

ANDHRA UNIVERSITY :: A.U.COLLEGE OF ENGINEERING(A)
SCHEME OF INSTRUCTION & EXAMINATION
I/IV B.TECH (FOUR YEAR COURSE)
&
I/VI B.TECH & M.TECH (SIX YEAR DOUBLE DEGREE COURSE)
(WITH EFFECT FROM 2019-20 ADMITTED BATCH ONWARDS)
BRANCH: CHEMICAL ENGINEERING
SEMESTER: FIRST

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
ENG 1101	English	2			30	70	100	2
ENG 1102	Maths -I	3			30	70	100	3
ENG 1103	Maths-2	3			30	70	100	3
ENG 1104	Chemistry	3	1		30	70	100	4
ENG 1106	Computer Programming & Numerical Methods	3			30	70	100	3
ENG 1108	Chemistry Lab.,			3	50	50	100	2
ENG 1110	CPNM Lab.,			3	50	50	100	2
ENG 1112	History of Science & Technology	2						0
Total		16	1	10			700	19

I/IV B.TECH (FOUR YEAR COURSE)
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I/VI B.TECH & M.TECH (SIX YEAR DOUBLE DEGREE COURSE)
(WITH EFFECT FROM 2019-20 ADMITTED BATCH ONWARDS)

BRANCH: CHEMICAL ENGINEERING
SEMESTER: SECOND

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
ENG 1201	Maths-3	3	1		30	70	100	4
ENG 1202	Physics	3	1		30	70	100	4
ENG 1205	Engineering Graphics	2		4	30	70	100	4
ENG 1206	Introduction to Chemical Engineering and Biotechnology	3	1		30	70	100	3
ENG 1208	Physics Lab.,			3	50	50	100	2
ENG 1210	Workshop			3	50	50	100	2
ENG 1212	English Lab.,			3	50	50	100	2
ENG 1214	Professional Ethics & Moral Values	2						0
Total		13	3	17			700	21

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: FIRST**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1301	Solid Mechanics	3	1	0	30	70	100	2
CHE1302	Mechanical Engg	3	1	0	30	70	100	2
CHE1303	Organic Chemistry	3	1	0	30	70	100	3
CHE1304	Material & Energy Balance	3	1	0	30	70	100	3
CHE1305	Biology	3	1	0	30	70	100	3
CHE1306	Basic Electrical Engg.,	3	1	0	30	70	100	3
CHE1308	General Engg., Lab (Electrical Engg. & Mechanical Engg.)	0	0	3	50	50	100	2
CHE1310	Organic Chemistry Lab.,	0	0	3	50	50	100	2
Total		18	6	6			800	20

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1401	Particle & Fluid Particle Processing	3	1	0	30	70	100	3
CHE1402	Fluid Mechanics	3	1	0	30	70	100	3
CHE1403	Thermodynamics-I	3	1	0	30	70	100	3
CHE1404	Materials Science & Engineering	3	1	0	30	70	100	3
CHE1405	Managerial Economics	3	1	0	30	70	100	3
CHE1406	Numerical Methods in Chemical Engineering	2	0	3	30	70	100	2
CHE1407	Environmental Science	3	-	-	100	--	100	0
CHE1410	Mechanical Operations Lab.,	0	0	3	50	50	100	2
CHE1412	Fluid Mechanics Laboratory	0	0	3	50	50	100	2
Total		20	05	09			900	21

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: FIRST**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1501	General Chemical Technology	3	1	0	30	70	100	3
CHE1502	Mass Transfer -I	3	1	0	30	70	100	3
CHE1503	Core Elective-I	3	1	0	30	70	100	3
CHE1504	Thermodynamics-II	3	1	0	30	70	100	3
CHE1505	Open Elective-I	3	0	0	30	70	100	3
CHE1506	Heat Transfer	3	1	0	30	70	100	3
CHE1508	Heat Transfer Lab	0	0	3	50	50	100	2
CHE1510*	General Chemical Technology Lab/ Petroleum Engg., Lab.,/Ceramic Technology Lab.,	0	0	3	50	50	100	2
CHE1512	Slot for MC (Constitution of India/Essence of Indian Traditional Knowledge)	3	0	0				0
Total		21	05	6			800	22

* General Chemical Technology Lab for B.Tech., (Chemical Engg.) & B.Tech+ M.Tech. (Chemical Engg.)/ Petroleum Engg., Lab., for B.Tech., (Chemical Engg. with Petroleum Engg. as elective) /Ceramic Technology Lab for B.Tech., (Chemical Engg. with Ceramic Technology as elective)

Core Elective-I:

For Chemical Engineering ;

1.Paper technology, 2. Fertilizer technology, 3. Petroleum Refinery Engg. 4. Ceramic raw materials.
5. Fuel cell technology, 6. Polymer technology. 7. Intellectual Property Rights

For Chemical Engineering with petroleum Engineering as elective:

Petroleum Refinery Engg.

For Chemical Engineering with Ceramic Technology as elective:

Ceramic raw materials

Open Elective-I

Corrosion Engineering

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1601	Chemical Reaction Engineering	3	1	0	30	70	100	4
CHE1602	Process Technology & Economics	3	1	0	30	70	100	3
CHE1603	Core Elective-II	3	1	0	30	70	100	3
CHE1604	Transport Phenomena	3	1	0	30	70	100	4
CHE1605	Mass Transfer –II	3	1	0	30	70	100	3
CHE1606	Open Elective-II	3	0	0	30	70	100	3
CHE1608	Chemical Reaction Engg., Lab.,	0	0	3	50	50	100	2
CHE1610	Mass Transfer Lab`	0	0	3	50	50	100	2
Total		18	05	06			800	24

Core Elective-II:

For Chemical Engineering ;

1. Computer applications in chemical Engineering ,
2. Process modeling and simulation,
3. Petrochemicals
4. White ware and heavy clayware,
5. Computational fluid dynamics ,
6. Multi component separation processes
7. Chemical Engineering Mathematics

For Chemical Engineering with petroleum Engineering as elective:

Petrochemicals

For Chemical Engineering with Ceramic Technology as elective:

White ware and heavy clayware

Open Elective-II

Nano Science & Technology

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: FIRST**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1701	Process Control & Instrumentation	3	1	0	30	70	100	4
CHE1702	Chemical Process Equipment Design	3	1	0	30	70	100	4
CHE1703	Core Elective-III	3	1	0	30	70	100	3
CHE1704	Industrial Management & Entrepreneurship	3	1	0	30	70	100	3
CHE1705	Open Elective-III	3	0	0	30	70	100	3
CHE1708	Instrumentation & Control Lab.,	0	0	3	50	50	100	2
CHE1710	Chemical Process Equipment Design Lab.,	0	0	3	50	50	100	2
Total		15	4	6			700	21

Core Elective-III

For Chemical Engineering ;

1. Computer aided design
2. Industrial pollution control Engineering
3. Process optimization
4. Reservoir Engineering
5. Fuels , Refractories and furnaces
6. Biochemical Engineering

For Chemical Engineering with petroleum Engineering as elective:

Reservoir Engineering,

For Chemical Engineering with Ceramic Technology as elective:

Fuels , Refractories and furnaces

Open Elective-III

1. Industrial Safety and Management
2. Environmental Pollution Control Engineering

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**BRANCH: CHEMICAL ENGINEERING
SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
CHE1801	Project Work	--	--	--	50	50	100	12

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**BRANCH: BIOTECHNOLOGY
SEMESTER: FIRST**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
ENG 1101	English	2			30	70	100	2
ENG 1102	Maths -I	3			30	70	100	3
ENG 1103	Maths-2	3			30	70	100	3
ENG 1104	Chemistry	3	1		30	70	100	4
ENG 1106	Computer Programming & Numerical Methods	3			30	70	100	3
ENG 1108	Chemistry Lab.,			3	50	50	100	2
ENG 1110	CPNM Lab.,			3	50	50	100	2
ENG 1112	History of Science & Technology	2						0
Total		16	1	10			700	19

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**BRANCH: BIOTECHNOLOGY
SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
ENG 1201	Maths-3	3	1		30	70	100	4
ENG 1202	Physics	3	1		30	70	100	4
ENG 1205	Engineering Graphics	2		4	30	70	100	4
ENG 1206	Introduction to Chemical Engineering and Biotechnology	3	1		30	70	100	3
ENG 1208	Physics Lab.,			3	50	50	100	2
ENG 1210	Workshop			3	50	50	100	2
ENG 1212	English Lab.,			3	50	50	100	2
ENG 1214	Professional Ethics & Moral Values	2						0
Total		13	3	17			700	21

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BRANCH: BIOTECHNOLOGY
SEMESTER: FIRST

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1301	Microbiology	3	1	0	30	70	100	3
BT 1302	Organic Chemistry	3	1	0	30	70	100	3
BT 1303	Material & Energy Balance	3	1	0	30	70	100	3
BT 1304	Biology	3	1	0	30	70	100	3
BT 1305	Cell and Molecular Biology	3	1	0	30	70	100	3
BT 1306	Basic Electrical Engg.,	3	1	0	30	70	100	3
BT 1308	Microbiology Lab.,	0	0	3	50	50	100	2
BT 1310	Cell and Molecular Biology Lab.,	0	0	3	50	50	100	2
Total		18	6	6			800	22

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SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1401	Biochemistry	3	1	0	30	70	100	3
BT 1402	Genetics	3	1	0	30	70	100	3
BT 1403	Bio Analytical Techniques	3	1	0	30	70	100	3
BT 1404	Managerial Economics	3	1	0	30	70	100	3
BT 1405	Fluid Mechanics and Heat transfer	3	1	0	30	70	100	3
BT 1406	Environmental Science	3	-	-	100	--	100	0
BT 1408	Biochemistry and Bio Analytical Techniques Lab.,	0	0	3	50	50	100	2
BT 1410	Fluid Mechanics Lab.,	0	0	3	50	50	100	2
Total		18	05	6			800	19

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SEMESTER: FIRST**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1501	Biostatistics	3	1	0	30	70	100	3
BT 1502	Mass Transfer	3	1	0	30	70	100	3
BT 1503	Enzyme Engineering	3	1	0	30	70	100	3
BT 1504	Thermodynamics	3	1	0	30	70	100	3
BT 1505	Elective-I	3	0	0	30	70	100	3
BT 1506	Downstream processing	3	1	0	30	70	100	3
BT 1508	Unit Operations Lab.,	0	0	3	50	50	100	2
BT 1510	Downstream Processing Lab.,	0	0	3	50	50	100	2
BT 1512	Slot for MC (Constitution of India/Essence of Indian Traditional Knowledge)	3	0	0				0
Total		21	05	6			800	22

- Elective-I:**
1. Food technology
 2. Process optimization
 3. Energy Engineering
 4. Systems Biology.

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**BRANCH: BIOTECHNOLOGY
SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1601	Chemical Reaction Engineering	3	1	0	30	70	100	3
BT 1602	Engineering Economics and Bioprocess Design	3	1	0	30	70	100	3
BT 1603	Immunology	3	1	0	30	70	100	3
BT 1604	Bioinformatics	3	1	0	30	70	100	3
BT 1605	Bioprocess Engg.	3	1	0	30	70	100	3
BT 1606	Elective-II	3	0	0	30	70	100	3
BT 1608	Bioprocess and Reaction Engineering Lab.,	0	0	3	50	50	100	2
BT 1610	Bioinformatics Lab.,	0	0	3	50	50	100	2
Total		18	05	06			800	22

Elective-II:

1. Pharmaceutical Biotechnology
2. Animal cell culture and Hybridoma technology
3. Cancer Biology
4. Stem cells in health care.
5. Intellectual Property Rights

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Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1701	Environmental Biotechnology	3	1	0	30	70	100	3
BT 1702	Genetic Engineering	3	1	0	30	70	100	4
BT 1703	Process Control	3	1	0	30	70	100	3
BT 1704	Industrial Management & Entrepreneurship	3	1	0	30	70	100	3
BT 1705	Industrial biotech products	3	1	0	30	70	100	3
BT 1706	Plant cell and tissue culture	3	1	0	30	70	100	3
BT 1708	Process control Lab.,	0	0	3	50	50	100	2
BT 1710	Plant cell and tissue culture Lab.,	0	0	3	50	50	100	2
Total		18	6	6			800	23

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SEMESTER: SECOND**

Code Number	course	Lecture	Tutorial	Practical	Allotment of marks		Total Marks	Credits
		Hours Per WEEK			Internal	External		
BT 1801	Project Work	--	--	--	50	50	100	12