



Chhattisgarh Swami Vivekanand Technical University (CSV TU), 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			Total Marks	Credit
				L	T	P	Theory/Lab				
							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 (CSV TU, 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			Total Marks	Credit
				L	T	P	Theory/Lab				
							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 Vivekanand Technical University (CSVTV, 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
P – Practical,
TA – Teacher's Assessment

T – Tutorial,
ESE – End Semester Exam,

CT –ClassTest

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
P – Practical,

T – Tutorial, TA – Teacher's Assessment
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 Vivekanand Technical University (CSVTV, 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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Chhattisgarh Swami Vivekanand Technical University (CSV TU, 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			Total Marks	Credit
				L	T	P	Theory/Lab				
							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 Transgenics
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 (CSVTV, NEWAI (C.G.))

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



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

SCHEME OF TEACHING AND EXAMINATION

B Tech (Eight Semester - Biotechnology Engineering)

Sl.No.	Board of Studies (BOS)	Courses (Subject)	Course Code	Period per Week			Scheme of Examination			Total Mark	Credit
				L	T	P	Theory/Lab				
							ESE	CT	TA		
1.	Biotechnology	Agriculture Technology	D018811(018)	3	1	-	100	20	30	150	4
2.	Professional Elective–IV (<i>Refer to Table-I</i>)			2	1	-	100	20	30	150	3
3.	Open Elective–III (<i>Refer to Table-III</i>)			2	0	-	100	20	30	150	2
4.	Biotechnology	Agriculture Biotechnology (Lab)	D018821(018)	-	-	2	40	-	20	60	1
5.	Professional Elective Lab–IV (<i>Refer to Table-II</i>)			-	-	2	40	-	20	60	1
6.	Biotechnology	Project (Phase-II)	D018825(018)	-	-	14	350	-	80	430	7
Total Marks				7	2	18	730	60	210	1000	18

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

Table–I (Professional Elective – IV)

S.N.	Board of Studies	Course Code	Courses (Subject)
1.	Biotechnology	D018831(018)	Applied Forensics in Biotechnology
2.	Biotechnology	D018832(018)	Biofuel Technology
3.	Biotechnology	D018833(018)	Biofertilizer and Biopesticide

Table–II (Professional Elective Lab – IV)

S.N.	Board of Studies	Course Code	Courses (Subject)
1.	Biotechnology	D018822(018)	Applied Forensics in Biotechnology (Lab)
2.	Biotechnology	D018823(018)	Biofuel Technology (Lab)
3.	Biotechnology	D018824(018)	Biofertilizer and Biopesticide (Lab)

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 (CSV TU, NEWAI (C.G.))

B.Tech (Eight Semester)

List of Open Elective – III (Table – III) (For 8th Semester)

S.N.	Board of Studies	Course Code	Subject
1	Agriculture Engineering	D000801(094)	Environmental Science
2	Management	D000802(076)	Industrial Engineering & Management
3	Computer Science & Engineering	D000803(022)	Soft Computing Techniques
4	Mechanical	D000804(037)	Composite Materials
5	Electrical & Electronics Engineering	D000805(025)	Industrial Automation
6	Mechanical Engineering	D000806(037)	Production & Product Management
7	Electronics & Telecommunication	D000807(028)	Virtual Instrumentation
8	Computer Science & Engineering	D000808(022)	Data Sciences
9	Mechanical Engineering	D000809(037)	Computational Fluid Dynamics
10	Biotechnology	D000810(018)	Medical Biotechnology
11	Biotechnology	D000811(018)	Bioterrorism and National Security
12	Biotechnology	D000812(018)	Precision Medicine and Wellness
13	Chemical Engineering	D000813(019)	Non Conventional Energy Sources (NCES) (Except Electrical Engg. and Agriculture Engg.)
14	Civil Engineering	D000814(020)	Air pollution and control measures
15	Civil Engineering	D000815(020)	Solid and hazardous waste management
16	Computer Science Engineering	D000816(022)	Natural language processing
17	Computer Science Engineering	D000817(022)	Cluster and Grid Computing
18	Computer Science Engineering	D000818(022)	Blockchain
19	Computer Science Engineering	D000819(022)	Data Compression
20	Electrical & Electronics Engineering	D000820(025)	Power Plant Engineering
21	Electrical & Electronics Engineering	D000821(025)	Utilization of Electrical Energy and Electric Traction
22	Electrical & Electronics Engineering	D000822(025)	Introduction to Micro-electromechanical systems (MEMS)
23	Management	D000823(076)	Management Concept Techniques
24	Electronics & Telecom.	D000824(028)	Operational Research

25	Electronics & Telecom.	D000825(028)	Android Apps Development
26	Electronics & Telecom.	D000826(028)	Digital Switching & Multiplexing
27	Electronics & Telecom.	D000827(028)	Optimization Techniques
28	Information Technology	D000828(033)	Business Intelligence
29	Information Technology	D000829(033)	Game Theory
30	Information Technology	D000830(033)	Optimization Design And Techniques
31	Information Technology	D000831(033)	Software Metrics and Quality Assurance
33	Mechanical Engineering	D000833(037)	Energy Management and Audit
34	Information Technology	D000834(033)	Cyber Security and Information Security
35	Mechatronics Engineering	D000835(067)	Nanotechnology
36	Computer Science & Engineering	D000836(022)	Supply Chain Management
37	Electrical Engineering	D000837(024)	Electrical Estimation and Costing
38	Computer Science & Engineering	D000838(022)	Data Mining & Warehousing
39	Plastics Engineering	D000839(095)	Fiber Technology
40	Electrical Engineering	D000840(024)	Wind Energy