Chhattisgarh Swami Vivekanand Technical University (CSVTU, NEWAI (C.G.))

SCHEME OF TEACHING AND EXAMINATION
B Tech (Seventh Semester - Biotechnology Engineering)

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination Theory/Lab			Total Marks	Credit
				L	T	P	ESE	CT	TA		
1.	Biotechnology	Pharmaceutical Biotechnology	**D018711(018)**	3	1	-	100	20	30	150	4
2.	Biotechnology	Functional Genomics and Proteomics	**D018712(018)**	2	1	-	100	20	30	150	3
3.	Biotechnology	Nano-Biotechnology	**D018713(018)**	2	1	-	100	20	30	150	3
4.	*Professional Elective –III (Refer to Table I)*			1	1	-	100	20	30	150	2
5.	*Open Elective- II (Refer to Table II)*			2	0	-	100	20	30	150	2
6.	Biotechnology	Pharmaceutical Biotechnology Lab	**D018721(018)**	-	-	2	40	-	20	60	1
7.	Biotechnology	Nano-Biotechnology Lab	**D018722(018)**	-	-	2	40	-	20	60	1
8.	Biotechnology	Project (Phase I)	**D018723(018)**	-	-	6	60	-	40	100	3
9.	Biotechnology	Industrial Training	**D018724(018)**			2			20	20	1
10.	Non-credit Course	Universal Human Values 2	**D000701(046)**	-	-	2	-	-	10	10	-
			Total Marks	**10**	**4**	**14**	**640**	**100**	**260**	**1000**	**20**

L – Lecturer ,T – Tutorial, P – Practical , CT –Class Test ESE – End Semester Exam TA – Teacher's Assessment

➤ **Note: - The students have to attend the four weeks industrial training / summer internship in B. Tech program after sixth semester, which will be evaluated in seventh semester.**

Table I (Professional Elective III)

S.N.	Board of Studies	Course Code	Subject
1.	Biotechnology	**D018731(018)**	Gene Expression and Trangenics
2.	Biotechnology	**D018732(018)**	Rational Drug Discovery
3.	Biotechnology	**D018733(018)**	Oncology

Note: (1) 1/4th of total strength of students subject to minimum of 20 students is required to offer and elective in the college in a particular academic session.

(2) Choice of elective course once made for an examination cannot be changed in future examinations.

Chhattisgarh Swami Vivekanand Technical University (CSVTU), Bhilai (CG)

SCHEME OF TEACHING AND EXAMINATION

B Tech (Third Semester - Biotechnology Engineering)

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination Theory/Lab			Total Marks	Credit
				L	T	P	ESE	CT	TA		
1.	Biotechnology	Biochemistry	B018311(018)	3	1	-	100	20	30	150	4
2.	Biotechnology	Microbial Technology	B018312(018)	3	1	-	100	20	30	150	4
3.	Biotechnology	Genetics	B018313(018)	3	1	-	100	20	30	150	4
4.	Biotechnology	Cell and Molecular Biology	B018314(018)	2	1	-	100	20	30	150	3
5.	Biotechnology	Biophysics	B018315(018)	2	-	-	100	20	30	150	2
6.	Biotechnology	Biochemistry Lab	B018321(018)	-	-	2	40	-	20	60	1
7.	Biotechnology	Microbial Technology Lab	B018322(018)	-	-	2	40	-	20	60	1
8.	Biotechnology	Cell and Molecular Biology Lab	B018323(018)	-	-	2	40	-	20	60	1
9.	Biotechnology	Software Lab	B018324(018)	-	-	2	40	-	20	60	1
10.	Humanities	Personality Development	B000306(046)	-	-	2	-	-	10	10	-
			Total Marks	**13**	**4**	**10**	**660**	**100**	**240**	**1000**	**21**

L-Lecture, T-Tutorial, P-Practical, ESE-End Semester Exam, CT- Class Test, TA-Teacher's Assessment

Chhattisgarh Swami Vivekanand Technical University (CSVTU, NEWAI (C.G.))
SCHEME OF TEACHING AND EXAMINATION

B Tech (Fourth Semester - Biotechnology Engineering)

Sl. No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination Theory/Lab			Total Marks	Credit
				L	T	P	ESE	CT	TA		
1.	Biotechnology	Bioprocess Engineering	B018411(018)	3	1	-	100	20	30	150	4
2.	Biotechnology	Immunology & Immuno technology	B018412(018)	3	1	-	100	20	30	150	4
3.	Biotechnology	Recombinant DNA Technology	B018413(018)	3	1	-	100	20	30	150	4
4.	Biotechnology	Bioinformatics & Computational Biology	B018414(018)	2	1	-	100	20	30	150	3
5.	Biotechnology	Environmental Biotechnology	B018415(018)	2	-	-	100	20	30	150	2
6.	Biotechnology	Immunology &Immunotechnology Lab	B018421(018)	-	-	2	40	-	20	60	1
7.	Biotechnology	Bioinformatics & Computational Biology Lab	B018422(018)	-	-	2	40	-	20	60	1
8.	Biotechnology	Recombinant DNA Technology Lab	B018423(018)	-	-	2	40	-	20	60	1
9.	Biotechnology	Virtual Lab	B018424(018)	-	-	2	40	-	20	60	1
10.	Non-credit Course	Indian Culture and Constitution of India	B000406(046)	-	-	2	-	-	10	10	-
			Total Marks	13	4	10	660	100	240	1000	21

L-Lecture, T-Tutorial, P-Practical, ESE-End Semester Exam, CT- Class Test, TA-Teacher's Assessment

Note:

1. Duration of End Semester Exam of all theory papers will be of Three Hours.
2. Industrial Training of eight weeks is mandatory for B.Tech.. Student. It is to be completed in two parts.
   - The first part will be in summer after IV semester after which students have to submit a training report which will be evaluated by the college teachers during B.E. V semester.

Chhattisgarh Swami VivekanandTechnical University (CSVTU, NEWAI (C.G.))

SCHEME OF TEACHING AND EXAMINATION

B Tech (Fifth Semester - Biotechnology Engineering)

Sl. No.	Board of Studies	Courses (Subject)	Course Code	L	T	P	Theory/Lab			Total Marks	Credits
							ESE	CT	TA		
1.	Biotechnology	Entrepreneurship and Startups	C018511(018)	3	1	-	100	20	30	150	4
2.	Biotechnology	Metabolic Engineering	C018512(018)	3	1	-	100	20	30	150	4
3.	Biotechnology	Analytical Techniques	C018513(018)	3	1	-	100	20	30	150	4
4.	Biotechnology	Biosafety and Bioethics	C018514(018)	2	1	-	100	20	30	150	3
5.		**Professional Elective-I (Refer Table I)**		2	0	-	100	20	30	150	2
6.	Biotechnology	Entrepreneurship and Startups Lab	C018521(018)	-	-	2	40	-	20	60	1
7.	Biotechnology	Metabolic Engineering Lab	C018522(018)	-	-	2	40	-	20	60	1
8.	Biotechnology	Analytical Techniques Lab	C018523(018)	-	-	2	40	-	20	60	1
9.	Biotechnology	Project –I based on summer internship/ Industrial Training	C018524(018)	-	-	2	40	-	20	60	1
10.	Civil Engg.	Environmental Studies	C000506(020)	-	-	2	-	-	10	10	-
			Total	**13**	**4**	**10**	**660**	**100**	**240**	**1000**	**21**

L – Lecturer   T – Tutorial,
P – Practical,   ESE – End Semester Exam,   CT –ClassTest
TA – Teacher's Assessment

Table I (Professional Elective I)

S.N.	Board of Studies	Course Code	Subject
1.	Biotechnology	C018531(018)	Marine Biotechnology
2.	Biotechnology	C018532(018)	Genome Editing
3.	Biotechnology	C018533(018)	Biosimilars Technology

Note: (1)   1/4th of total strength of students subject to minimum of 20 students is required to offer and elective in the college in a particular academic session.

(2)   Choice of elective course once made for an examination cannot be changed in future examinations.

SCHEME OF TEACHING AND EXAMINATION
B Tech (Sixth Semester – Biotechnology Engineering)

Sl. No.	Board of Studies	Courses (Subject)	Course Code	Period per Week			Theory/Lab			Total Marks	Credits
				L	T	P	ESE	CT	TA		
1.	Biotechnology	Plant and Animal Biotechnology	C018611(018)	3	1	-	100	20	30	150	4
2.	Biotechnology	Enzyme Technology	C018612(018)	3	1	-	100	20	30	150	4
3.	Biotechnology	Food Processing Technology	C018613(018)	3	1	-	100	20	30	150	4
4.	Professional Elective-II(Refer Table I)			2	1	-	100	20	30	150	3
5.	Open Elective – I (Refer Table III)			2	0	-	100	20	30	150	2
6.	Biotechnology	Plant and Animal Biotechnology Lab	C018621(018)	-	-	2	40	-	20	60	1
7.	Biotechnology	Enzyme Technology Lab	C018622(018)	-	-	2	40	-	20	60	1
8.	Biotechnology	Food Processing Technology Lab	C018623(018)	-	-	2	40	-	20	60	1
9.	Biotechnology	Professional Elective-II Lab (Refer Table II)		-	-	2	40	-	20	60	1
10.	Humanities	Technical Communication and Soft Skill	C000601(046)	-	-	2	-	-	10	10	-
			Total	13	4	10	660	100	240	1000	21

L – Lecturer   T – Tutorial, TA – Teacher's Assessment

P – Practical,   ESE – End Semester Exam,   CT –ClassTest

Table I (Professional Elective I)

S.N.	Board of Studies	Subject	Course Code
1.	Biotechnology	Machine Learning	C018631(018)
2.	Biotechnology	Waste Management & Up cycling	C018632(018)
3.	Biotechnology	Stem-Cell Technology	C018633(018)

Table II (Professional Elective Lab)

S.N.	Board of Studies	Subject	Course Code
1.	Biotechnology	Machine Learning Lab	C018624(018)
2.	Biotechnology	Waste Management & Up cycling Lab	C018625(018)
3.	Biotechnology	Stem-Cell Technology	C018626(018)

Note: (1) 1/4th of total strength of students subject to minimum of 20 students is required to offer and elective in the college in a particular academic session.

(2) Choice of elective course once made for an examination cannot be changed in future examinations.

Chhattisgarh Swami VivekanandTechnical University (CSVTU, NEWAI (C.G.))

B Tech (Sixth Semester)

List of Open Elective – I (Table III) (For 6th Semester)

S.N.	Board of Studies	Subject	Course Code
1	Agriculture Engg.	Food Packaging Technology	C000601(094)
2	Agriculture Engg	Energy Management & Audit	C000602(094)
3	Agriculture Engg	Energy Conservation & Management	C000603(094)
4	Agriculture Engg	Disaster Management	C000604(094)
5	Agriculture Engg	Ecology and Sustainable Development	C000605(094)
6	Agriculture Engg	Non Conventional Energy Sources	C000606(094)
7	Mechanical Engineering	Safety Engineering	C000607(037)
8	Mechanical Engineering	Value Engineering	C000608(037)
9	Mechanical Engineering	Managing Innovation & Entrepreneurship	C000609(037)
10	Mechanical Engineering	Environment Pollution & Control	C000610(037)
11	Management	Enterprise Resource Planning ((Except CSE & IT Branch)	C000611(076)
12	Computer Science Engg.	Artificial Intelligence	C000612(022)
13	Computer Science Engg	Quantum Computing	C000613(022)
14	Computer Science Engg	Cyber Security	C000614(022)
15	Civil Engg	Construction engineering and management	C000615(020)
16	Civil Engg	Metro system and engineering	C000616(020)
17	Civil Engg	Infrastructure Planning and Management	C000617(020)
18	Computer Science Engg	Parallel Processing & Computing	C000618(022)
19	Computer Science Engg	Cryptography & Network Security	C000619(022)
20	Computer Science Engg	Cloud Computing	C000620(022)
21	Computer Science Engg	Computer Networks	C000621(022)
22	Computer Science Engg	Internet of Things	C000622(022)
23	Computer Science Engg	Data Structures and Algorithms	C000623(022)
24	Computer Science Engg	Big Data Analytics	C000624(022)
25	Electrical and Electronics Engg	Electrical Estimation and Costing	C000625(025)
26	Electrical and Electronics Engg	Energy Auditing and Management	C000626(025)
27	Management	Finance Management	C000627(076)
28	Mechanical Engineering	Safety Engineering	C000628(037)
29	Electronics & Telecom.	AI and Machine learning	C000629(028)
30	Electronics & Telecom.	Operating Systems	C000630(028)
31	Electronics & Telecom.	Internet & Web Technology	C000631(028)
32	Electronics & Telecom.	Database Management Systems (DBMS)	C000632(028)
33	Electronics & Telecom.	Device Modelling	C000633(028)
34	Electronics & Telecom.	Introduction to MEMS	C000634(028)
35	Mechanical Engineering	Principles of Management	C000635(037)
36	Mechanical Engineering	Advanced I.C. Engines	C000636(037)

37	Mechanical Engineering	Mechanical Vibrations & Condition Monitoring	**C000637(037)**
38	Mechatronics	Entrepreneurship Developments	**C000638(067)**
39	Plastic Engineering	Heat Transfer Operation	**C000639(095)**
40	Plastic Engineering	Process Economics and Management	**C000640(095)**
41	Plastic Engineering	Adhesive and Surface Coating	**C000641(095)**
42	Information Technology	E-Commerce	**C000642(033)**
43	Information Technology	Industrial Economics and Management	**C000643(033)**
44	Information Technology	Project Planning & Management	**C000644(033)**
45	Information Technology	Bio-Informatics	**C000645(033)**
46	Information Technology	Management Information System	**C000646(033)**
47	**Chemical Engineering**	**Plant Utility & Safety Engineering**	**C000647(019)**
48	**Chemical Engineering**	**Environment Pollution & Control**	**C000648(019)**

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B Tech (Seventh Semester)

List of Open Elective – II (Table III) (For 7th Semester)

S.N.	Board of Studies	Course Code	Subject
1	Agriculture Engg	D000701(094)	Biomass Management For Fodder And Energy.
2	Agriculture Engg	D000702(094)	Gully And Ravine Control Structures
3	Civil Engg	D000703(020)	Design Of Structures.
4	Agriculture Engg	D000704(094)	Reservoir And Farm Pond Design.
5	Mechanical	D000705(037)	3 D Printing & design
6	Management	D000706(076)	TechnologyManagement
7	Information Technology	D000707(033)	Decision Support & ExecutiveInformationsystem
8	CSE	D000708(022)	Software Technology
9	Management	D000709(076)	Knowledge Entrepreneurship
10	Management	D000710(076)	Intellectual Property Rights
11	Biotechnology	D000711(018)	Phytochemistry
12	Biotechnology	D000712(018)	Clinical Research and Trial Management
13	Biotechnology	D000713(018)	Cellular and Molecular Diagnostics
14	Chemical Engineering	D000714(019)	Environmental Legislation & Impact Assessment
15	Civil Engineering	D000715(020)	Environmental management and Legislations
16	Civil Engineering	D000716(020)	Hydraulics of water and waste water
17	Civil Engineering	D000717(020)	Disaster Management
18	CSE	D000718(022)	Neural Network and Deep Learning
19	CSE	D000719(022)	Big data and Hadoop
20	CSE	D000720(022)	BioInformatics
21	CSE	D000721(022)	SoftwareTesting
22	EEE	D000722(025)	Switched Mode Power Converter
23	EEE	D000723(025)	Internet of Things
24	EEE	D000724(025)	Non Conventional Energy Sources
25	EEE	D000725(025)	Sensors and Transducers
26	Information Technology	D000726(033)	E-Commerce & strategic IT
27	Computer Science & Engg.	D000727(022)	Software Technology
28	Electrical Engineering	D000728(024)	Solar PV Energy System
29	Mechanical Engineering	D000729(037)	Energy Conservation & Management
30	Information Technology	D000730(033)	Information Theory & Coding
31	Management	D000731(076)	Project Planning, Management & Evaluation
32	Electronics & Telecom	D000732(028)	Java Programming
33	Electronics & Telecom	D000733(028)	Cloud computing

34	Electronics & Telecom	**D000734(028)**	Big data Mining
35	Electronics & Telecom	**D000735(028)**	Cryptography & Network security
36	Electronics & Telecom	**D000736(028)**	Neural Network & Fuzzy Logic
37	Electronics & Telecom	**D000737(028)**	RF IC Design
38	Information Technology	**D000738(033)**	Graph Theory And Applications
39	Information Technology	**D000739(033)**	Biometrics
40	Information Technology	**D000740(033)**	Quantum Computing
41	Information Technology	**D000741(033)**	Entrepreneurship essentials
42	Information Technology	**D000742(033)**	Managerial Skills
43	Mechanical Engineering	**D000743(037)**	Mechatronics
44	Mechanical Engineering	**D000744(037)**	Engineering Economics
45	Mechanical Engineering	**D000745(037)**	Computer Graphics
46	Mechanical Engineering	**D000746(037)**	Control Engineering
47	Management	**D000747(076)**	Finance Management
48	Mechanical Engg.	**D000748(037)**	Energy Conservation & Management
49	Plastics Engineering	**D000749(095)**	Renewable Energy
50	Plastics Engineering	**D000750(095)**	Plastics Waste Management and Recycling