

CHILDREN'S EDUCATION SOCIETY (Regd.) Administrative Office:

1st Phase, JP Nagar, Bengaluru – 560 078 D: 080-61754501 – 502 Fax: 080-2654 8658

THE OXFORD COLLEGE OF ENGINEERING

(Recognized by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi, Approved by A.I.C.T.E. New Delhi & Recognized by UGC Under Section 2(f), Accredited by NBA, New Delhi, NAAC 'A' Grade with score of 3.24 & Diamond Rating by QS I Guage) Bommanahalli, Hosur Road, Bengaluru –560 068. D: 080 -61754601/602 E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

CROSSCUTTING ISSUES 2023-24

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PRINCIPAL The Oxford College of Engineering Bommanahatii, Hosur Road Bengaluru-560 068



CHILDREN'S EDUCATION SOCIETY (Regd.) Administrative Office: 1st Phase, JP Nagar, Bengaluru – 560 078 ①: 080-61754501 – 502 Fax: 080-2654 8658 **THE OXFORD COLLEGE OF ENGINEERING** (Recognized by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi, Approved by A.I.C.T.E. New Delhi & Recognized by UGC Under Section 2(f), Accredited by NBA, New Delhi, NAAC 'A' Grade with score of 3.24 & Diamond Rating by QS I Guage) Bommanahalli, Hosur Road, Bengaluru –560 068. ①: 080 -61754601/602

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Summary on Institution integrates crosscutting issues relevant to Professional Ethics, Gender, Human Values, Environment and Sustainability into the Curriculum

The Oxford College of Engineering, Bangalore, is dedicated to providing a holistic education that integrates crosscutting issues into its curriculum, ensuring students emerge as socially responsible and well-rounded professionals. Professional ethics form the foundation of this approach, with dedicated modules instilling a strong commitment to ethical standards across various disciplines. Gender perspectives are thoughtfully incorporated, promoting awareness of equality and inclusivity. The institution also emphasizes the cultivation of human values such as empathy and integrity, preparing students to navigate complex professional challenges with a moral compass. Environmental awareness is seamlessly embedded in the subjects, fostering an understanding of the ecological impact of professional practices. Sustainability principles are emphasized, encouraging students to evaluate the long-term economic, social, and environmental consequences of their decisions. Collaborative learning is a key feature of the curriculum, with group projects and team-based activities fostering engagement with peers from diverse backgrounds. This approach mirrors real-world professional environments, enhancing interpersonal skills and cultural competence essential for success. By combining technical expertise with a deep understanding of societal and environmental responsibilities, the institution ensures its graduates are prepared to address global challenges. This comprehensive educational framework shapes conscientious professionals capable of making meaningful contributions to their fields and society.



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Departmental wise- Course Outcome's (Cos) with Crosscutting Issues- Academic Year 2023-24

Department	Total Number of Courses	Total Cos	Core Cos	Ethics	Gender	Human Values	Environment	Field Visit Research Internship Project
CSE	59	291	221	6	2	18	9	35
CIVIL	55	246	193	9	2	8	12	22
ECE	66	316	248	4	2	16	4	42
Mechatronics	60	252	200	5	2	15	6	24
Biotechnology	53	231	156	10	2	11	25	27
ISE	62	282	215	6	2	18	14	27
EEE	63	291	227	9	3	15	9	28
Mech	62	290	223	8	2	16	14	27
AIML	47	224	171	5	2	15	6	25
PG CSE	20	81	52	0	0	0	0	29
PG CIVIL	19	82	67	0	0	0	0	15
PG ECE	18	96	64	0	0	0	0	32
MBA	34	152	113	6	2	5	0	26
MCA	34	158	129	6	0	2	0	21
Total	652	2992	2275	74	21	141	102	379



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Departmental wise- Course Outcome's (Cos) with Crosscutting Issues- Academic Year 2023-24

Total Cos	Core Cos	Ethics	Gender	Human Values	Environment	Field Visit Research
						Internship
						Project
2992	2275	74	21	141	102	379





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Institution integrates crosscutting issues – Curriculum CO-PO-PSO Mapping 2023-24

S.No	Year /Semester	Name of the Program	Name of the Course	Course Code	Cross Cutting issues	PO, CO, PSO,Mapping
1	2nd Year/ 3rd sem	Department of Biotechnology	Bio-Lab Management and Risk Assessment	BBT358A	Professional Ethics	PO 8- CO 1- PSO 2
2	1st Year/1st sem	Department of Biotechnology	Indian Constitution	BICOK107-207	Professional Ethics	PO 8- CO 5- PSO 2
3	3rd Year/ 6th sem	Department of Biotechnology	Stem Cell Technology	21BT644	Professional Ethics	PO 8- CO 3- PSO 2
4	4th Year/8th sem	Department of Biotechnology	Bioethics, Biosafety & IPR	18BT741	Professional Ethics	PO 8- CO 1- PSO 2
5	2nd Year/ 4th sem	Department of Information Science & Engineering	Physical Education (PE) (Sports and Athletics)	BPEK459	Professional Ethics	PO 8- CO 1- PSO 2
6	1st Year/1st sem	Department of Information Science & Engineering	Indian Constitution	BICOK107-207	Professional Ethics	PO 8- CO 5- PSO 2
7	2nd Year/3rd and 4th sem	Department of Information Science & Engineering	Research Methodology & Intellectual Property Rights	21RMI56	Professional Ethics	PO 8- CO 4- PSO 2
8	1st Year/1st sem	Department of Mechanical Engineering	Indian Constitution	BICOK107-207	Professional Ethics	PO 8- CO 5- PSO 2
9	2nd Year/4th sem	Department of Mechanical Engineering	Physical Education (PE) (Sports and Athletics)	BPEK459	Professional Ethics	PO 8- CO 1- PSO 2
10	2nd Year/4th sem	Department of Mechanical Engineering	Research Methodology & Intellectual Property Rights	21RMI56	Professional Ethics	PO 8- CO 4- PSO 2
11	2nd Year/ 4th sem	Department of Computer Science & Engineering	Physical Education (PE) (Sports and Athletics)	BPEK459	Professional Ethics	PO 8- CO 1- PSO 2
12	1st Year/1st sem	Department of Computer Science & Engineering	Indian Constitution	BICOK107-207	Professional Ethics	PO 8- CO 5- PSO 2



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		Department of				
		Electrical and				
13	1st Year/1st	Communication			Professional	PO 8- CO 5-
	sem	Engineering	Indian Constitution	BICOK107-207	Ethics	PSO 2
		Department of				
		Artificial				
		Intelligence and				
14	1st Year/1st	Machine			Professional	PO 8- CO 5-
	sem	Learning	Indian Constitution	BICOK107-207	Ethics	PSO 4
		Department of				
		Artificial				
		Intelligence and				
15	2rd Year/4th	Machine	Research Methodology		Professional	PO 8- CO 5-
	sem	Learning	& Intellectual Property	21RMI56	Ethics	PSO 4
		C .	Rights			
16	1st Year/1st	Department of			Professional	PO 8- CO 5-
	sem	Mechatronics	Indian Constitution	BICOK107-207	Ethics	PSO 1
17	3rd Year/4th	Department of	Research Methodology		Professional	PO 8 CO 4
17	sem	Mechatronics	& Intellectual Property	21RMI56	Fithics	PSO 1
	Sem	Wieenauonies	Rights	211001150	Lunes	1501
		Department of	Rights			
18	2rd Year/4th	Civil Engineering	Building Materials		Professional	PO 8- CO 4-
	sem	Civil Eligilicering	Testing Laboratory	BCVI 404	Ethics	PSO 3
	sem	Department of		Develor	Lunes	150.5
19	3rd Year/5th	Civil	Design of RC Structural		Professional	PO 8- CO 4-
	sem	Engineering	Flements	21CV53	Ethics	PSO 3
	sem	Department of		210,055	Edites	1505
20	4th Year/8th	Civil			Professional	PO 8- CO 4-
20	sem	Engineering	Technical Seminar	18CVS84	Ethics	PSO 3
	Sem	Department of		100 1001	Lunes	1505
21	1st Year/2nd	Civil			Professional	PO 8- CO 4-
	Sem	Engineering	Indian Constitution	BICOK207	Ethics	PSO 3
	Sem	Department of		DICOREOT	Lunes	1505
		Electrical &				
22	2rd Year/3rd	Electronics	Social Connect and		Professional	PO 8- CO 2-
	sem	Engineering	Responsibility	BSCK307	Ethics	PSO 3
		Department of		2501207		1505
		Electrical &				
23	1st Year/2nd	Electronics			Professional	PO 8- CO 5-
	Sem	Engineering	Indian Constitution	BICOK207	Ethics	PSO 3
		Department of				
		Electrical &				
24	2nd Year/4th	Electronics	Physical Education (PE)		Professional	PO 8- CO 1-
	sem	Engineering	(Sports and Athletics)	BPEK459	Ethics	PSO 3
		Department of	× 1 ······)		Professional	
		Electrical &			Ethics	
25	3rd Year/4th	Electronics	Research Methodology		Lunes	PO 8- CO 4-
-	sem	Engineering	& Intellectual Property	21RMI56		PSO 3
		Zinginicoring	Rights			
		Department of	0		Professional	
		Electrical &			Fthics	
26	4th Year/8th	Electronics			Luncs	PO 8- CO 4-
	sem	Engineering	Technical Seminar	18CVS84		PSO 3
	-					



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27	1st Year/1st Sem	Department of Business Administration	Entrepreneurship Development	22MBA12	Professional Ethics	PO 8- CO 5- PSO 3
28	1st Year/2 nd Sem	Department of Business Administration	Research Methodology and IPR	22MBA23	Professional Ethics	PO 8- CO 5- PSO 3
29	1st Year/2 nd Sem	Department of Business Administration	Managerial Economics	22MBA26	Professional Ethics	PO 8- CO 5- PSO 3
30	2nd Year/3rd Sem	Department of Business Administration	Recruitment And Selection	22MBAHR303	Professional Ethics	PO 8- CO 1- PSO 3
31	2nd Year/4th Sem	Department of Business Administration	International Business	22MBA401	Professional Ethics	PO 8- CO 1- PSO 3
32	2nd Year/4th Sem	Department of Business Administration	Integrated Marketing Communications	22MBAMM404	Professional Ethics	PO 8- CO 4- PSO 3
33	1st Year/1 st Sem	Master of Computer Applications	Research Methodology	22RMI18	Professional Ethics	PO 8- CO 5- PSO 3
34	1st Year/1 st Sem	Master of Computer Applications	Software Engineering	22MCA23	Professional Ethics	PO 8- CO 2- PSO 3
35	1st Year/2nd Sem	Master of Computer Applications	User Interface Design	22MCA254	Professional Ethics	PO 8- CO 3- PSO 3
36	1st Year/1st sem	Department of Biotechnology	Indian Constitution	BICOK107-207	Gender	PO 6- CO 2- PSO 2
37	1st Year/1st sem	Department of Information Science & Engineering	Indian Constitution	BICOK107-207	Gender	PO 6- CO 2- PSO 2
38	1st Year/1st sem	Department of Mechanical Engineering	Indian Constitution	BICOK107-207	Gender	PO 6- CO 2- PSO 2
39	1st Year/1st sem	Department of Computer Science & Engineering	Indian Constitution	BICOK107-207	Gender	PO 6- CO 2- PSO 2
40	1st Year/1st sem	Department of Electrical and Communication Engineering	Indian Constitution	BICOK107-207	Gender	PO 6- CO 2- PSO 2



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		Department of				PO 6- CO 2-
		Artificial				PSO 2
		Intelligence and				
41	1st Year/1st	Machine				
	sem	Learning	Indian Constitution	BICOK107-207	Gender	
						PO 6- CO 2-
						PSO 2
42	1st Year/1st	Department of				
	sem	Mechatronics	Indian Constitution	BICOK107-207	Gender	
		Department of				PO 6- CO 2-
43	1st Year/2nd	Civil Engineering				PSO 2
-	Sem	Civil Eligineering	Indian Constitution	BICOK207	Gender	1502
		Department of		DICOILLOT	Sender	PO 6- CO 2-
		Electrical &				
44	3rd Year/6 th	Electronics	Management			F30 2
	sem	Engineering	and	21EE61	Gender	
	~	Lingineering	Entrepreneur		Condor	
			ship			
		Department of	P			
		Electrical &				
45	1st Year/2nd	Electronics				PO 6- CO 2-
	Sem	Engineering	Indian Constitution	BICOK207	Gender	PSO 2
		Department of				PO 6- CO 2-
46	2nd Vear/3rd	Business				PSO 2
40	Sem	Administration	Recruitment And	22MBAHR303	Gender	1502
	belli	7 kunninstration	Selection	22010/1110305	Gender	
		Department of				PO 6- CO 4-
47	2nd Year/4th	Business	Conflict & Negotiation			PSO 2
	Sem	Administration	Management	22MBAHR403	Gender	150 2
10	1 st Voor/1 st	Department of	Scientific Foundations of	22010111111105	Uumon	DO 2 CO 2
40		Department of	Scientific Foundations of	DCELIV 150/050	Valuas	PU 3- CU 3-
	sem	Biotechnology	Health	DSFIIN130/230	values	F30 2
49	2nd Year/4th	Department of		DUM	Human	PO 3- CO 3-
	sem	Biotechnology	Universal Human Values	BUHK408	Values	PSO 2
		Department of				
F.0	0.137 /0.1	Information				
50	2nd Year/3rd	Science &	Social Connect &	DCCK207	Human	PO 3- CO 5-
	sem	Engineering	Responsibility	BSCK307	Values	PSO 2
		Department of				PO 3- CO 3-
		Information				PSO 2
51	2nd Year/4th	Science &			Human	
	sem	Engineering	Universal Human Values	BUHK408	Values	
		Department of				PO 3- CO 3-
		Information				PSO 2
52	2nd Year/4th	Science &	Physical Education (PE)		Human	
	sem	Engineering	(Sports and Athletics)	BPEK459	Values	
		Department of				PO 3- CO 3-
		Information				PSO 2
53	1st Year/1st	Science &	Scientific Foundations of		Human	
	sem	Engineering	Health	BSFHK158/258	Values	



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1							
			Department of			Human	PO 3- CO 3-
	54	2nd Year/3rd	Mechanical			Values	PSO 2
		sem	Engineering	Universal Human Values	BUHK408		
			Department of			Human	PO 3- CO 3-
	55	2nd Year/4th	Mechanical	Physical Education (PE)		Values	PSO 2
		sem	Engineering	(Sports and Athletics)	BPEK459		
			Department of				PO 3- CO 3-
	56	1st Year/1st	Mechanical	Scientific Foundations of		Human	PSO 2
		sem	Engineering	Health	BSFHK158/258	Values	1502
		Sem	Department of		251 11113 0/250	(undeb	
			Computer				
	57	2nd Year/3rd	Science &	Social Connect &		Human	PO 3- CO 5-
	•	sem	Engineering	Responsibility	BSCK307	Values	PSO 2
		Sem	Department of	responsionity	DBCHBOT	(undeb	1502
			Computer Science				
	58	2nd Year/4th	&			Human	PO 3- CO 3-
	50	sem	a Engineering	Universal Human Values	BUHK408	Values	PSO 2
		sem	Department of	eniversai Human Values	DOIIR400	v aides	1502
			Computer Science				
	59	2nd Year/4th		Physical Education (PE)		Human	PO 3 CO 3
	55	sem	a Engineering	(Sports and Athletics)	RPFK459	Values	PSO 2
		sem	Department of	(Sports and Athletics)	DILIC	v alues	1502
			Computer				
	60	1st Vear/1st	Science &	Scientific Foundations of		Human	PO 3- CO 3-
	00	sem	Engineering	Health	BSFHK158/258	Values	PSO 2
		sem	Doportmont of	Ticaltii	DSI IIK 130/230	v alues	1502
			Electrical and				
	61	2nd Year/3rd	Communication	Social Connect &		Human	PO 9- CO 5-
	01	sem	Engineering	Responsibility	BSCK307	Values	PSO 3
		sem	Department of	Responsionity	DBCR307	v ulues	1505
			Electrical and				
	62	2nd Year/4th	Communication			Human	PO 9- CO 3-
	02	sem	Engineering	Universal Human Values	BUHK408	Values	PSO 3
			Department of	Chryonsur Human values	20111100	, 41405	1505
			Flectrical and				
	63	1st Vear/1st	Communication	Scientific Foundations of		Human	
	05	sem	Engineering	Health	BSEHK158/258	Values	PSO 3
		50111	Doportmont of	11041111	DOI/HK130/230	values	1505
			Artificial				
			Artificial Intelligence and				
	64	2nd Year/3rd	Machina	Social Connect &		Human	PO 3- CO 5
	54	sem	Learning	Responsibility	BSCK307	Values	PSO 2
		50111	Department of	Responsionity	DOCKOU	values	PO 3 CO 3
			Artificial				FO 5- CO 5-
			Intelligence and				PSO 2
	65	2nd Year/4th	Machine			Human	
	00	sem	Learning	Universal Human Values	BUHK408	Values	
		50111	Doportmont of			v alues	PO 3 CO 3
			Artificial				10 5- 00 5-
			Intelligence and				02
	66	1st Year/1st	Machine	Scientific Foundations of		Human	
		sem	Learning	Health	BSFHK158/258	Values	
		~~111	Louining		-SI IIII 30/230	, and 00	1



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67	2nd Year/3rd	Department of	Social Connect &	DSCV207	Human	PO 3- CO 5-
	Selli		Responsionity	DSCR507	Values	1501
68	2nd Year/4th sem	Department of Mechatronics	Universal Human Values	BUHK408	Human Values	PO 3- CO 3- PSO 1
69	1st Year/1st sem	Department of Mechatronics	Scientific Foundations of Health	BSFHK158/258	Human Values	PO 3- CO 3- PSO 1
70	1st Year/1st sem	Department of Civil Engineering	Scientific Foundations of Health	BSFHK158/258	Human Values	PO 3- CO 3- PSO 3
71	2nd Year/3rd sem	Department of Civil Engineering	Social Connect & Responsibility	BSCK307	Human Values	PO 3- CO 5- PSO 3
72	2nd Year/3rd sem	Department of Electrical & Electronics Engineering	Social Connect & Responsibility	BSCK307	Human Values	PO 3- CO 5- PSO 3
73	1st Year/1st sem	Department of Electrical & Electronics Engineering	Scientific Foundations of Health	BSFHK158/258	Human Values	PO 3- CO 3- PSO 3
74	1st Year/1st Sem	Department of Business Administration	Principles of Management and Organisational Behaviour	22MBA11	Human Values	PO 3- CO 3- PSO 3
75	1st Year/1st Sem	Department of Business Administration	Business Communication	22MBA16	Human Values	PO 3- CO 1- PSO 3
76	1st Year/2nd Sem	Department of Business Administration	Human Resource Management	22MBA21	Human Values	PO 3- CO 3- PSO 3
77	2nd Year/4th Sem	Department of Business Administration	Innovation And Design Thinking	22MBA402	Human Values	PO 3- CO 3- PSO 3
78	1st Year/2 nd Sem	Master of Computer Applications	Software Engineering	22MCA23	Human Values	PO 3- CO 3- PSO 3
79	2nd Year/4th Sem	Master of Computer Applications	Software Project Management	22MCA414	Human Values	PO 3- CO 4- PSO 3
80	1st Year/1 st or 2nd Sem	Department of Biotechnology	Engineering Chemistry	22CHE12/22	Environment and Sustainability	PO 7- CO 2- PSO 1



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81	2nd Year/3rd	Department of			Environment	PO 7 CO 5
01	Sem	Biotechnology	Microbiology	BBT304	Sustainability	PSO 1
82	2nd Year/3rd Sem	Department of Biotechnology	Plant Physiology and Phytohormones	BBT306D	Environment and Sustainability	PO 7- CO 3- PSO 1
83	2nd Year/4th Sem	Department of Biotechnology	Biopesticides and Biofertilizers	BBT456D	Environment and Sustainability	PO 7- CO 1- PSO 1
84	2nd Year/4th Sem	Department of Biotechnology	Biology For Engineers	BBOK407	Environment and Sustainability	PO 7- CO 4- PSO 1
85	4th Year/7th sem	Department of Biotechnology	Bioethics, Biosafety &	18BT741	Environment and Sustainability	PO 7- CO 4- PSO 1
86	4th Year/7th	Department of Biotechnology	Energy and Environment	18ME751	Environment and Sustainability	PO 7- CO 3- PSO 1
87	4th Year/8th sem	Department of Biotechnology	Industrial Microbiology	18BT822	Environment and Sustainability	PO 7- CO 2- PSO 1
88	3rd Year/5th sem	Department of Information Science & Engineering	Environmental Studies	21CIV57	Environment and Sustainability	PO 7- CO 1- PSO 2
89	3rd Year/5th sem	Department of Information Science & Engineering	Conservation of natural Resources	21cv654	Environment and Sustainability	PO 7- CO 5- PSO 2
90	4th Year/7th sem	Department of Information Science & Engineering	Disaster Management Plan	18EE753	Environment and Sustainability	PO 7- CO 5- PSO 2
91	1st Year/1 st or 2nd Sem	Department of Information Science & Engineering	Engineering Chemistry	22CHE12/22	Environment and Sustainability	PO 7- CO 2- PSO 2
92	2nd Year/3rd Sem	Department of Mechanical Engineering	Electric and Hybrid Vehicle Technology	BME306A	Environment and Sustainability	PO 7- CO 4- PSO 2
93	3rd Year/5th sem	Department of Mechanical Engineering	Environmental Studies	21CIV57	Environment and Sustainability	PO 7- CO 1- PSO 2



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		Dementant of			Enstinement	DOT COF
		Department of			Environment	PO /- CO 5-
04	2 1 37 (61	Mechanical			and	PSO 2
94	3rd Year/6th	Engineering	Renewable Energy	21ME652	Sustainability	
	Selli	Department of	rower rialits	21ME032	Environment	
		Department of			Environment	PO /- CO 3-
05	441 , \mathbf{V}_{1} , $\mathbf{v}_{2}/041$,	Mechanical			and	PS0 2
95	4th Year/8th	Engineering	Enourse Engineering	101/1001	Sustainability	
	sem	Department of	Energy Engineering	TOMEOT	Environment	PO 7 CO 2
		Department of Mashaniaal				PO 7- CO 2-
06	1 - t V / 1 St					PS0 2
90	1st Year/1" or 2nd Sem	Engineering	Engineering Chemistry	22CHE12/22	Sustainability	
	2lid Selli	Donartmont of	Englicering Chemisury	22CHE12/22		PO 7 CO 1
		Computer Science			Environment	
97	3rd Year/5th	&			and	F30 2
	Sem	Engineering	Environmental Studies	21CIV57	Sustainability	
	4th Year/7th	Department of				PO 7- CO 5-
	sem	Computer Science			Environment	PSO 2
		& Engineering	Disaster Management	18EE753	and	
98		g	Plan		Sustainability	
	<u> </u>	Department of			Environment	PO 7- CO 2-
	1st Vear/1st or	Computer Science			and	PSO 2
	2nd Sem	& Engineering	Engineering Chemistry	22CHF12/22	Sustainability	1502
99	2nd Ben	& Engineering	Engineering Chemistry	22011212/22	Sustamaonity	
55		Department of			Environment	PO 7- CO 2-
	2nd Vear/Ath	Electrical and	National Service Scheme		and	PSO 3
100	Sem	Communication	(NSS)	BNSK459	Sustainability	1505
		Engineering	(1.00)	DIGITIO	Sustanuonny	
		Department of				PO 7- CO 1-
		Electrical and			Environment	PSO 3
101	3rd Year/5th	Communication			and	1505
	Sem	Engineering	Environmental Studies	21CIV57	Sustainability	
					Environment	PO 7- CO 1-
102	3rd Year/5th	Department of			and	PSO 1
	sem	Mechatronics	Environmental Studies	21CIV57	Sustainability	
					Environment	PO 7- CO 2-
103	1st Year/1 st or	Department of			and	PSO 1
	2nd Sem	Mechatronics	Engineering Chemistry	22CHE12/22	Sustainability	
46.5		Department of			Environment	PO 7- CO 2-
104	2nd Year/3rd	Civil Engineering	Water Supply And	D GY 100 /	&	PSO 3
	Sem		Wastewater	BCV304	Sustainability	
		Demonstrates of a f	Engineering			
105	and Voor/Sth	Department of Civil Engineering			Environment	
102	Sem	Civil Engineering	Environmental Studies	21CIV57	α Sustainability	1503
	Juli			2101 ¥ 57	Ensine	PO 7 CO 1
		D				
106	3rd Veer/6th	Department of	Alternate			
106	3rd Year/6th Sem	Department of Civil Engineering	Alternate Building	21CV646	& Sustainability	PSO 3



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		Department of			Environment	PO 7- CO 2-
107	1st Year/1 st or	Civil Engineering			&	PSO 3
	2nd Sem		Engineering Chemistry	22CHE12/22	Sustainability	
		Department of				PO 7- CO 1-
		Electrical &			Environment	PSO 3
108	3rd Year/5th	Electronics			and	
	sem	Engineering	Environmental Studies	21CIV57	Sustainability	
		Department of				PO 7- CO 5-
		Electrical &			Environment	PSO 3
109	3rd Year/6th	Electronics	Renewable Energy		and	
	sem	Engineering	Power Plants	21ME652	Sustainability	
		Department of				PO 7- CO 2-
		Electrical &			Environment	PSO 3
110	1st Year/1st or	Electronics			and	
	2nd Sem	Engineering	Engineering Chemistry	22CHE12/22	Sustainability	



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Professional Ethics

Department of Biotechnology

BIO-LAB MANAGEMEN	Semester	III	
Course Code	BBT358A	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	1
Examination type (SEE)	Theory		

Course objectives:

- To enable the students to develop an understanding biolab management and risk and its assessment.
- To enable the students to learn the methods to minimize and mitigate the risks at various steps of lab processes.
- To enable the students to perform the risk-benefit analysis in biotechnological processes.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry-based teaching.
- Instructions with interactions in classroom lectures (physical/hybrid).
- Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- Flipped classroom sessions (~10% of the classes).
- Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- Students' participation through audio-video based content creation for the syllabus (as assignments).
- Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- Students' seminars (in solo or group) /oral presentations.

Module-1 (3 Hours)

BIO LABORATORY MANAGEMENT:

Essentials of lab management- Designing the lab, spacing, inventory organization and its management, automation via use of technology, documentation, safety requirements, biosafety levels, planning experiments, storage space, waste generation and its disposal. Case studies.

Module-2 (3 Hours)



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INTRODUCTION TO RISK ASSESSMENT:

Definition and meaning of Risk. Difference between risk and hazard. Probability of occurrence of risk. Risk assessment, risk control, risk review, risk management tools, HACCP, risk ranking and filtering. Case studies.

Module-3 (3 Hours)

BASICS OF BIOSAFETY:

Biosafety- meaning, levels of biosafety- BSL 1, BSL2, BSL 3 and BSL 4, examples, applications of each and hazards involved there in for products derived out of biotechnology. International protocols and Case studies.

Module-4 (3 Hours)

BIOSAFETY AND RISK ASSESSMENT:

Principles of safety assessment (for infectious organisms, agents, microbes- genetically altered/ metabolically engineered, transgenic plants, GMOs /LMOs used in food, pharma, bioremediation etc., Sequential steps in risk assessment; concepts of familiarity and substantial equivalence; environmental risk assessment and food and feed safety assessment. Case studies.

Module-5 (3 Hours)

RISK MINIMIZATION AND/OR RISK MITIGATION:

Risk assessment through omics approach. Ethical, legal, and social implications of health privacy and policy

laws for mitigation/minimization (Indian and Global contexts). Risk characterization and development of

analysis plan. Case studies.

Course outcome (Course Skill Set)

At the end of the course the student will be able to:

- 1. Apply principles of biology to understand risk and its assessment.
- 2. Deduce methods to minimize and mitigate the risks.
- 3. Evaluate risk-benefit analysis of different genetic engineering interventions based upon case studies.
- 4. Correlate laws pertaining to biological risk to the sustainable use of GMOs in different applications.

Course Title:	Indian Constitution						
Course Code:		CIE Marks	50				
Course Tupe (Theory (Dreatical (Integrated)	BICOK107-207	SEE Marks	50				
Course Type (Theory/Practical/Integrated)		Total Marks	100				
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory				
Total Hours of Pedagogy	15 hours	Credits	01				
Course objectives :							
The course INDIAN CONSTITUTION (2210	The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,						
1. To know about the basic structure of Indian Constitution.							
2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.							

- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.



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Teaching Learning Process				
reaching-heatining rocess				
These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and				
make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning				
process. The pedagogy shall involve the combination of different methodologies which suit modern technological				
cools.				
(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technologica tools),				
(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.				
(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through				
videos, animation films may be adapted so that the delivered lesson can progress the students In				
theoretical applied and				
practical skills.				
Module-1 (03 hours of pedagogy)				
Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduct				
to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.				
Module-2 (03 hours of pedagogy)				
Calient features of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble.				
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.				
Module-3 (03 hours of pedagogy)				
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society Fundamental				
Duties				
and its Scope and significance in Nation. Union Executive : Parliamentary System, Union Executive – President,				
Prime Minister, Union Cabinet.				
Module-4 (03 hours of pedagogy)				
Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of				
India.Supreme Court of India and other Courts. Judicial Reviews and Judicial Activism.				
Module-5 (03 hours of pedagogy)				
State Executive and Coverner CM State Cabinet Legislature - VS & VP Election Commission Elections & Elector				
Process Amondment to Constitution and Important Constitutional Amondments till today Emergency				
Provisions.				
Course outcome (Course Skill Set)				
C ourse outcome (Course Skill Set) At the end of the course 22ICO17/27 the student will be able to:				
Course outcome (Course Skill Set)At the end of the course 22ICO17/27 the student will be able to:CO1Analyse the basic structure of Indian Constitution.				
Course outcome (Course Skill Set)At the end of the course 22IC017/27 the student will be able to:CO1Analyse the basic structure of Indian Constitution.CO2Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.				
Course outcome (Course Skill Set)At the end of the course 22IC017/27 the student will be able to:C01Analyse the basic structure of Indian Constitution.C02Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.C03know about our Union Government, political structure & codes, procedures.				
Course outcome (Course Skill Set)At the end of the course 22IC017/27 the student will be able to:CO1Analyse the basic structure of Indian Constitution.CO2Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.CO3know about our Union Government, political structure & codes, procedures.CO4Understand our State Executive & Elections system of India.				
Course outcome (Course Skill Set)At the end of the course 22IC017/27 the student will be able to:C01Analyse the basic structure of Indian Constitution.C02Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.C03know about our Union Government, political structure & codes, procedures.C04Understand our State Executive & Elections system of India.C05Remember the Amendments and Emergency Provisions, other important provisions given by the				



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STEM CELL TECHNOLOGY					
Course Code	21BT644	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	3:0:0:1	SEE Marks	50		
Total Hours of Pedagogy	40	Total Marks	100		
Credits	03	Exam Hours	03		

Course objectives:

- > To provide a broad overview of stem cells, reviewing the different types and how they are cultured.
- > To familiarize the students with stem cell technology and its bioengineering applications.
- > To understand the potential of Stem cells towards treatment of human diseases.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- ✓ Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry-based teaching.
- ✓ Instructions with interactions in classroom lectures (physical/hybrid).
- ✓ Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- ✓ Flipped classroom sessions (~10% of the classes).
- ✓ Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- ✓ Students' participation through audio-video based content creation for the syllabus (as assignments).
- ✓ Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- ✓ Students' seminars (in solo or group) /oral presentations.

Module-1 (8 Hours)

STEM CELLS AND TYPES:

Stem cells: Definition, Classification, Sources and Properties –Types of stem cells: methods of isolation, study of stem cells and their viability IPSC, embryonic stem cells, cancer stem cells. Preservations of Stem cell. Embryonic stem cell: Isolation, Culturing, Differentiation, Properties – Adult stem cell: Isolation, Culturing, Differentiation, Transdifferentiation, Plasticity, and Properties, Molecular mechanisms. fate mapping, application.

Module-2 (8 Hours)

STEM CELL MEDIA ANDREGENERATION:

Cell Culture Media, Cell culture methods, Cell isolation, selection, maintenance of primary and early passage cultures. Clinical potential of stem cells: Organ and tissue regeneration. Germ cells, hematopoietic organs, and kidney, cord blood transplantation, donor selection, HLA matching, patient selection, peripheral blood and Hematopoietic Stem Cell Disorders and bone marrow transplantation, Stem cell Techniques: fluorescence activated cell sorting (FACS), time lapse video, green fluorescent protein tagging.

Module-3 (8 Hours)

STEM CELLS IN PLANTS AND ANIMALS:

Stem cell and founder zones in plants-particulary their roots- stem cells of shoot meristems of higher plants. Skeletal

muscle stem cell – Mammary stem cells – intestinal stem cells – keratinocyte stem cells of cornea – skin and hair follicles –tumour stem cells.



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Module-4 (8 Hours)

STEM CELL IN DRUG DISCOVERY AND TISSUE ENGINEERING:

Target identification, Manipulating differentiation pathways, stem cell therapy Vs cell protection, stem cell in cellular assays for screening – stem cell based drug discovery, drug screening and toxicology. Tissue engineering application – production of complete organ - kidney – eyes - heart – brain.

Module-5 (8 Hours)

APPLICATIONS AND ETHICAL ISSUES :

Gene therapy – genetically engineered stem cells – stem cells and Animal cloning – transgenic animals and stem cells – Therapeutic applications – Cardiovascular treatment, Cell deficiency therapy, treatment of brain related defects. Neurological disorder (AD,PD),limb amputation, heart disease - spinal cord injuries – diabetes –burns - HLA typing-hepatic and pancreatic disorders. Stem cell policy and ethics, stem cell research: Hype, hope and controversy.

Course outcomes (Course Skill Set)

At the end of the course the student will be able to:

- > Understand the basics of stem cell biology, the various types and their isolation and identification.
- Correlate stem cell technology in treatment of various diseases and disorders.
- > Apply the basics of stem cells in drug discovery and tissue engineering in line with ethical considerations.

B. E. BIOTECHNOLOGY

Outcome Based Education (OBE) and Choice Based Credit System (CBCS) SEMESTER - VII

BIOETHICS , BIOSAFETY & IPR

Course Code	18BT741	CIE Marks	40
Teaching Hours/Week (L:T:P)	(3:0:0)	SEE Marks	60
Credits	03	Exam Hours	03

Course Learning Objectives: : This course will enable students

- To introduce the biosafety regulations
- To understand the ethical concepts in biotechnology
- To emphasize on IPR issues and need for knowledge in patents in biotechnology

Module-1

BIOTECHNOLOGY AND SOCIETY

Introduction to science, technology and society, issues of access-Case studies/experiences from developing and developed countries. Ownership, monopoly, traditional knowledge, biodiversity, benefit sharing, environmental sustainability, public vs. private funding, biotechnology in international relations, globalization and development divide. Public acceptance issues for biotechnology Biotechnology and hunger: Challenges

for the Indian Biotechnological research and industries.

Module-2



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BIOETHICS & LEGAL ISSUES:	
Principles of bioethics: Legality, morality and ethics, autonomy, human rights, beneficence, priv	acy,
justice, equity etc. The expanding scope of ethics from biomedical practice to biotechnology, bioethic	s vs.
business ethics, ethical dimensions of IPR, technology transfer and other global biotech issues.	
The legal, institutional and socioeconomic impacts of biotechnology; biotechnology and so	ocial
responsibility. Public education to increase the awareness of bioethics with regard to genera	ting
new forms of life for	
informed decision making – with case studies.	
Module-3	
BIOSAFETY CONCEPTS AND ISSUES:	
Ethical conflicts in biotechnology - interference with nature, fear of unknown, unequal distribution o	i
risks and benefits of biotechnology, Rational vs. subjective perceptions of risks and benefits, relations	hip
between risk, hazard, exposure and safeguards, Biotechnology and biosafety concerns at the level of	
individuals, institutions,	
society, region, country and the world. The Cartagena protocol on biosafety. Biosafety management.	
Ethical implications of biotechnological products and techniques.	
Module-4	
REGULATIONS:	
Biosafety assessment procedures in India and abroad. International dimensions in biosa	fety,
bioterrorism and convention on biological weapons. Social and ethical implications of biolog	gical
weapons. Biosafety regulations and national and international guidelines with regard to recombin	nant
DNA technology. Guidelines for research	
in transgenic plants. Good manufacturing practice and Good lab practices (GMP and GLP). National	and
international regulations for food and pharma products.	
Module-5	
IPR, PATENTS AND PATENT LAWS:	
Intellectual property rights-TRIP- GATT International conventions patents Methods of application of	
patents Legal implications Biodiversity and farmer rights	
Objectives of the patent system Basic principles and general requirements of patent	law
Biotechnological inventions and patent law .Legal development-Patentable subjects and protection	n in
biotechnology .The patenting of living organisms.	
Course Outcomes: At the end of the course the student will be able to	
 Describe the rules governing manufacture, use/import/exportand storage of 	
hazardous microorganisms/genetically engineered organisms or cells.	
 Describe the ethical issues related to biotechnology research 	
• Explain the various forms of IPR, methods of application of Patents, Protection of Plant varies	<mark>ies</mark>
and farmer rights	
 Overview of the Indian Patent Law, knowledge on patentability requirements, 	
patenting biotechnological inventions and innovations	



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Department of Information Science & Engineering

Physical Education (Sports and Athletics) syllabus

				Seme	ster: IV			
			PHYSICAL E	DUCATION (SPORTS & A	THLET	ICS) – II	
Course	Course Code : BPEK459 CIE : 100 Marks							
Credit	Credits: L:T:P : 0:0:1							
Total I	Total Hours : 24 P							
1. 2. 3.	e Outcon Understa Perform Understa games.	nes: nd in ti nd	At the end of the the ethics and mo ne selected sports the roles and ro	e course, the st oral values in s s or athletics o esponsibilities	udent will be ports and ath f student's cl of organisa	e able to nletics noice. ntion and	d administration	of sports and
Modu A.	le I: Et Ethics in	hics	and Moral Val	ues				4 Hours
В.	Moral Va	lue	s in Sports and G	James				
Modul	e II : Spec	ific	Games (Any or	ne to be seled	cted by the	student	.)	16 Hours
А. В.	Volleyba Athletics	ll – (Tr	Attack, Block, Se ack Events) – Ar	ervice, Upper ny event as per	Hand Pass a r availability	nd Lowe of Grou	r hand Pass. nd.	
Modul	e III: Role	e of	Organisation ar	nd administra	ntion			4 Hours

Scheme and Assessment for auditing the course and Grades:

Sl. No.	Activity	Marks
1.	Participation of student in all the modules	20
2.	Quizzes – 2, each of 15 marks	30
3.	Final presentation / exhibition / Participation in competitions/ practical on specific tasks assigned to the students	50
	Total	100

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Tadian Constitution

course mue.	inulan constitution		
Course Code:		CIE Marks	50
	BICOK107-207	SEE Marks	50
Course Type (Theory/Practical/Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

- (ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and
 - practical skills.

Module-1	(03 hours of pedagogy)

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2 (03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.
Module-3 (03 hours of pedagogy)
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental
Duties
and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President,
Prime Minister, Union Cabinet.
Module-4 (03 hours of pedagogy)
Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of
India,Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.
Module-5 (03 hours of pedagogy)
State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral
Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.



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Bommanahalli, Hosur Road, Bengaluru –560 068. D: 080 -61754601/602

E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Course outcome (Course Skill Set)

At the en	d of the course 22ICO17/27 the student will be able to:				
C01	Analyse the basic structure of Indian Constitution.				
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.				
CO3	know about our Union Government, political structure & codes, procedures.				
CO4	Understand our State Executive & Elections system of India.				
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.				



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Course Code:	21RMI56	CIE Marks	50
Teaching Hours/Week (L:T:	P: S) 1:2:0:0	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	02	Exam Hours	03
CO1. To Understand the k CO2. To Learn the concept Engineering Research. CO4. To Discuss the conce	nowledge on basics of ro of Literature Review, T pts of Intellectual Prope	esearch and its types. echnical Reading, Attribu erty Rights in engineering	tions and Citations.CO3. To learn Ethics in
Teaching-Learning Proces	s (General Instructions) 	
i nese are sample Strategies	; which teachers can use	to accelerate the attainm	ent of the various courseoutcomes.
1. Lecturer methods (LJ need not be only the t	raditional lecture methods	, but alternativeeffective teaching
methods could be a	dopted to attain the outc	omes.	
2. Use of Video to expl	ain various concepts on	IPK.	
3. Encourage collabor	ative (Group Learning) I	earning in the class.	1.1
4. Ask at least three H	OT (Higher Order Think	ing) questions in the class	, which promotes criticalthinking.
5. Introduce Topics ir	n manifold representation	15.	
6. Show the different	ways to analyze the rese	earch problem and encour	rage the students to comeup withtheir own
creative ways to so	olve them.		
students' understa	nding.		en that's possible, it helpsnippiove the
		Module-1 (5 Hours)	
Introduction: Meaning of Engineering Research, Find	Research, Objectives of ding and Solving a Wort	Engineering Research, ar hwhile Problem.	nd Motivation in EngineeringResearch, Types of
Ethics in Engineering Rese Related to Authorship.	arch, Ethics in Engineer	ing Research Practice, Ty	pes of Research Misconduct,Ethical Issues
····· r ·			
Teaching- LearningCProcessC	halk and talk method / H	PowerPoint Presentation.	
Teaching- Learning Cl Process Cl	halk and talk method / H	PowerPoint Presentation. Module-2(5 Hours)	
Teaching- Learning CI Process CI Literature Review and Bibliographic Databases, N Technical Reading Conce Mathematics and Algorithm	halk and talk method / I Technical Reading, Veb of Science, Google ptualizing Research, C ns, Reading a Datasheet	PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe critical and Creative Re	wledge, Analysis and Synthesis of Prior Ar ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading
Teaching- Learning ProcessClLiterature Review and Bibliographic Databases, V Technical Reading Conce Mathematics and Algorithm Attributions and Citation Keywords on Citations, K Attributions, What Should Dissertations, Dedication on	Technical Reading, Veb of Science, Google ptualizing Research, C ns, Reading a Datasheet ons: Giving Credit Wh nowledge Flow throug Be Acknowledged, Ack r Acknowledgments.	PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe critical and Creative Re crever Due, Citations: F h Citation, Citing Datase nowledgments in, Books	wledge, Analysis and Synthesis of Prior Art ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading Functions and Attributes, Impact of Title and ets, Styles for Citations, Acknowledgments and
Teaching- Learning ProcessClLiterature Review and Bibliographic Databases, V Technical Reading Conce Mathematics and AlgorithiClAttributions and Citation Keywords on Citations, K Attributions, What Should Dissertations, Dedication o Teaching-Learning ProcessCl	halk and talk method / I Technical Reading , Veb of Science, Google ptualizing Research, C ns, Reading a Datasheet ons: Giving Credit Wh nowledge Flow throug Be Acknowledged, Ack r Acknowledgments. Chalk and talk method /	PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe ritical and Creative Re rever Due, Citations: F h Citation, Citing Datase nowledgments in, Books PowerPoint Presentation	wledge, Analysis and Synthesis of Prior Art ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading Functions and Attributes, Impact of Title and ets, Styles for Citations, Acknowledgments and



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Bommanahalli, Hosur Road, Bengaluru –560 068. D: 080 -61754601/602

E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments inIP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Teaching- Learning
ProcessChalk and talk method / PowerPoint Presentation.

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks

Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

Module-5(5 Hours)

Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**



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Department of Mechanical Engineering

Physical Education (Sports and Athletics) syllabus

Semester: IV								
			PHYSICAL	EDUCATION (S	SPORTS & A	THLET	TCS) – II	
Course	Code	:	BPEK459		CIE	1	100 Marks	
Credits	: L:T:P	:	0:0:1					
Total H	ours	:	24 P					
 Course Outcomes: At the end of the course, the student will be able to 1. Understand the ethics and moral values in sports and athletics 2. Perform in the selected sports or athletics of student's choice. 3. Understand the roles and responsibilities of organisation and administration of sports and games. 								
Module	eI: Etl	hics	s and Moral Va	lues				4 Hours
А	Ethics in	Sn	orts					
В.	Moral Va	lue	s in Sports and	Games				
Module A. B.	Module II : Specific Games (Any one to be selected by the student) 16 Hours A. Volleyball – Attack, Block, Service, Upper Hand Pass and Lower hand Pass. B. Athletics (Track Events) – Any event as per availability of Ground.							
Module	III: Role	of	Organisation a	and administra	tion			4 Hours

Scheme and Assessment for auditing the course and Grades:

Sl. No.	Activity	Marks
1.	Participation of student in all the modules	20
2.	Quizzes – 2, each of 15 marks	30
3.	Final presentation / exhibition / Participation in competitions/ practical on specific tasks assigned to the students	50
	Total	100

@#@ 16092024

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (Theory (Dreatical (Integrated)	BICOK107-207	SEE Marks	50
course Type (Theory/Practical/Integrated)	-	Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01



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E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Course objectives :

The course **INDIAN CONSTITUTION (22ICO17 / 27)** will enable the students,

- 6. To know about the basic structure of Indian Constitution.
- 7. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 8. To know about our Union Government, political structure & codes, procedures.
- 9. To know the State Executive & Elections system of India.
- 10. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

- (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.
- (ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and
- practical skills.

Module-1 (03 hours of pedagogy)	
Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Intro- to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.	duction
Module-2 (03 hours of pedagogy)	
Salient features of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble.	
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.	
Module-3 (03 hours of pedagogy)	
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundament	tal
Duties	
and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – Presider	ıt,
Prime Minister Union Cabinet	

	Module-4	(03 hours of pedagogy)	
Parliament - LS and RS,	Parliamentary Commi	ttees, Important Parliamentary Terminologies. Judicial Syster	n of
India, Supreme Court of In	idia and other Courts, J	udicial Reviews and Judicial Activism.	

	Module-5	(03 hours of pedagogy)	
State Exec	cutive and Governer, CM, State (Cabinet, Legislature - VS & VP, Election Commission, Elections & Elec	ctoral
Process A	Amendment to Constitution, and Provisions.	Important Constitutional Amendments till today. Emergency	

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.



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	E-mail: engprincipa	al@theoxford.edu Web: www	.theoxfordengg.org
	RESEARCH METHOD	OLOGY & INTELLECTUAL	PROPERTY RIGHTS
Course Code:	21RMI56	CIE Marks	50
Teaching Hours/Week (L:	Г:P: S) 1:2:0:0	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	02	Exam Hours	03
CO1. To Understand the CO2. To Learn the concep Engineering Research. CO4. To Discuss the come Teaching-Learning Proce These are sample Strategie 8. Lecturer methods methods could be	knowledge on basics of r ot of Literature Review, T cepts of Intellectual Prop ess (General Instructions s; which teachers can use (L) need not be only the t adopted to attain the out	esearch and its types. Technical Reading, Attribu erty Rights in engineering s) e to accelerate the attainm raditional lecture methods comes.	utions and Citations.CO3. To learn Ethics in g. nent of the various courseoutcomes. s, but alternativeeffective teaching
9 Use of Video to ex	nlain various concents or	IDD	
10 Encourage collebo	prative (Crown Loarning)	Learning in the class	
10. Encourage collabo	UOT (Lighor Ordon Thin)	tear ming in the tids.	a which promotor criticalthinking
11. ASK at least three	in manifold	ang) questions in the class	s, which promotes critical minking.
12. Introduce Topics	in manifold representatio	ns.	
13. Show the differen	t ways to analyze the res	earch problem and encou	rage the students to comeup withtheir own
creative ways to	solve them.		
14. Discuss how ever	y concept can be applied	to the real world - and wh	en that's possible, it helpsImprove the
students' underst	anding.		
		Module-1 (5 Hours)	
Introduction Manning of	f Research Objectives of	Engineering Research a	nd Motivation in EngineeringResearch, Types of
Engineering Research, Fi	nding and Solving a Wor	thwhile Problem.	nu Mouvation în EngliceringResearch, Types of
Ethics in Engineering Res Related to Authorship.	earch, Ethics in Engineer	ring Research Practice, Ty	pes of Research Misconduct,Ethical Issues
Teaching- Learning Process	Chalk and talk method / 1	PowerPoint Presentation.	
		Module-2(5 Hours)	
Literature Review and Bibliographic Databases, Technical Reading Cond Mathematics and Algorit	1 Technical Reading , Web of Science, Google ceptualizing Research, (hms, Reading a Datashee	New and Existing Kno and Google Scholar, Effe Critical and Creative Re t.	weldge, Analysis and Synthesis of Prior Art ective Search: The Way Forward Introduction to eading, Taking Notes While Reading, Reading
Attributions and Citat	ions: Giving Credit Wh Knowledge Flow throug	erever Due, Citations: I th Citation, Citing Datase	Functions and Attributes, Impact of Title and ets, Styles for Citations, Acknowledgments and
Attributions, What Shoul Dissertations, Dedication	d Be Acknowledged, Ack or Acknowledgments.	mowledgments in, Books	
Attributions, What Shoul Dissertations, Dedication Teaching-Learning Process	d Be Acknowledged, Ack or Acknowledgments. Chalk and talk method /	rowledgments in, Books	



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Bommanahalli, Hosur Road, Bengaluru –560 068. D: 080 -61754601/602

E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments inIP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Teaching- Learning
ProcessChalk and talk method / PowerPoint Presentation.

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks

Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

Module-5(5 Hours)

Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**



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Department of Computer Science & Engineering

Physical Education (Sports and Athletics) syllabus

Semester: IV								
			PHYSICAL	EDUCATION (SPORTS &	ATHLET	TICS) – II	
Course	Course Code : BPEK459 CIE : 100 Marks							
Credit	s: L:T:P	:	0:0:1					
Total I	Iours	:	24 P					
 Course Outcomes: At the end of the course, the student will be able to 1. Understand the ethics and moral values in sports and athletics 2. Perform in the selected sports or athletics of student's choice. 3. Understand the roles and responsibilities of organisation and administration of sports and games. 								
Modu	le I: Et	hic	s and Moral V	alues				4 Hours
В.	Moral Va	alue	s in Sports and	Games				
Module II : Specific Games (Any one to be selected by the student) 16 Hours A. Volleyball – Attack, Block, Service, Upper Hand Pass and Lower hand Pass. 16 Hours B. Athletics (Track Events) – Any event as per availability of Ground 16 Hours								
Modul	e III: Rolo	e of	Organisation	and administra	ation			4 Hours

Scheme and Assessment for auditing the course and Grades:

Sl. No.	Activity	Marks
1.	Participation of student in all the modules	20
2.	Quizzes – 2, each of 15 marks	30
3.	Final presentation / exhibition / Participation in competitions/ practical on specific tasks assigned to the students	50
	Total	100

@#@ 16092024

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
	BIG@K107-207	SEE Marks	50
Course Type (Theory/Practical /Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01



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E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

- (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.
- (ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and

practical skills.

Module-1		(03 hours of pedagogy)							

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limit	tations in different Complex Situations. building.
Module-3	(03 hours of pedagogy)
Directive Principles of State Policy (DPSP's) and its pre Duties	esent relevance in Indian society. Fundamental
and its Scope and significance in Nation, Union Executive	: Parliamentary System, Union Executive – President,
Prime Minister, Union Cabinet.	
Module-4	(03 hours of pedagogy)
Parliament - LS and RS, Parliamentary Committees, Imp	ortant Parliamentary Terminologies. Judicial System of
India,Supreme Court of India and other Courts, Judicial Re	views and Judicial Activism.
Module-5	(03 hours of pedagogy)
State Executive and Governer, CM, State Cabinet, Legislat	ure - VS & VP, Election Commission, Elections & Electoral
Process Amendment to Constitution, and Important Cons Provisions.	titutional Amendments till today. Emergency
Course outcome (Course Skill Set) At the end of the course 22ICO17/27 the student will be ab	le to:

CO1	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.



D

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anortment of Electrical and Communication Engineering

Department of Liec		incation Eng	gineering			
Course Title:	Indian Constitution					
Course Code:		CIE Marks	50			
Course Type (Theory/Practical /Integrated)	Bhewyk107-207	Total Marks	100			
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory			
Total Hours of Pedagogy	15 hours	Credits	01			
Course objectives :						
The course INDIAN CONSTITUTION (2210	CO17 / 27) will enable the stu	ıdents,				
1. To know about the basic structure	of Indian Constitution.					
2. To know the Fundamental Rights (FR's), DPSP's and Fundamen	tal Duties (FD's) (of our constitution.			
3. To know about our Union Governm	nent, political structure & cod	les, procedures.				
4. To know the State Executive & Ele	ctions system of India.					
5. To learn the Amendments and Eme	ergency Provisions, other imp	portant provision	s given by the constitution.			
Teaching-Learning Process						
These are sample Strategies, which teacher	can use to accelerate the atta	ainment of the va	rious course outcomes and			
make Teaching –Learning more effective: 7	Feachers shall adopt suitable	pedagogy for eff	ective teaching - learning			
process. The pedagogy shall involve the co	mbination of different metho	dologies which s	uit modern technological			
tools.						
(i) Direct instructional method (Low,	Old Technology), (ii) Flipped	l classrooms (Hig	h/advanced Technological			
tools),						
(iii) Blended learning (Combinatio	n of both), (iv) Enquiry and e	evaluation based	learning, (v) Personalized			
learning, (vi) Problems based learn	ning through discussion.					
(ii) Apart from conventional lecture m	ethods, various types of inno	vative teaching to	echniques through			
videos, animation films may be ada	apted so that the delivered le	sson can progres	s the students In			
theoretical applied and						
practical skills.	(03 hours	of nedagogy)				
	(05 110013	orpeutagogyj				
Indian Constitution: Necessity of the Con	stitution, Societies before and	d after the Consti	tution adoption. Introduction			
to theIndian constitution, Making of the Co	nstitution, Role of the Consti	tuent Assembly.				
Module-2	(03 hours	of pedagogy)				
Salient features of India Constitution. Pre	amble of Indian Constitutior	n & Key concepts	s of the Preamble.			
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.						
Module-3	(03 hours	of pedagogy)				
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental						
and its Scope and Significance in Nation, Union Executive : Parliamentary System, Union Executive – President,						
Module-4 (03 hours of pedagogy)						
Parliament - LS and RS. Parliamentary Committees, Important Parliamentary Terminologies, Iudicial System of						
India,Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.						
Module-5	Module-5 (03 hours of pedagogy)					
State Executive and Governer, CM, State C	abinet, Legislature - VS & V	P, Election Comn	nission, Elections & Electoral			



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Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:					
CO1	Analyse the basic structure of Indian Constitution.				
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.				
CO3	know about our Union Government, political structure & codes, procedures.				

Department of Artificial Intelligence and Machine Learning

Course	Title:	Indian Constitution			
Course	Code:		CIE Marks	50	
Course Type (Theory / Practical / Integrated)		BICOK107-207	SEE Marks	50	
course	Type (meory) Tractical / megrateu)		Total Marks	100	
Teachi	ng Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory	
Total H	lours of Pedagogy	15 hours	Credits	01	
Cours	e objectives :				
The cou	urse INDIAN CONSTITUTION (221	CO17 / 27) will enable t	he students,		
1.	To know about the basic structure	e of Indian Constitution.			
2.	To know the Fundamental Rights	(FR's), DPSP's and Funda	amental Duties (FD's) c	of our constitution.	
3.	To know about our Union Govern	ment, political structure	& codes, procedures.		
4.	To know the State Executive & El	ections system of India.	-		
5.	To learn the Amendments and Em	ergency Provisions, othe	er important provision	s given by the constitution.	
Teach	ing-Learning Process	<u> </u>	r ···· ·······························	<u> </u>	
These	are sample Strategies, which teache	r can use to accelerate th	ne attainment of the va	rious course outcomes and	
make T	'eaching –Learning more effective:	Teachers shall adont sui	table nedagogy for effe	ective teaching - learning	
nroces	s The nedgoory shall involve the co	mbination of different r	nethodologies which s	uit modern technological	
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(i)	Direct instructional mathed (Low	(Old Technology) (ii) El	inned classrooms (Hig	h (advanced Technological	
tool		/olu reciliology), (ii) P	ipped classi oollis (Ilig	il/auvaliceu reciliological	
1001	(iii) Blandad laarning (Combinatic	n of both) (iv) Enquiry	and ovaluation based l	oarning (y) Porconalized	
	loarning (vi) Problems based loar	ming through discussion	and evaluation based i	earning, (v) i ersonanzeu	
	An aut from conventional leature of	athada wariawa temagad	l. Sinn arrativa taa ahin a ta	ahu i awaa thu ay ah	
(ii)	Apart from conventional lecture in	iethods, various types of	innovative teaching te	configues through	
	videos, animation films may be ad	apted so that the deliver	red lesson can progres	s the students In	
	theoretical applied and				
	practical skills.	(0.0.1			
	Module-1	. (03 ho	ours of pedagogy)		
Indian	Constitution: Necessity of the Cor	stitution, Societies befor	re and after the Constit	ution adoption. Introduction	
to the Indian constitution Making of the Constitution Role of the Constituent Assembly					
	Module-2	(03 h	ours of pedagogy)		
Salient	features of India Constitution. Pre-	eamble of Indian Consti	tution & Key concepts	of the Preamble.	
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.					
	Module-3	(03 h	ours of nedgoogy)		
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Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive - President, Prime Minister, Union Cabinet.

Module-4 (03 hours of pedagogy) Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

	Module-5	(03 hours of pedagogy)	
State Exe	ecutive and Governer, CM, State	Cabinet, Legislature - VS & VP, Election Commission, Elections & Elector	oral
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Course o At the end	utcome (Course Skill Set) d of the course 22ICO17/27 the student will be able to:	
C01	Analyse the basic structure of Indian Constitution.	
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.	
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Course Code: 21RMIS6 CIE Marks 50 Teaching Hours/Week (L:T): 51 1:2:0:0 SEE Marks 50 Total Hours of Pedagogy 25 Total Marks 100 Carrest Objectives: 0.2 Exam Hours 0.3 CO1: To Understand the knowledge on basics of research and its types. 0.3 CO2: To Learn the concept of Literature Review, Technical Reading, Attributions and Citations.CO3. To learn Ethics in Engineering Research. C04: To Discuss the concepts of Intellectual Property Rights in engineering. Teaching-Learning Process (General Instructions) These are sample Strategies; which teachers can use to accelerate the attainment of the various courseoutcomes. 1. Lecturer methods (L) need not be only the traditional lecture methods, but alternativeeffective teaching methods could be adopted to attain the outcomes. 2. Use of Video to explain various concepts on IPR. Encourage collaborative (Group Learning) Learning in the class. Ask at least three HOT (Higher Order Thinking) questions in the class, which promotes criticalthinking. 1. Introduce topics in manifold representations. 6. Show weery concept can be applied to the real world - and when that's possible, it helpsImprove the students' understanding. Introduction: Meaning of Research, Objectives of Engineering Research, and Motiv	RESEARCH METHODOLOGY & INTELLECTUAL PROPERTY RIGHTS					
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Total Mours of Pedagogy 25 Total Marks 100 Credits 02 Exam Hours 03 Course Objectives: 03 03 CO1. To Understand the knowledge on basics of research and its types. 03 CO2. To Learn the concept of Literature Review, Technical Reading, Attributions and Citations.CO3. To learn Ethics in Engineering Research. 04 CO4. To Discuss the concepts of Intellectual Property Rights in engineering. Teaching-Learning Process (General Instructions) These are sample Strategies; which teachers can use to accelerate the attainment of the various courseoutcomes. 1 Lecturer methods (L) need not be only the traditional lecture methods, but alternativeeffective teaching methods could be adopted to attain the outcomes. 2 Use of Video to explain various concepts on IPR. 3 Encourage collaborative (Group Learning) Learning in the class. 4. Ask at least three HOT (Higher Order Thinking) questions in the class, which promotes criticalthinking. 5 Introduce Topics in manifold representations. 6. Show the different ways to solve them. 7 Discuss how every concept can be applied to the real world - and when that's possible, it helpsImprove the students' understanding. 7. Discus how every concept can be applied to the real world - and when that's possible, it helpsImprove the students' understanding.	Teaching Hours/Week (L:	T:P: S) 1:2:0:0	SEE Marks	50		
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Teaching-Learning ProcessChalk and talk method / PowerPoint Presentation.Module-2(5 Hours)Literature Review and Technical Reading, New and Existing Knowledge, Analysis and Synthesis of Prior A Bibliographic Databases, Web of Science, Google and Google Scholar, Effective Search: The Way Forward Introduction Technical Reading Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet.Attributions and Citations: Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books Dissertations, Dedication or Acknowledgments.Teaching-Learning ProcessChalk and talk method / PowerPoint PresentationModule-3(5 Hours)	Related to Authorship.					
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Module-3(5 Hours)	Teaching-Learning Process	Chalk and talk method / Po	owerPoint Presentation			
	Module-3(5 Hours)					



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Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments inIP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Teaching- Learning
ProcessChalk and talk method / PowerPoint Presentation.

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks

Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

Module-5(5 Hours)

Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**



Administrative Office:

1st Phase, JP Nagar, Bengaluru – 560 078

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THE OXFORD COLLEGE OF ENGINEERING

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E-mail: engprincipal@theoxford.edu Web: www.theoxfordengg.org

Department of Mechatronics

Course Title:	Indian Constitution					
Course Code:		CIE Marks	50			
Course Type (Theory/Practical /Integrated)	BICOK107-207	SEE Marks	50			
Taaching Hours (Weak (LiTip: C)	1.0.0.0	Total Marks	100 01 Theory			
Tetal Hours of Podagogy	1:0:0:0 15 hours	Exam Hours Crodits	01 Theory			
Course abjectives	15 110015	creuits	01			
The source INDIAN CONSTITUTION (22)	C(17/27) will enable the	a atu danta				
The course INDIAN CONSTITUTION (2210	2017 / 27 J will enable u	ie students,				
6. To know about the basic structure	OI INGIAN CONSTITUTION.	montal Dution (ED'a) of a	un constitution			
7. To know the Fundamental Rights	[FR S], DPSP S and Funda	imental Duties (FD S) of C	our constitution.			
8. 10 know about our Union Governm	nent, political structure o	& codes, procedures.				
9. To know the State Executive & Ele	ections system of India.					
10. To learn the Amendments and Em	ergency Provisions, othe	er important provisions g	iven by the constitution.			
Teaching-Learning Process	. 11					
I nese are sample Strategies, which teached	r can use to accelerate th	e attainment of the vario	ous course outcomes and			
make leacning – Learning more effective:	l eachers shall adopt sul	table pedagogy for effect	ive teaching - learning			
process. The pedagogy shall involve the co	mbination of different n	nethodologies which suit	modern technological			
(i) Direct in structional mathed (Law	(Old Technology) (;;) El	inned alegane and (IIiah (a dwan and Ta shu ala si sal			
tools)	/ Old Technology J, (II) FI	ipped classi oonis (rigii/	auvanceu recimologicai			
(iii) Blended learning (Combinatio	n of both) (iv) Fnauiry	and evaluation based lea	rning (v) Personalized			
learning (vi) Problems based lear	ning through discussion		rining, (v) i ci sonalizeu			
(ii) Apart from conventional lecture m	ethods various types of	Innovative teaching tech	iniques through			
videos animation films may be ad	anted so that the deliver	ed lesson can progress t	he students In			
theoretical applied and	apted 50 that the deriver	eu lesson ean progress e				
practical skills.						
Module-1	(03 ho	ours of pedagogy)				
Indian Constitution: Necessity of the Con	stitution, Societies befor	e and after the Constitut	ion adoption. Introduction			
to theIndian constitution, Making of the Co	onstitution, Role of the C	onstituent Assembly.				
Module-2 (03 hours of pedagogy)						
Salient features of India Constitution. Pre	amble of Indian Constit	ution & Key concepts o	f the Preamble.			
FundamentalRights (FR's) and its Rest	riction and limitations in	n different Complex Situa	tions. building.			
Modulo-3 (02 hours of podagoogy)						
Directive Principles of State Policy (DPS	P'_{c} and its present re	alevance in Indian so	ciety Fundamental			
Directive Frinciples of State Folicy (DFSF S) and its present relevance in indian society. Fundamental						
and its Scope and significance in Nation Union Executive · Parliamentary System Union Executive - President						
Prime Minister. Union Cabinet.						
Module-4 (03 hours of pedagogy)						
Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of						
India,Supreme Court of India and other Co	India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.					


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	(00)	
Module-5	(03 hours of p	edagogy)

State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:				
C01	Analyse the basic structure of Indian Constitution.			
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.			
CO3	know about our Union Government, political structure & codes, procedures.			

	RESEARCH METHOD	OLOGY & INTELLECTUAL	PROPERTY RIGHTS			
Course Code:	21RMI56	CIE Marks	50			
Teaching Hours/Week (L:T	:P: S) 1:2:0:0	SEE Marks	50			
Total Hours of Pedagogy	25	Total Marks	100			
Credits	02	Exam Hours	03			
Course Objectives:						
CO1. To Understand the k	nowledge on basics of r	esearch and its types.				
CO2. To Learn the concept	t of Literature Review, T	echnical Reading, Attribu	itions and Citations.CO3. To learn Ethics in			
Engineering Research.						
CO4. To Discuss the conce	epts of Intellectual Prop	erty Rights in engineering	<u>.</u>			
Teaching-Learning Proces	s (General Instructions	5)				
These are sample Strategies	; which teachers can use	e to accelerate the attainm	ent of the various courseoutcomes.			
8. Lecturer methods (L) need not be only the t	raditional lecture methods	, but alternativeeffective teaching			
methods could be a	dopted to attain the outo	omes.				
9. Use of Video to exp	lain various concepts on	IPR.				
10. Encourage collabor	rative (Group Learning)	Learning in the class.				
11. Ask at least three H	IOT (Higher Order Think	ing) questions in the class	s, which promotes criticalthinking.			
12. Introduce Topics in	12. Introduce Topics in manifold representations.					
13. Show the different creative ways to set	ways to analyze the resolute them.	earch problem and encou	rage the students to comeup withtheir own			
14. Discuss how every	concept can be applied	to the real world - and wh	en that's possible, it helpsImprove the			
students' understa	inding					
		Module-1 (5 Hours)				
Introduction: Meaning of Engineering Research, Fin	Research, Objectives of ding and Solving a Wort	Engineering Research, an hwhile Problem.	nd Motivation in EngineeringResearch, Types of			
Ethics in Engineering Rese Related to Authorship.	earch, Ethics in Engineer	ing Research Practice, Ty	pes of Research Misconduct,Ethical Issues			
Teaching- LearningCProcess	halk and talk method / 1	PowerPoint Presentation.				
<u> </u>		Module-2(5 Hours)				



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Literature Review and Technical Reading, New and Existing Knowledge, Analysis and Synthesis of Prior Art Bibliographic Databases, Web of Science, Google and Google Scholar, Effective Search: The Way Forward Introduction to Technical Reading Conceptualizing Research, Critical and Creative Reading, Taking Notes While Reading, Reading Mathematics and Algorithms, Reading a Datasheet.

Attributions and Citations: Giving Credit Wherever Due, Citations: Functions and Attributes, Impact of Title and Keywords on Citations, Knowledge Flow through Citation, Citing Datasets, Styles for Citations, Acknowledgments and Attributions, What Should Be Acknowledged, Acknowledgments in, Books

Dissertations, Dedication or Acknowledgments.

Teaching-Learning	Chalk and talk method / PowerPoint Presentation
Process	
	Module-3(5 Hours)

Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments inIP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Teaching-Learning Process Chalk and talk method / PowerPoint Presentation.

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks

Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

Module-5(5 Hours)

Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights.



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Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**



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Department of Civil Engineering

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (Theory/Practical /Integrated)	BICOK107-207	SEE Marks	50
	1.0.0.0	Total Marks	100
Teaching Hours/Week (L:T:P:S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01
Course objectives :			
The course INDIAN CONSTITUTION (2210	2 017 / 27) will enable th	ne students,	
1. To know about the basic structure	of Indian Constitution.		
2. To know the Fundamental Rights ([FR's), DPSP's and Funda	amental Duties (FD's) of	our constitution.
3. To know about our Union Governr	nent, political structure	& codes, procedures.	
4. To know the State Executive & Ele	ections system of India.		
5. To learn the Amendments and Em	ergency Provisions, othe	er important provisions	given by the constitution.
Teaching-Learning Process			
These are sample Strategies, which teacher	r can use to accelerate th	e attainment of the vari	ous course outcomes and
make Teaching –Learning more effective:	Feachers shall adopt sui	table pedagogy for effec	tive teaching - learning
process. The pedagogy shall involve the co	mbination of different n	nethodologies which su	it modern technological
tools			
(i) Direct instructional method (Low,	/Old Technology), (ii) Fl	ipped classrooms (High	/advanced Technological
(iii) Planded learning (Combinetic	n of hoth) (iv) Enquiry	and avaluation based la	anning (y) Danaanaligad
(III) Dielided lear ling (Combinatio	ning through disquesion	allu evaluatioli baseu le	ai iiiig, (v) Personalizeu
August forman and a stress of the stress of			h;
(ii) Apart from conventional lecture m	lethods, various types of	innovative teaching tec	the students by
videos, animation films may be ad	apted so that the deliver	ed lesson can progress	the students in
theoretical applied and			
practical skills.	(0.2.1.	·····	
Module-1	(03 hc	ours of pedagogy)	
Indian Constitution: Necessity of the Con	stitution, Societies befor	re and after the Constitu	tion adoption. Introduction
to theIndian constitution. Making of the Co	onstitution. Role of the C	onstituent Assembly.	
	,		
Module-2	(03 ho	ours of pedagogy)	
Salient features of India Constitution. Pre	amble of Indian Constit	ution & Key concepts	of the Preamble.
FundamentalRights (FR's) and its Rest	riction and limitations in	n different Complex Situ	ations. building.
Module-3	(03 ho	ours of pedagogy)	
Directive Principles of State Policy (DPS Duties	P's) and its present re	elevance in Indian so	ociety. Fundamental
and its Scope and significance in Nation. I	Jnion Executive : Parliar	nentary System, Union	Executive – President.
Prime Minister, Union Cabinet.		···	
Module-4	(03 h	ours of pedagogy)	
Parliament - LS and RS. Parliamentary C.	ommittees. Important F	Parliamentary Termino	logies, Judicial System of
India Supreme Court of India and other Co	urts Indicial Reviews ar	nd Iudicial Activism	
inality aprenie dourt of inalit and other do			



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1 main <u>engenneipale neemenateur</u> meen <u>mininternetaengeer</u>							
Module-5	(03 hours of pedagogy)						
e and Governer, CM, State Cabinet, L	egislature - VS & VP, Election Commissi	on, Elections &					

State Executiv & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:				
C01	Analyse the basic structure of Indian Constitution.			
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.			
CO3	know about our Union Government, political structure & codes, procedures.			

Course C Teaching Credits Examinat Course o Abi med	ode Hours/Week (L:T:P: S) tion type (SEE)	BCVL404 0:0:2:0 01	CIE Marks SEE Marks Total Marks	50 50
Teaching Credits Examinat Course o Abi mes	Hours/Week (L:T:P: S)	0:0:2:0 01	SEE Marks Total Marks	50
Credits Examinat Course o Abi med	tion type (SEE)	01	Total Marks	
Examinat Course o • Abi met	tion type (SEE)		a second contract they	100
• Abi	tion type (SEE)			02
Abi mc		Pract	ical	
 Abi Ubi Abi 	ility to apply knowledge of m chanical propertiesofstructura ilitytofunctiononmulti-discipli ilitytousethetechniques,skillsa derstanding of professional and ilitytocommunicates ffectively	athematics and engineering in Imaterials. in ary teams in the are aof material ndmodernengineering tools nee ethical responsibility in the areas the mechanical properties of mat	calculating the stesting. essaryforengineering. ofmaterialtesting. lerials.	i i
A NO L	in your communicate circuit ci y	Experiments		
1	Tests on Bricks, Tiles, Cemen Absorption, Strength)(L1, L2	t Concrete blocks (Weight &I , L3, L4)	Dimensionality, Water	E
2	Tests on Fine aggregates - Sie density, Bulking and Silt Con	ve Analysis, Moisture content tent	, Specific gravity, Bu (L1, L2, L3	lk (, L4)
3	Tests on Coarse aggregates-S gravity and Bulk density(L1,	ieve Analysis, Water absorpti L2, L3, L4)	on, Moisture content,	specific
4	Compression test on mild stee	l, cast iron and wood.(L1, L2	, L3 , L4)	
5.	Tension test on mild steel and	HYSD bars (L2, L3, L4)		
6 .	Torsion test on mild steel circ	ular sections.	(L1, L2,	L3, L4)
7	Bending Test on Wood Under	two-point loading.	(L1, L2,	13, 14
8	Shear Test on Mild steel- sing	te and double shear.	(L1, L2,	L3, L4
9	Impact test on Mild Steel (Ch	arpy&lzod).	(L1, L2, I	L3, L4)
10	Hardness tests on ferrous and (L1, L2, L3, L4)	non-ferrous metals- Brinell's,	Rockwell and Vicker	*s.
11	Demonstration of Strain gauge	es and Strain indicators.	(L1, L2, L3, L4)	

Analyze the physical characteristics, and behavior of common building materials.



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V Semester

		the second state of the se		the second se
DESIGN	OF	RC STRU	CTURAL	ELEMENTS

Course Code	21CV53	CIE Marks	50
Teaching Hours/Week [L:T:P: S]	2+2+0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	3	Exam Hours	3

This course will enable students to

- Identify, formulate and solve engineering problems of RC elements subjected to different kinds of loading.
- 2. Follow a procedural knowledge in designing various structural RC elements.
- 3. Impart the usage of codes for strength, serviceability and durability.
- 4. Acquire knowledge in analysis and design of RC elements.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Blackboard teaching
- 2. Power point Presentation
- 3. Videos, NPTEL materials
- 4. Quiz/Assignments/Open book test to develop skills
- 5. Adopt problem based learning (PBL) to develop analytical and thinking skills
- Encourage collaborative learning, site visits related to subject and impart practical knowledge. Module-1

Introduction to working stress and limit State Design: Introduction to working stress method, Difference between Working stress and Limit State Method of design.

Philosophy and principle of limit state design with assumptions. Partial Safety factors, Characteristic load and strength. Stress block parameters, concept of balanced section, under reinforced and over reinforced section.

Limiting deflection, short term deflection, long term deflection, Calculation of deflection of singly reinforced beam only.

Teaching-Chalk & Talk, PPT presentation, Youtube videos, Nearby construction site visits. Learning Process

Module-2

Limit State Analysis of Beams:

Analysis of singly reinforced, doubly reinforced and flanged beams for flexure and shear.

and the second se	
Teaching- Learning Process	Chalk & Talk, PPT presentation, Youtube videos, Nearby construction site visits.

Module-3

Limit State Design of Beams: Design of singly reinforced beams with check for shear, check for development length and other checks. Design of doubly reinforced beams and flanged sections without checks.

Teaching-	Chalk & Talk, PPT presentation, Youtube videos, Nearby construction site visits.	1
Learning Process		
	Module-4	1



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(Choice Based Credit !	B. E. CIVIL ENGINEER System (CBCS) and Outcon SEMESTER - VIII	ING me Based Education (OB	E)		
TECHNICAL SEMINAR						
Course	Code	18CVS84	CIE Marks	100		
Teachin	ng Hours/Week(L:T:P)		SEE Marks	-		
Credits		01	Exam Hours	03		
The ob skill, in is requ Carryot	jective of the seminar is to inc wolve in group discussion and p ired to choose, preferably, a r ut literature survey; organize the Conduct literature survey in the Prepare the synopsis report with Learn to use MS word, MS po preparation of report and preser Present the seminar topic orally Communicate effectively to ans The participants shall take part students are motivated to reach	ulcate self-learning, face an resent and exchange ideas. I ecent topic of his/her inter Course topics in a systemat domain area to find appropr a own sentences in a standard over point, MS equation an ntation. and/or through power point wer the queries and involve in discussion to foster frien- high standards and become	idience confidently, enhat Each student, under the gui est relevant to the course ic order. inte topic. d format. d Drawing tools or any sa slides. in debate/discussion. dly and stimulating enviror self-confident.	nee communication idance of a Faculty e of specialization the facilities in the nment in which the		
Course	Outcomes: At the end of the co Develop knowledge in the field and collaborative study. Identify and discuss the current, Develop written and oral comm Explore concepts in larger diver Apply principles of ethics and r Develop the skills to enable life there are an	surse the student will be able t of Civil Engineering and o , real-time issues and challen unication skills. se social and academic conte espect in interaction with oth -long learning.	to: ther disciplines through in- ges in engineering & techn exts. ers.	dependent learning pology.		
Evalua	tion Procedure: As per University guidelines. The Internal Assessment marks topic, quality of the report, pres the seminar classes/sessions.	s for the seminar shall be av entation skills, participation	varded based on the releva in the question and answer	nce of the seminar , and attendance in		



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Department of Electrical & Electronics Engineering

BSCK307 – Social Connect & Responsibility 2022 Scheme & syllabus 3rd sem

BSCK307 – Socia	l Connect & Responsibility	Semester	3 rd			
2022 Scheme	e & syllabus for 3 rd sem					
Course Code BSCK307 CIE Marks 100						
Teaching Hours/Week (L:T:P: S)	Teaching Hours/Week (L:T:P: S) 0:0:3:1 SEE Marks					
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	100			
Examination nature	Examination nature For CIE Assessment - Activities Report Evaluation by College NSS					
Officer / HOD / Sports Dept / Any Dept.						
Credits	01 - Credit					
 Course objectives: The course Provide a formal platform for create a responsible connection Understand the community in Identify the needs and problem Develop among themselves a in finding practical solutions to Develop competence required in mobilizing community parti General Instructions - Pedagog These are sample Strategies, which tead In addition to the traditional that the activities will develo State the need for activities a Support and guide the studen You will also be responsible students' progress in real activities 	will enable the students to: students to communicate and connect to the surrounding. a with the society. general in which they work. Is of the community and involve them in problem –solvin sense of social & civic responsibility & utilize their know o individual and community problems. for group-living and sharing of responsibilities & gain sk cipation to acquire leadership qualities and democratic att gy : hers can use to accelerate the attainment of the various co lecture method, different types of innovative teaching met p students' theoretical and applied social and cultural skil and its present relevance in the society and Provide real-li ts for self-planned activities. for assigning homework, grading assignments and quizze vities in the field. rouw work to improve their creative and analytical skills	ig. ledge iills iitudes. purse outcomes. thods may be add ls. fe examples. s, and document	opted so			
Contents ·						
The course is mainly activity-based th	at will offer a set of activities for the student that enables	them to connect	with fellow			
human beings, nature, society, and the	world at large.					
The course will engage students for in	teractive sessions, open mic, reading group, storvtelling s	essions, and sen	nester-long			
activities conducted by faculty mentor	S.		5			
In the following a set of activities planned for the course have been listed:						
Social (Connect & Responsibility - Content	s	ň			
Part I:	· · ·					
Plantation and adoption of a tr	ee:					
Plantation of a tree that will be adopted	for four years by a group of BE / B.Tech students. (ON	E STUDENT O	NE TREE)			
They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life.						
its appearance in folklore and literature Objectives, Visit, case study, report, outcomes.						
Part II ·						
Heritage walk and crafts corne						
Heritage tour knowing the history and	culture of the city connecting to people around through	n their history k	nowing the			
city and its craftsman, photo blog and	documentary on evolution and practice of various and	forms . Obio	ctives Visit			
case study report outcomes	documentary on evolution and practice of various craft	iomis - – Obje	cuves, v 1511,			
case study, report, outcomes.						
Part III :						
Organic farming and waste ma	nagement:					
Usefulness of organic farming, wet	vaste management in neighboring villages, and impler	mentation in the	e campus -			



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BSCK307 – Social Connect & Responsibility 2022 Scheme & syllabus 3rd sem

Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking - Objectives, Visit, case study, report, outcomes.

Course outcomes (Course Skill Set):

- At the end of the course, the student will be able to:
- CO1: Communicate and connect to the surrounding.
- CO2: Create a responsible connection with the society.
- CO3: Involve in the community in general in which they work.
- CO4: Notice the needs and problems of the community and involve them in problem -solving.
- CO5: Develop among themselves a sense of social & civic responsibility & utilize their knowledge in finding practical solutions to individual and community problems.
- CO6: Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

Activities:

Jamming session, open mic, and poetry: Platform to connect to others. Share the stories with others. Share the experience of Social Connect. Exhibit the talent like playing instruments, singing, one-act play, art-painting, and fine art.

PEDAGOGY:

The pedagogy will include interactive lectures, inspiring guest talks, field visits, social immersion, and a course project. Applying and synthesizing information from these sources to define the social problem to address and take up the solution as the course project, with your group. Social immersionwith NGOs/social sections will be a key part of the course. Will all lead to the course project that will address the needs of the social sector?

COURSE TOPICS:

The course will introduce social context and various players in the social space, and present approaches to discovering and understanding social needs. Social immersion and inspiring conversional will culminate in developing an actual, idea for problem-based intervention, based on an in-depth understanding of a key social problem.

Duration :

A total of 40 - 50 hrs engagement per semester is required for the 3rd semester of the B.E. /B.Tech. program. The students will be divided into groups. Each group will be handled by faculty mentor. Faculty mentor will design the activities (particularly Jamming sessions open mic ,and poetry) Faculty mentors has to design the evaluation system as per VTU guidelines of scheme & syllabus.

Guideline for Assessment Process:

Continuous Internal Evaluation (CIE):

After completion of the course, the student shall prepare, with daily diary as reference, a comprehensive report in consultation with the mentor/s to indicate what he has observed and learned in the social connect period. The report should be signed by the mentor. The report shall



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Physical Education (Sports and Athletics) syllabus

Semester: IV								
	PHYSICAL EDUCATION (SPORTS & ATHLETICS) – II							
Course C	ode	:	BPEK459		CIE	:	100 Marks	
Credits: 1	L:T:P	:	0:0:1					
Total Ho	urs	:	24 P					
Course C 1. U 2. Pe 3. U ga	Dutcomo Inderstar erform i Inderstar ames.	es: nd n t nd	At the end of the of the ethics and more the selected sports of the roles and res	course, the stud al values in sp or athletics of sponsibilities	dent will be orts and ath student's cl of organisa	e able to nletics noice. ntion and	d administration	of sports and
A. E	thics in	Sp	orts	es				4 Hours
B. M	Ioral Va	ific	s in Sports and Ga	mes	ed by the	student	ð	16 Hours
A. V B. A	olleybal	1 – (Ti	Attack, Block, Ser rack Events) – Any	vice, Upper H vevent as per a	and Pass and vailability	nd Lowe of Grou	r hand Pass. nd.	10 11011 5
Module I	II: Role	of	Organisation and	1 administrati	on			4 Hours

Scheme and Assessment for auditing the course and Grades:

Sl. No.	Activity	Marks
1.	Participation of student in all the modules	20
2.	Quizzes – 2, each of 15 marks	30
3.	Final presentation / exhibition / Participation in competitions/ practical on specific tasks assigned to the students	50
	Total	100

@#@ 16092024

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
	BIG@K107-207	SEE Marks	50
Course Type (Theory/Practical/Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01



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Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

- (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.
- (ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and
- practical skills.

Module-1	(03 hours of pedagogy)
Indian Constitution: Necessity of the Constitution, So	cieties before and after the Constitution adoption. Introduction
to the Indian constitution Making of the Constitution F	Role of the Constituent Assembly

to thematan constitution, Making of the constitution, Note	of the constituent rissembly.
Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	n Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limit	ations in different Complex Situations. building.

Module-3(03 hours of pedagogy)Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental
Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet.

Module-4 (03 hours of pedagogy)

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

	Module-5	(03 hours of pedagogy)	
State Ex	ecutive and Governer, CM, State Cabinet,	Legislature - VS & VP, Election Commission, Elections	& Electoral
Process	Amendment to Constitution, and Import Provisions.	ant Constitutional Amendments till today. Emergency	

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

CO1 Analyse the basic structure of Indian Constitution.

CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.



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Course Code		OLOGY & INTELLECTUAL	PROPERTY RIGHTS
	21RMI56	CIE Marks	50
Teaching Hours/Week (L:T	P: S) 1:2:0:0	SEE Marks	50
Total Hours of Pedagogy	25	Total Marks	100
Credits	02	Exam Hours	03
CO1. To Understand the k CO2. To Learn the concept Engineering Research. CO4. To Discuss the conce Teaching-Learning Proces	epts of Intellectual Prope	echnical Reading, Attribu erty Rights in engineering	tions and Citations. CO3. To learn Ethics in
These are sample Strategies 1. Lecturer methods (methods could be a 2. Use of Video to exp	; which teachers can use L) need not be only the tr dopted to attain the outco lain various concepts on	to accelerate the attainm raditional lecture methods omes. IPR.	ent of the various courseoutcomes. , but alternativeeffective teaching
3. Encourage collabor	ative (Group Learning) I	earning in the class.	
4. Ask at least three H	OT (Higher Order Think	ing) questions in the class	s, which promotes criticalthinking.
5. Introduce Topics in	n manifold representation	15.	
6. Show the different	ways to analyze the rese	earch problem and encou	rage the students to comeup withtheir own
creative ways to se	olve them.		
7. Discuss how every students' understa	concept can be applied t nding.	o the real world - and wh	en that's possible, it helpsImprove the
		Module-1 (5 Hours)	
Introduction: Meaning of Engineering Research, Fin	Research, Objectives of ding and Solving a Wort	Engineering Research, an hwhile Problem.	nd Motivation in EngineeringResearch, Types of
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Rese Related to Authorship.	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer	Engineering Research, an hwhile Problem. ing Research Practice, Ty	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Rese Related to Authorship. Teaching- Learning Process	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer halk and talk method / F	Engineering Research, an hwhile Problem. ing Research Practice, Ty PowerPoint Presentation.	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Rese Related to Authorship. Teaching- Learning Process	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer halk and talk method / F	Engineering Research, an hwhile Problem. ing Research Practice, Ty PowerPoint Presentation. Module-2(5 Hours)	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Rese Related to Authorship. Teaching- Learning Process Literature Review and Bibliographic Databases, N Technical Reading Conce Mathematics and Algorithm	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer halk and talk method / F Technical Reading, Web of Science, Google ptualizing Research, C ms, Reading a Datasheet	Engineering Research, an hwhile Problem. ing Research Practice, Ty PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe ritical and Creative Re	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues wledge, Analysis and Synthesis of Prior Art ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Research, Fin Ethics in Engineering Research, Fin Related to Authorship. Teaching- Learning Process Literature Review and Bibliographic Databases, V Technical Reading Conce Mathematics and Algorithe Attributions and Citation Keywords on Citations, K Attributions, What Should Dissertations, Dedication of	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer halk and talk method / F Technical Reading, Web of Science, Google ptualizing Research, C ms, Reading a Datasheet ons: Giving Credit Who nowledge Flow throug Be Acknowledged, Ackn r Acknowledgments.	Engineering Research, an hwhile Problem. ing Research Practice, Ty PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe ritical and Creative Re tritical and Creative Re c. erever Due, Citations: I h Citation, Citing Datase nowledgments in, Books	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues wledge, Analysis and Synthesis of Prior Art ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading Functions and Attributes, Impact of Title and ets, Styles for Citations, Acknowledgments and
Introduction: Meaning of Engineering Research, Fin Ethics in Engineering Research, Fin Ethics in Engineering Research, Fin Related to Authorship. Teaching- Learning Process Literature Review and Bibliographic Databases, V Technical Reading Conce Mathematics and Algorithe Attributions and Citation Keywords on Citations, K Attributions, What Should Dissertations, Dedication of Teaching-Learning Process	Research, Objectives of ding and Solving a Wort arch, Ethics in Engineer halk and talk method / F Technical Reading, Web of Science, Google ptualizing Research, C ms, Reading a Datasheet ons: Giving Credit Who nowledge Flow throug Be Acknowledged, Acknowledged, Acknowledge, Acknowledge, Acknowledge, Acknowledge, Acknowledge, Acknowledgments. Chalk and talk method /	Engineering Research, an hwhile Problem. ing Research Practice, Ty PowerPoint Presentation. Module-2(5 Hours) New and Existing Kno and Google Scholar, Effe ritical and Creative Re curver Due, Citations: I h Citation, Citing Datase nowledgments in, Books PowerPoint Presentation	nd Motivation in EngineeringResearch, Types of pes of Research Misconduct,Ethical Issues wledge, Analysis and Synthesis of Prior Art ctive Search: The Way Forward Introduction to ading, Taking Notes While Reading, Reading Functions and Attributes, Impact of Title and ets, Styles for Citations, Acknowledgments and



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Introduction To Intellectual Property: Role of IP in the Economic and Cultural Development of the Society, IP Governance, IP as a Global Indicator of Innovation, Origin of IP History of IP in India. Major Amendments inIP Laws and Acts in India.

Patents: Conditions for Obtaining a Patent Protection, To Patent or Not to Patent an Invention. Rights Associated with Patents. Enforcement of Patent Rights. Inventions Eligible for Patenting. Non-Patentable Matters. Patent Infringements. Avoid Public Disclosure of an Invention before Patenting. Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Process of Patenting. Prior Art Search. Choice of Application to be Filed. Patent Application Forms. Jurisdiction of Filing Patent Application. Publication. Pre-grant Opposition. Examination. Grant of a Patent. Validity of Patent Protection. Post-grant Opposition. Commercialization of a Patent. Need for a Patent Attorney/Agent. Can a Worldwide Patent be Obtained. Do I Need First to File a Patent in India. Patent Related Forms. Fee Structure. Types of Patent Applications. Commonly Used Terms in Patenting. National Bodies Dealing with Patent Affairs. Utility Models.

Teaching- Learning
ProcessChalk and talk method / PowerPoint Presentation.

Module-4(5 Hours)

Copyrights and Related Rights: Classes of Copyrights. Criteria for Copyright. Ownership of Copyright. Copyrights of the Author. Copyright Infringements. Copyright Infringement is a Criminal Offence. Copyright Infringement is a Cognizable Offence. Fair Use Doctrine. Copyrights and Internet. Non-Copyright Work. Copyright Registration. Judicial Powers of the Registrar of Copyrights. Fee Structure. Copyright Symbol. Validity of Copyright. Copyright Profile of India. Copyright and the word 'Publish'. Transfer of Copyrights to a Publisher. Copyrights and the Word 'Adaptation'. Copyrights and the Word 'Indian Work'. Joint Authorship. Copyright Society. Copyright Board. Copyright Enforcement Advisory Council (CEAC). International Copyright Agreements, Conventions and Treaties. Interesting Copyrights Cases.

Trademarks: Eligibility Criteria. Who Can Apply for a Trademark. Acts and Laws. Designation of Trademark Symbols. Classification of Trademarks. Registration of a Trademark is Not Compulsory. Validity of Trademark. Types of Trademark Registered in India. Trademark Registry. Process for Trademarks

Registration. Prior Art Search. Famous Case Law: Coca-Cola Company vs. Bisleri International Pvt. Ltd.

Module-5(5 Hours)

Industrial Designs: Eligibility Criteria. Acts and Laws to Govern Industrial Designs. Design Rights. Enforcement of Design Rights. Non-Protectable Industrial Designs India. Protection Term. Procedure for Registration of Industrial Designs. Prior Art Search. Application for Registration. Duration of the Registration of a Design. Importance of Design Registration. Cancellation of the Registered Design. Application Forms. Classification of Industrial Designs. Designs Registration Trend in India. International Treaties. Famous Case Law: Apple Inc. vs. Samsung Electronics Co.

Geographical Indications: Acts, Laws and Rules Pertaining to GI. Ownership of GI. Rights Granted to the Holders. Registered GI in India. Identification of Registered GI. Classes of GI. Non-Registerable GI. Protection of GI. Collective or Certification Marks. Enforcement of GI Rights. Procedure for GI Registration Documents Required for GI Registration. GI Ecosystem in India.

Case Studies on Patents. Case study of Curcuma (Turmeric) Patent, Case study of Neem Patent, Case study of Basmati patent. **IP Organizations In India. Schemes and Programmes**



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B.E. ELECTRICAL & ELECTRONICS ENGINEERING Outcome Based Education (OBE) and Choice Based Credit System (CBCS) SEMESTER -VIII

TECHNICAL SEMINAR					
Course Code	18EES84	CIE Marks	100		
Contact Hours/Week	02	SEE Marks			
Credits	01	Exam Hours			

Course objectives:

The objective of the seminar is to inculcate self-learning, face audience confidently, enhance communication skill, involve in group discussion and present and exchange ideas.

Each student, under the guidance of a Faculty, shall choose, preferably, a recent topic of his/her interest relevant to the Course of Specialization.

- Carryout literature survey, organize the seminarcontent in a systematic manner.
- Prepare the report with own sentences, avoiding cut and paste act.
- Type the matter to acquaint with the use of Micro-soft equation and drawing tools or any such facilities.
- · Present the seminar topic orally and/or through power point slides.
- Answer the queries and involve in debate/discussion.
- Submit typed report with a list of references.

The participants shall take part in discussion to foster friendly and stimulating environment in which the students are motivated to reach high standards and become self-confident.

Revised Bloom's Taxonomy Level	$L_3-Applying,L_4-Analysing,L_5-Evaluating,L_6-Creating$
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Course outcomes:

At the end of the course the student will be able to:

- Attain, use and develop knowledge in the field of engineering and other disciplines through independent learning and collaborative study.
- · Identify, understand and discuss current, real-time issues.
- Improve oral and written communication skills.
- Explore an appreciation of the self in relation to its larger diverse social and academic contexts.
- Apply principles of ethics and respect in interaction with others.

Evaluation Procedure:

The CIE marks for the seminar shall be awarded (based on the relevance of the topic, presentation skill, participation in the question and answer session and quality of report) by the committee constituted for the purpose by the Head of the Department. The committee shall consist of three teachers from the department with the senior most acting as the Chairman.

Marks distribution for CIE of the course:

Seminar Report:50 marks Presentation skill:25 marks

50



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Department of Business Administration

ENTREPRE	NEURSHIP DEVELO	PMENT	
Course Code	22MBA12	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
· To develop and strengthen entrepre	neurial qualities and motivat	tion among studen	its.
 To impart basic entrepreneurial s effectively. 	kills and understandings to	o run a business	efficiently and
 To provide insights to students institutions supporting entrepreneur 	on entrepreneurship opport 's.	unities, sources	of funding and
 To make students understand the way 	ays of starting a company of	their own.	
Module-1 (7 Hours)			
Introduction to Entrepreneur & Ent	repreneurshin: Meaning o	f entrepreneur - I	Evolution of the
	The former and the second seco	I chilepreneur I	stolution of the
concept - Functions of an Entrepreneur	- Types of Entrepreneurs -	Intrapreneur- an o	emerging class -
Concept of Entrepreneurship -Entrepren	eurial Culture - Stages in ent	trepreneurial proc	ess.
Creativity and Innovation: The role of	creativity, The innovation	Process, Sources	of New Ideas .
Methods of Generating Ideas . Creative	Problem Solving Entrepren	eurial Process.	
Module 2 (9 Hours)	, providence and the second seco		
D L D D M LL L	C.D. 1. 1.1.1.	0	
Developing Business Model: Importa	ince of Business Model,	Starting a small-	scale industry -
Components of an Effective Business M	odel, Osterwalder Business	Model Canvas.	
Business Planning Process: Meaning	of business plan - Busines	s plan process -	Advantages of
husiness clanning. Final Desiast Danag	t with Esselbility Study an	angering a model of	malast samest for
business planning - Final Floject Repor	t with reasibility Study - pro	eparing a moder p	of oject report for
starting a new venture.			
Lab Component and assignment: Des	signing a Business Model C	anvas	
Module 3 (9 Hours)			
Module-5 (9 Hours)	Den sin for the	the second second	
Managing and Growing New Ventur	e: Preparing for the new ver	nure launch - earl	ly management
decisions, Managing early growth of th	e new venture- new venture	expansion strateg	ies and issues.
Getting Financing or Funding for the N	ew Venture: Estimating the	financial needs of	a new venture
and propagation of a financial plan	ourses of Bersonal Einensi	na Dranasina ta	Daisa Daht or
and preparation of a financial plan, S	ources of Personal Financi	ng, Freparing to	Kaise Debt of
Equity Financing, Business Angels, V	enture Capital, Initial Publi	c Offering, Com	mercial Banks,
Other Sources of Debt Financing, Lea	sing. Forms of business org	ganization: Sole H	Proprietorship .
Partnership . Limited liability partnersh	in - Joint Stock Companies	and Cooperatives.	
Module-4 (9 Hours)	ip som storn companies.		
Entrepreneurship Development and	Covernment: Pole of	Central Govern	ment and State
Covernment in promoting Entrepreneur	ship Introduction to variou	central Governi	idiae and grante
Covernment in promoting Entrepreneur		Ctert He Lad's	sidies and grants
- Export Oriented Units - Fiscal and	Tax concessions available-	Start Up India s	cheme. women
Entrepreneurs, Reasons for low wor	men Entrepreneurs, Prospe	ects for Women	Entrepreneurs,
Strategies to motivate entrepreneurship	amongst women.		
Institutions supporting Entrepreneurs: A	A brief overview of financia	al institutions in	India - SIDBI -
NABARD - IDBI - SIDCO - Indian Ir	stitute of Entrepreneurship	- DIC - Single V	Vindow - Latest
Industrial Policy of Government of India	a.		
Module-5 (7 Hours)			
Process of Company Incorporation: p	process of registration of a p	private limited con	mpany, a public
limited company, a partnership; Charact	teristics of a limited liability	partnership; Fou	r stages of Start
Up, Intellectual property protection an	nd Ethics: Patents , Copyri	ight - Trademark	- Geographical
indications, Ethical and social responsil	bility and challenges.		
Module-6 (9 Hours)			



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Emerging Trends in Entrepreneurship Development; Digital Entrepreneurship, meaning, scope and opportunities. Social Entrepreneur, Meaning of Social Entrepreneur, Motivation for a Social Entrepreneur; Supporting and Evaluating Social Entrepreneurship in India. Rural Entrepreneur, Meaning of Rural Entrepreneur, Potential opportunities for Rural entrepreneurship in India

Assessment Details (both CIE and SEE)

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Continuous Internal Evaluation:

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CIE Marks shall be based on:

a) Tests (for 25Marks) and

b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- · The question paper will have 8 full questions carrying equal marks.
- Each full question is for 20 marks with 3 sub questions.
- · Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.

Suggested Learning Resources: Books

- The Dynamics of Entrepreneurial Development and Management, Vasant Desai, Himalaya Publishing House, 2010.
- 2. Entrepreneurship, Donald F. Kuratko and Richard M. Hodgetts, South-Western, 2012.
- 3. Entrepreneurship Development, Gupta S.L., Arun Mittal, International Book House, 2012.
- 4. Management and Entrepreneurship Development, Sudha G. S, Indus Valley Publication, 2009

Web links and Video Lectures (e-Resources):

- <u>https://youtu.be/rbmz5VEW90A</u>
- https://www.youtube.com/watch?v=CnStAWc7iOw
- https://www.youtube.com/watch?v=RLOivEOUgUc

Note: The aforesaid links and study material are suggestive in nature, they may be used with due regards to copy rights, patenting and other IPR rules.



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Research Methodology and IPR				
Course Code	22MBA23	CIE Marks	50	
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50	
Total Hours of Pedagogy	50	Total Marks	100	
Credits	04	Exam Hours	03	

Course Learning objectives:

- To understand the basic components of research design
- · To Gain an insight into the applications of research methods
- · To equip students with various research analytical tools used in business research
- · To provide the insights of IPR and IPR system in India

Module-1 (7 Hours)

Introduction to Business Research: Meaning, types, process of research- management problem, defining the research problem, formulating the research Hypothesis, developing the research proposals, research design formulation, sampling design, planning and collecting the data for research, data analysis and interpretation. Research Application in business decisions, Ethical issues in business research. Features of a good research study.

Module-2 (9 Hours)

Business Research Design: Meaning, types and significance of research design, errors affecting research design.

Exploratory Research: Meaning, purpose, methods, Literature search, experience survey, focus groups and comprehensive case methods.

Conclusive Research Design: Descriptive Research, Meaning, Types, Cross sectional studies and longitudinal studies.

Experimental Research Design: Meaning and classification of experimental designs, formal and informal, Pre experimental design, True experimental design, Quasi-experimental design, Statistical experimental design.

Module-3 (7 Hours)

Sampling: Concepts, Types of Sampling, Probability Sampling: simple random sampling, systematic sampling, stratified random sampling, cluster sampling,

Non Probability Sampling: convenience sampling- judgmental sampling, snowball sampling, quota sampling, Errors in sampling.

Module-4 (9 Hours)

Data Collection: Meaning, types, **Data collection methods**: Observations, survey and interview techniques, **Questionnaire design**: Meaning, process of designing questionnaire. Qualitative Techniques of data collection Secondary data Sources: advantages and disadvantages.

Measurement and Scaling Techniques: Basic measurement scales-Nominal scale, Ordinal scale, Interval scale, Ratio scale. Attitude measurement scale - Likert Scale, Semantic Differential Scale, Thurston scale, Multi-Dimensional Scaling: Non comparative scaling techniques

Module-5 (9 Hours)

Data Analysis and Report Writing: Editing, Coding, Classification, Tabulation, Validation. Analysis and Interpretation, Report writing and presentation of results, Importance of report writing, types of research reports, Report structure, Guidelines for effective documentation.

Module-6 (9 Hours)



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Intellectual Property Rights: Meaning and Concepts of Intellectual Property, Nature and Characteristics of Intellectual Property, Origin and Development of Intellectual Property, Kinds of Intellectual Property, Intellectual Property System in India, IPRs- Invention and Creativity- Intellectual Property-Importance and Protection of Intellectual Property Rights (IPRs)- A brief summary of: Patents, Copyrights, Trademarks, TRIPS and TRIMS, Industrial Designs- Integrated Circuits-Geographical Indications-Establishment of WIPO-Application and Procedures.

Assessment Details (both CIE and SEE)

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Semester End Examination:

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- · The question paper will have 8 full questions carrying equal marks.
- · Each full question is for 20 marks with 3 sub questions.
- · Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full question from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.
- · 100 Percent theory.



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MANA	GERIAL ECONOMI	CS	
Course Code	22MBA26	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	4	Exam Hours	3

Course Learning objectives:

- · To introduce the fundamentals, tools and theories of managerial economics.
- To provide an understanding of the application of Economics in Business
- · To learn the basic Micro and Macro-economic concepts.
- To understand Demand, Production, Cost, Profit and Market competitions with reference to firm and industry.

Module-1 (7 Hours)

Introduction: Managerial Economics: Meaning, Nature, Scope & Significance, Uses of Managerial Economics, Role and Responsibilities of Managerial Economist.

Theory of the Firm: Firm and Industry, Objectives of the firm, alternate objectives of firm. Managerial theories: Baumol's Model, Marris's model of growth maximization, Williamson's model of managerial discretion.

Module-2 (9 Hours)

Demand Analysis

Law of Demand, Exceptions to the Law of Demand, Elasticity of Demand, Classification of Price, Income &Cross elasticity, Promotional elasticity of demand. Uses of elasticity of demand for Managerial decision making, Measurement of elasticity of demand. Law of supply, Elasticity of supply.

Demand forecasting: Meaning & Significance, Methods of demand forecasting. (Problems on Price elasticity of demand, and demand forecasting using Time-series method).

Module-3 (9 Hours)

Cost Analysis & Production Analysis Concepts of Production, production function with one variable input - Law of Variable Proportion, Laws of returns to scale, Indifference Curves, ISO-Quants & ISO-Cost line, Economies of scale, Diseconomies of scale. Types of cost, Cost curves, Cost - Output Relationship in the short run and in the long run, Long- Run Average Cost (LAC) curve Break Even Analysis-Meaning, Assumptions, Determination of BEA, Limitations, Margin of safety, Uses of BEA In Managerial decisions (Theory and simple Problems). Module -4 (9 Hours) Market structure and Pricing Practices Perfect Competition: Features, Determination of price under perfect competition, Monopolistic Competition: Features, Pricing Under monopolistic competition, Product differentiation. Oligopoly: Features, Kinked demand Curve, Cartels, Price leadership. Monopoly: Features, Pricing under monopoly, Price Discrimination. Descriptive Pricing Approaches: Loss leader pricing, Peak Load pricing, Transfer pricing. (9 Hours) Module-5 Indian Business Environment Nature, Scope, Structure of Indian Business Environment, Internal and External Environment. Political and Legal Environment, Economic Environment, Socio- Cultural Environment, Global Environment, Private Sector, Growth, Problems and Prospects, SMEs, Significance in Indian economy, challenges and prospects. Fiscal policy and Monetary Policy: Meaning of Fiscal policy, three main types of fiscal policy - neutral policy, expansionary, and contractionary. Monetary policy: Meaning, Objectives of monetary policies: Controlling inflation, Managing employment levels, and Maintaining long-term interest rates. (Theory only) (7 Hours) Module-6 Indian Industrial Policy : New industrial policy 1991, Production Linked Incentive (PLI) scheme for Promoting manufacturing of Telecom & Networking Products in India, New economic initiatives proposed by Indian government for economic growth Private Sector-Growth- like Atma Nirbhar Bharath Abhiyan.



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RECRUI	TMENT AND SELECT	ION	
Course Code	22MBAHR303	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Learning Objectives:

This course will enable the students

- · To recite the theories and various steps involved in Recruitment and Selection
- To describe and explain in her/his own words, the relevance and importance of Recruitment and Selection in the Organization
- · To apply and solve the workplace problems through Recruitment and Selection intervention
- To classify and categorize in differentiating between the best method to be adopted by organization related to Recruitment and Selection
- To compare and contrast different approaches of Recruitment and Selection framework for solving the complex issues and problems
- To design and develop an original framework and framework in dealing with the problems in the organization.

Module-1 (8 Hours)

Workforce Planning and Recruitment Analytics:

Concept of Work, Organisation's Work and Jobs; Millennials at the work place; Key Characteristics of Millennials; Types of Millennial; The Evolution of Work Structure; Organising the Work; Strategic Job Redesign and Its Benefits; Strategic Issues in Recruitment; What make Bad Recruitment; Overview of the Hiring Process; Recruitment Metrics; Factors Affecting Recruitment; Recruitment Strategy: An Internal Approach; Recruitment Strategy: An External Approach; Legal and Ethical Considerations; Organisational Best Practices.

Module-2 (9 Hours)

Job Analysis, Job Description and Job Design:

Identify the Job to Examine; Determine Appropriate Information Sources and Collect Job-Related Data; Job Description; Competency and Competency Ice Berg Model; Why Competency Based Recruitment; Sources of Recruitment; Different steps of job search; Motivational Job Specification; Creation of Functional Specification; Creation of Behavioural Specification; Employer branding; Social Media; Job Design.

Module-3 (9 Hours)

Job Evaluation:

The Job Evaluation Process; Obtain Job KSAOs, Qualifications, Working Conditions, and Essential Duties; Examine Compensable Factors Using the Rating/Weighting Evaluation Method; Determine Overall Job Value; Hay Group—Pioneer in Job Evaluation; Determining Compensation using Job Evaluation Data; Legal and Ethical Considerations for Job Evaluation; Online Salary Survey.

Module-4 (9 Hours)



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Selection and Interview Strategy:

Interview Strategy and Process; Millennials shaping the Recruitment landscape in the organizations; Strategies for recruiting and selecting Generation Y into the workforce Developing Effective. Interviewers; Interviewing Techniques; Legal and Ethical Considerations in the Interview Process; The overall BEI Process; Assessment Centre's; Simulations.

Module-5 (9 Hours)

Testing and Assessment:

Testing in Occupational Selection; Test related to Assessment of Knowledge, Skills, and Abilities; Personality Assessment; The Birkman method and MBTI® comparison; FIRO-B; Honesty and Integrity Assessment; Various Non-Interviewing Methods; Graphology; Skills Assessment; Games and Group Activity for Leadership Assessment; Administration of Tests and Assessments; Key Interviewer Skills.

Module-6 (7 Hours)

Making the Hire; Assessment of Candidate and Job Fit:

Unique Recruitment strategies; Biodata and Application Forms; Implications of Using Social Media Content in Hiring Decisions; Background Checks; Reference Checks; Pre-employment Testing; Making a Job Offer; Transitioning from Job Candidate to Employee; Induction; Placement.

Assessment Details (both CIE and SEE)

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International Business			
Course Code	22MBA401	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course Learning objectives:

- · To explore and offer knowledge on Global Business Environment.
- · To explore knowledge on International Institutions involved in global business.
- · To assist the students to develop a truly Global Perspective.
- To understand the contemporary issues in global business that illustrates the unique challenges faced by managers in the IBE.

Module-1 (6 Hours)

Introduction to International Business: Evolution, Meaning, Importance, Nature and Scope of International Business, Characteristics of International Business, Factors affecting International Business, Changing scenario of International Business, Advantages of International Business, challenges in International business, Modes of entry into International Business, Internationalization Process.

Module-2 (7 Hours)

International Business Environment: Introduction, Meaning and Components of International Business Environment, Political Environment, Legal Environment, Economic Environment, Technological Environment, Socio and Cultural Environment, Ethics in International Business and CSR in International Business.

Module-3 (7 Hours)

Theories of International Business: Introduction, Mercantilism, Theory of absolute cost advantage, Comparative cost advantage theory, Comparative cost advantage with money, Relative factor endowment theory, Product life cycle theory, Global strategic rivalry theory, Porter's National Competitive Advantage Theory.

Module-4 (7 Hours)

International Institutions: UNCTAD- Introduction, Principles and achievements, IMF-Role and objectives, WTO-Role and advantages, TRIMS, TRIPS Features, Economic Integration-Introduction, Levels of Economic Integration, Regional Economic Integration in Europe, USA, ASEAN, SAARC, SAPTA.

Module-5 (6 Hours)

Multi-National Corporations: Definition and Meaning, factors that contributed to positive growth of MNCs, Importance of MNCs, Advantages and disadvantages of MNCs, MNCs in India, Organizational structure of MNCs, Transfer of Technology, Global Competitiveness, Indicators of competitiveness, Technology of Global competitiveness.

Module-6 (7 Hours)

Basics of International Marketing- Environment and cultural dynamics of global markets, functions of International Marketing, determining International Marketing strategies, Major actors in International Marketing, Competitive Global Marketing Strategies.

Global HRM- Characteristics, Nature and factors of IHRM, Functions of IHRM,

Global Finance-Features of Global Capital Market, Growth of Global Capital Market, Global equity market. International Production Management-Coordinating Global Manufacturing System.



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D MARKETING COM	MUNICATIONS	_
22MBAMM404	CIE Marks	50
2:2:0	SEE Marks	50
40	Total Marks	100
03	Exam Hours	03
	D MARKETING COM! 22MBAMM404 2:2:0 40 03	D MARKETING COMMUNICATIONS 22MBAMM404 CIE Marks 2:2:0 SEE Marks 40 Total Marks 03 Exam Hours

Course Learning objectives:

- · To build a comprehensive framework for integrated marketing communications.
- To the study the advertising, publicity, personal selling, direct marketing and sales promotion.
- · To enhance knowledge of emerging trends in integrated marketing communications.
- To acquaint the students with the latest internet and e-marketing techniques, ethically way of handling business.

Module-1 (6 Hours)

Integrated Marketing Communication: Role of IMC in marketing process, IMC planning model, Marketing and promotion Process model.

Communication Process, steps involved in developing IMC programme, Effectiveness of marketing communications

Advertising: Purpose, Role, Functions, Types, Advertising Vs Marketing mix, Advertising appeal in various stages of PLC

Relevant Case Study

Module-2 (6 Hours)

Advertising Agency: Type of agencies, Services offered by various agencies, Criteria For selecting the agencies and evaluation.

Advertising objectives and Budgeting: Goal setting - DAGMAR approach, various budgeting methods used.

Relevant Case Study

Module-3 (7 Hours)

Media planning: Factors considered in Media Planning, Developing Media plan, Importance, Problems encountered, Advertising Media, Media Evaluation-Print, Broadcast media, Support media in advertising.

Media strategy: Creativity, Elements of creative strategies and its implementation, Importance of Headline and body copy.

Relevant Case Study

Module-4 (7 Hours)

Direct Marketing: Features, Functions, Growth, Advantages/Disadvantages, And Direct Marketing Strategies.

Promotion: Meaning, Importance, tools used, Conventional/unconventional, drawbacks, push pull strategies, Co-operative advertising, Integration with advertising and publicity

Public relation/ Publicity:-Meaning, Objectives, tools of public relations, Public Relation strategies, Goals of publicity

Corporate Advertising - Role, Types, Limitations, PR Vs Publicity

Relevant Case Study



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Module-5 (7 Hours)

Monitoring, Evaluation and control: Measurement in advertising, various methods used for evaluation, Pre-testing, Post testing.

Relevant Case Study

Module-6 (7 Hours)

International Advertising: Global environment in advertising, Decision areas in international advertising.

Industrial advertising: B 2 B Communication, Special issues in Industrial selling.

Internet advertising: Meaning, Components, Advantages and Limitations, Types of Internet advertising

Advertising Laws & Ethics: Adverting & Law, Advertising & Ethics, Pester Power, Intellectual Property Rights, ASCI

Relevant Case Study

Assessment Details (both CIE and SEE)

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Master of Computer Applications

Re	search Methodology and II	PR	
Course Code	22RMI18	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:0:0	SEE Marks	50
Total Hours of Pedagogy	20	Total Marks	100
Credits	02	Exam Hours	03
Course Learning objectives:			
 To give an overview of the resear 	ch methodology and explain the technic	que of defining a rese	arch problem
 To explain the functions of the lit 	erature review in research.		
 To explain carrying out a literature 	e search, its review, developing theoret	ical and conceptual fr	ameworks and
writing a review.	an and their abamatariation		G
 To explain various research desig 	ns and their characteristics.		
 To explain the details of sampling data collections. 	g designs, measurement and scaling tech	hniques and also diffe	rent methods of
To explain several parametric test	ts of hypotheses and Chi-square test.		
 To explain the art of interpretation 	n and the art of writing research reports		
 To explain the art of meripretation To explain various forms of the in 	tellectual property, its relevance and b	usiness impact in the o	chanoine elobal
business environment.	neneedar property, his tele vance and of	asiness impact in the	ananging groom
 To discuss leading International I 	nstruments concerning Intellectual Proj	perty Rights.	
	Module-1		
Research Methodology: Introduction, Me	aning of Research, Objectives of Rese	arch, Motivation in R	Research, Types of
Research, Research Approaches, Signif	icance of Research, Research Method	ds versus Methodolo	gy, Research and
Scientific Method, Importance of Knowi	ng How Research is Done, Research P	rocess, Criteria of Go	ood Research, and
Problems Encountered by Researchers in	India.		
Teaching- Chalk and talk method / H	PowerPoint Presentation		
Learning			
Process			
	Module-2		
Defining the Research Problem: Resea	rch Problem, Selecting the Problem,	, Necessity of Defin	ing the Problem,
Technique Involved in Defining a Proble	em, An Illustration. Reviewing the lite	rature: Place of the li	terature review in
research, Bringing clarity and focus to yo	ur research problem, Improving researc	h methodology, Broa	dening knowledge
base in research area, Enabling context	ual findings, How to review the liter	ature, searching the o	existing literature,
reviewing the selected literature, Develo	ping a theoretical framework, Develo	ping a conceptual fra	amework, Writing
about the literature reviewed.			
Teaching- Chalk and talk method	1/ PowerPoint Presentation		
Learning			
Process			
	Module-3		
Research Design: Meaning of Research	Design, Need for Research Design,	Features of a Good	Design, Important
Concepts Relating to Research Design	, Different Research Designs, Basic	Principles of Expe	rimental Designs,
Important Experimental Designs. Design	of Sample Surveys: Introduction, Sam	ple Design, Sampling	g and Non-
sampling Errors, Sample Survey versus Census Survey, Types of Sampling Designs.			



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Intellectual Property (IP) Acts: Introduction to IP: Introduction to Intellectual Property (IP), different types of IPs and its importance in the present scenario, Patent Acts: Indian patent acts 1970. Design Act: Industrial Design act 2000. Copy right acts: Copyright Act 1957. Trade Mark Act, 1999.

Chalk and talk method / PowerPoint Presentation Teaching-

Learning Process

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

- 1. Three Unit Tests each of 20 Marks
- Two assignments each of 20 Marks or one Skill Development Activity of 40 marks 2. to attain the COs and POs

The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

- 1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
- The question paper will have ten full questions carrying equal marks.
 Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
- 4. Each full question will have a sub-question covering all the topics under a module.
- The students will have to answer five full questions, selecting one full question from each module.

Suggested Learning Resources:

Text Books

1. Research Methodology: Methods and Techniques, C.R. Kothari, Gaurav Garg New Age International 4th Edition, 2018. 2. Research Methodology a step-by- step guide for beginners. (For the topic Reviewing the literature under module 2) Ranjit Kumar SAGE Publications Ltd 3rd Edition, 2011 Study Material.

3. Intelectual property, Debirag E. Bouchoux, Cengage learning, 2013.

References Books

- 1. Research Methods: the concise knowledge base Trochim, Atomic Dog Publishing, 2005.
- 2. Conducting Research Literature Reviews: From the Internet to Paper Fink A Sage Publications, 2009.



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	E manong			8
		Software Engineering		
Course Code		22MCA23	CIE Marks	50
Teaching Hours	Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of	Pedagogy	50	Total Marks	100
Credits		04	Exam Hours	03
• Outline	ing objectives: software engineering princ	iples and activities involved in building	g large software progra	ms.
 Identify 	ethical and professional is	sues and explain why they are of conce	rn to software engineer	S.
 Explain 	the fundamentals of object	oriented concents.		A
 Describ require 	e the process of requirements validation.	nts gathering, requirements classificati	on, requirements speci	fication and
Differen	ntiate system models, use U	ML diagrams and apply design pattern	s.	
Discuss	the distinctions between w	lidetion testine and defect testine	J.	
 Discuss 	the distinctions between va	andation testing and detect testing.		-
		Module-1		
Introduction: Professional Software Development Attributes of good software, software engineering diversity, IEEE/ACM code of software engineering ethics, case studies. Software Process and Agile Software Development Software Process models: waterfall, incremental development, reuses oriented, Process activities; coping with change, The Rational Unified Process			ersity, IEEE/ACM Software Process Rational Unified	
Teaching-	Chalk and board, Active I	earning, Problem based learning		
Learning Process) Y	
		Module-2		
Agile Methods	, Plan-Driven and Agile De	velopment, Extreme Programming,	Agile Project Manager	nent, scaling agile
methods. Req	uirement Engineering: F	unctional and non-functional requ	irements, The Softwa	are requirements
document, Req Requirement v	uirements specification, I alidation, Requirement m	Requirements engineering processes anagement	, Requirement elicitat	ion and analysis,
Teaching-	Chalk and board, Activ	ve Learning, Problem based learning		
Learning				
Process				
		Module-3		
What is object modelling hist concepts; Link models; Practi	orientation? What is OO tory, modelling as design and associations concept cal tips. Advanced object	development? OO themes; Evidence n Technique: Modelling; abstraction s; Generalization and inheritance; A s and class concepts; Associations e	for usefulness of OO n; the three models. sample class model; N nds; N-array associat	development; OO Object and class avigation of class ion; Aggregation,
Abstract class; Multiple inheritance; Metadata; Reification; Constraints; Derived data; packages; practical tips				
Teaching-	Chaik and board, Active I	earning, Problem based learning		
Learning				
Process				
	$\sim \gamma$	Module-4		
System Model engineering De UML. Design pa	ls: Context models, Inte esign and Implementation atterns. Implementation is	eraction models. Structural model n: Introduction to RUP, Design Princ ssues. Open source development.	s. Behavioural mode iples. Object-oriented	els. Model-driven l design using the



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		User Interface Design		
Course Code		22MCA254	CIE Marks	50
Teaching Hours	Week (L:P:SDA)	2:0:2	SEE Marks	50
Total Hours of	Pedagogy	40	Total Marks	100
Credits		03	Exam Hours	03
Course Learn • Identi	ing objectives: fy and define key terms relat	ed to user interfaces and user interfa	ce design and implementa	ition.
 Identif 	y and describe various types	of computer users and computer us	e contexts.	
Descri	ibe and explain the user inte	rface design process.		Ġ
		Module-1		
Introduction: U Universal Usat Theories.	sability of Interactive Syste bility, Goals for our profess	ms: Introduction, Usability Goals a ion. Guideline, principles, and the c	nd Measures, Usability M ories: Introduction, Guidel	otivation, ines, principles,
Teaching- Learning Process	Chalk and talk method / P	owerPoint Presentation	~?	
		Module-2		
Development I	Processes: Managing Desig	n Processes: Introduction, Organi	zational Design to suppo	rt Usability, The
Four Pillars of	of Design, Development	methodologies: Ethnographic Obs	ervation, Participatory I	Design, Scenario
Development,	Social Impact statement for	Early Design Review, Legal Issues		
Teaching- Learning Process	Chalk and talk method / PowerPoint Presentation			
	•	Module-3		
Evaluating Inte Acceptance tes	rface: Design Introduction, ts, Evaluation during Active	Expert Reviews, Usability Testing a Use, Controlled Psychologically O	and Laboratories, Survey I riented Experiments	nstruments,
Teaching-	Chalk and talk method / P	owerPoint Presentation		
Learning				
Process				
		Module-4		
Direct Manipu	lation and Virtual Environ	ments: Introduction, Examples of	Direct Manipulation, Dis	cussion of direct
manipulation,	3D Interfaces, Tele-operation	on, Virtual and Augmented Reality	Menu Selection, Form F	illing and Dialog
Boxes: Introdu	uction, Task-Related Men	1 Organization, Single Menus, C	ombination of Multiple	Menus, Content
Organization, I	Fast Movement Through M	enus, Data Entry With Menus, Forr	n Filling, Dialog Boxes a	nd Alternatives,
Audio Menus a	nd Menus for Small Display	/S	e. e	-
Teaching-	Chalk and talk method / P	owerPoint Presentation		
Learning				
Process				



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	Module-5
Command and	Natural Languages Introduction, Command-organization functionality strategies and structure, Naming
and Abbre viat	ions, Natural Language in computing. Interaction Devices: Introduction, Keyboards and Keypads, Pointing
Devices, Spee	ch and Auditory interfaces, Displays-Small and Large
Teaching-	Chalk and talk method / PowerPoint Presentation
Learning	
Process	

10.08.2023

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023

EES-24.06.2023

Credits corre

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

- 1. Three Unit Tests each of 20 Marks
- 2. Two assignments each of 20 Marks or one Skill Development Activity of 40 marks to attain the COs and POs

The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.

Semester End Examination:

- 1. The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.
- 2. The question paper will have ten full questions carrying equal marks.
- 3. Each full question is for 20 marks. There will be two full questions (with a maximum of four sub-questions) from each module.
- 4. Each full question will have a sub-question covering all the topics under a module.
- 5. The students will have to answer five full questions, selecting one full question from each module



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Gender

Department of Biotechnology

GENETIC ENGINEERING & APPLICATIONS				
Course Code 18BT56 CIE Marks 40				
Teaching Hours/Week (L:T:P)	(3:0:0)	SEE Marks	60	
Credits 03 Exam Hours 03				

Course Learning Objectives:

- To learn about rDNA technology, vectors and enzymes used in genetic engineering.
- To learn acquire the knowledge of specific techniques like PCR, NA hybridization & libraries.
- To learn about various gene transfer techniques, applications of transgenic plants & animals and importance of gene therapy

Module-1

VECTORS & ENZYMES IN GENETIC ENGINEERING:

Vectors in rDNA technology, salient features of vectors, types of vectors-plasmids, cosmids, phagemids and viruses. Construction of rDNA& vectors (BAC, Blue script and YAC). Exonucleases and Restriction Endonculeases: classification, mode of action. Enzymes in modification - Polynucleotide phosphorylase, DNase, Methylases, phosphatases, polynucleotide Kinase, Ligases, RNase and their mechansim of action

Module-2

NUCLEIC ACID HYBRIDIZATION, AMPLIFICATION & CONSTRUCTION OF LIBRARIES:

Methods of nucleic acid detection, polymerase chain reaction (PCR), variants of PCR and applications, methods of nucleic acid hybridization, Southern, Northern & Western hybridization techniques & applications. Isolation of nucleic acids (DNA & RNA). Isolation of plasmids, construction of genomic and cDNA libraries, purification, screening and preservation

Module-3

METHODS OF GENE/DNA TRANSFER:

Overview & classification of gene transfer techniques in plants, animals and microbes – Transformation, stable & transient transformation, transfection, electroporation, microinjection, liposome mediated gene transfer, transfection of DNA by calcium phosphate coprecipitation, gene gun method. Agrobacteriummediated gene transfer in plants – Ti &Ri plasmids: structure and functions, Ti plasmid based vectors – advantages, disease control of Agrobacterium tumefaciens. Chloroplast transformation & its applications. Module-4

TRANSGENIC SCIENCE IN GENETIC IMPROVEMENT

Transgenic science in plant improvement, biopharming – plants as bioreactors, transgenic crops for increased yield, resistance to biotic and abiotic stresses. Techniques of gene mapping in plants. Marker-assisted selection and breeding for improvement. Transgenic science for animal improvement, biopharming - animals as bioreactors for recombinant proteins, Gene mapping in farm animals. Marker-assisted selection and genetic improvement of livestock.

Module-5

OTHER APPLICATIONS & GENE THERAPY

Microbial biotechnology - Genetic manipulation, engineering microbes for the production of antibiotics, enzymes, Insulin, growth hormones, monoclonal antibodies, clearing oil spills. Introduction to gene therapy. Methods of Gene therapy. Gene targeting and silencing. Gene therapy in the treatment of cancer, SCID, muscular dystrophy, respiratory disease (emphysema), cystic fibrosis. Challenges & future of gene therapy.



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Course Outcomes: At the end of the course the student will be able to:

- Explain & compare the different vectors & enzymes used in the construction of recombinant DNA in Genetic engineering
- · Choose& explain specific techniques like PCR, Blotting & construction of libraries
- · Differentiate between & learn the different gene/DNA transfer techniques
- Outline the various methods of producing transgenic organisms and sub-divide/summarize the
 applications of genetic engineering for the welfare of mankind & society

Question paper pattern:

- The question paper will have ten full questions carrying equal marks.
- · Each full question will be for 20 marks.
- · There will be two full questions (with a maximum of four sub- questions) from each module.
- Each full question will have sub- question covering all the topics under a module.
- · The students will have to answer five full questions, selecting one full question from each module.

Sl No	Title of the Book	Name of the Author/s	Name of the Publisher	Edition and Year
Text	book/s			
1	Principles of Gene	S.B. Primrose and R. M.	Blackwell Science	7th edition 2006
	Manipulation and	Twyman	Publications	
	Genomics			
2	Gene Cloning and DNA	T A Brown	Wiley – Blackwell	(6th edition)
	Analysis: An Introduction		Publications.	
Refe	Reference Books			
3	Recombinant DNA	Watson.J.D. et al	Scientific American Books, New York	1993
4	Plant Genetic	J. H. Dodds	Cambridge University Press	1983
	Engineering			
5	Gene Cloning and Manipulation	Howe C. J	Cambridge University Press	2007

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (The arr (Dreatical) (Integrated)	BIGOK107-207	SEE Marks	50
Course Type (Theory/Practical /Integrated)		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01
Course objectives :			
The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,			
1. To know about the basic structure of Indian Constitution.			

- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.



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Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and

practical skills.

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limit	ations in different Complex Situations. building.

	Module-3	(03 hours of pedagogy)	
ciples of Sta	ate Policy (DPSP's) and its	present relevance in Indian society Fundamental	

Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet.

Module-4	(03 hours of pedagogy)	
	Internet Deulisse entre Terreite de sie	Le distal Constant

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

Module-5	(03 hours of pedagogy)

State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
CO4	Understand our State Executive & Elections system of India.
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.



Course Title

CHILDREN'S EDUCATION SOCIETY(Regd.) THE OXFORD COLLEGE OF ENGINEERING

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Department of Information Science & Engineering

course mue.			
Course Code:		CIE Marks	50
	BIGOK107-207	SEE Marks	50
Course Type (Theory/Practical /Integrated)		Total Marks 100	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and

practical skills.

Module-1 (03 hours of pedagogy)

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)

Salient features of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble. FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.

Module-3 (03 hours of pedagogy)		
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental		
Duties		
and its Scope and significance in Nation, <mark>Union Executive : Parliamentary System, Union Executive – President,</mark>		
Prime Minister, Union Cabinet.		
Module-4 (03 hours of pedagogy)		
Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of		
India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.		
Module-5 (03 hours of pedagogy)		
State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral		
Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.		
Course outcome (Course Skill Set) At the end of the course 221C017/27 the student will be able to:		
CO1 Analyse the basic structure of Indian Constitution		



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CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
CO4	Understand our State Executive & Elections system of India.
CO5	Remember the Amendments and Emergency Provisions, other important provisions given by the
	constitution.

Department of Mechanical Engineering

Course Title:	Indian Constitutio	n		
Course Code:		CIE Marks	50	
Course Type (Theory /Practical /Integrated)	BICOK107-207	SEE Marks	50	
course Type (Theory/Tractical/Integrated)	-	Total Marks	100	
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory	
Total Hours of Pedagogy	15 hours	Credits	01	
Course objectives :				
The course INDIAN CONSTITUTION (22IC	017 / 27) will enabl	e the students,		
1. To know about the basic structure	of Indian Constitutio	n.		
2. To know the Fundamental Rights (FR's), DPSP's and Fui	ndamental Duties (FD's) o	of our constitution.	
3. To know about our Union Governm	nent, political structu	re & codes, procedures.		
4. To know the State Executive & Ele	ctions system of Indi	a.		
5. To learn the Amendments and Eme	ergency Provisions, o	ther important provision	s given by the constitution.	
Teaching-Learning Process		* *		
These are sample Strategies, which teacher	can use to accelerate	e the attainment of the va	rious course outcomes and	
make Teaching –Learning more effective: T	eachers shall adopt	suitable pedagogy for eff	ective teaching - learning	
process. The pedagogy shall involve the co	mbination of differer	nt methodologies which s	uit modern technological	
tools.				
(i) Direct instructional method (Low/	(Old Technology), (ii)	Flipped classrooms (Hig	h/advanced Technological	
tools),			ny university i contrological	
(iii) Blended learning (Combination	n of both), (iv) Enqui	iry and evaluation based	earning, (v) Personalized	
learning. (vi) Problems based learn	ning through discussion	ion.		
(ii) Apart from conventional lecture m	Apart from conventional lecture methods various types of innovative teaching techniques through			
videos, animation films may be ada	apted so that the deli	vered lesson can progres	s the students In	
theoretical applied and	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		
practical skills.	nractical skills			
Module-1 (03 hours of pedagogy)				
Indian Constitution, Necessity of the Con-	atitution Conintion he	fore and often the Constit	ution adaption Introduction	
			ution adoption. Introduction	
to theindian constitution, Making of the Co	nstitution, Role of th	e Constituent Assembly.		
Module-2	(03	hours of pedagogy)		
Salient features of India Constitution. Prea	amble of Indian Con	stitution & Key concepts	of the Preamble.	
FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.				
Module-3	(03	hours of pedagogy)		
Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental				
and its Scone and significance in Nation Union Executive · Parliamentary System Union Executive – President				
Prime Minister Union Cabinet				
Module-4 (03 hours of nedagooy)				
Parliament - LS and RS Parliamentary Co	mmittees Importar	t Parliamentary Termin	ologies Indicial System of	
India Supreme Court of India and other Courts Judicial Reviews and Judicial Activism				
Module-5	(0:	s nours of pedagogy)		



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State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
C04	Understand our State Executive & Elections system of India.
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

Department of Computer Science & Engineering

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (Theory/Practical /Integrated)	BICOK107-207	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and

practical skills.			
	Module-1	(03 hours of pedagogy)	
Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.			
	Module-2	(03 hours of pedagogy)	
Salient features of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble.			
FundamentalRights (FR's	FundamentalRights (FR's) and its Restriction and limitations in different Complex Situations. building.		
i unuamentantignes (i K s		and minitations in different complex situations. Building.	



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Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet.

Module-4 (03 hours of pedagogy)

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

Module-5(03 hours of pedagogy)State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & ElectoralProcess Amendment to Constitution, and Important Constitutional Amendments till today. Emergency

Provisions.

Course outcome (Course Skill Set)

At the end of the course 22IC017/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
C04	Understand our State Executive & Elections system of India.
CO5	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

Department of Electrical and Communication Engineering

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (Theory/Practical /Integrated)	BICOK107-207	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.

F	
Module-1	(03 hours of pedagogy)


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Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.					
	Module-2 (03 hours of pedagogy)				
Salient fe	eatures of India Constitution. Preamble of Indian Constitution & Key concepts of the Preamble.				
Fundam	entalRights (FR's) and its Restriction and limitations in different Complex Situations. building.				
	Module-3 (03 hours of pedagogy)				
Directiv Duties	e Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental				
and its S	Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President,				
Prime M	linister, Union Cabinet.				
D 11	Module-4 (03 hours of pedagogy)				
Parliame	nt - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of				
India,Sup	preme Court of India and other Courts, Judicial Reviews and Judicial Activism.				
	Module-5 (03 hours of pedagogy)				
State Exe	ecutive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral				
Process	Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.				
Course o At the en	u tcome (Course Skill Set) d of the course 22ICO17/27 the student will be able to:				
C01	Analyse the basic structure of Indian Constitution.				
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.				
CO3	know about our Union Government, political structure & codes, procedures.				
CO4	Understand our State Executive & Elections system of India.				
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.				

Department of Artificial Intelligence and Machine Learning

Course Title:	Indian Constitution		
Course Code:	「	CIE Marks	50
Course Tupe (The are (Dreatical (Integrated)	BICOK107-207	SEE Marks	50
Course Type (Theory/Practical/Integrated)	-	Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized



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learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.

 Module-1
 (03 hours of pedagogy)

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limit	ations in different Complex Situations. building.

	Module-3	(03 hours of pedagogy)	
Directive Principles of State	Policy (DPSP's) and its	present relevance in Indian society. Fundamental	
Duties			
and its Scope and significance	e in Nation, <mark>Union Execut</mark> i	ive : Parliamentary System, Union Executive – President,	

Prime Minister, Union Cabinet. Module-4 (03 hours of pedagogy)

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

	Module-5	(03 hours of pedagogy)	
State Ex	ecutive and Governer, CM, State	Cabinet, Legislature - VS & VP, Election Commission, Elections	& Electoral
Process	Amendment to Constitution, and	d Important Constitutional Amendments till today. Emergency	
	Provisions.		

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
CO4	Understand our State Executive & Elections system of India.
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

Department of Mechatronics

\mathbf{r}						
Course Title:	Indian Constitution					
Course Code:		CIE Marks	50			
Course Type (The own (Due stice) (Integrated)	BICOK107-207	SEE Marks	50			
Course Type (Theory/Practical/Integrated)		Total Marks	100			
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory			
Total Hours of Pedagogy	15 hours	Credits	01			
Course objectives :						

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.



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Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching –Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.

(i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

(iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Personalized learning, (vi) Problems based learning through discussion.

(ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and

practical skills.

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limitation	ations in different Complex Situations. building.

		Module-3		(03 h	ours of peo	lag	ogy)		
nciples	of State	Policy (DPSP's)	and its	present	relevance	in	Indian	society. Fundament	al

Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet.

Module-4	(03 hours of pedagogy)	
and DC Darliamontary Committees	Important Darliamontary Terminologies	Indicial System

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

Module-5	(03 hours of pedagogy)

State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
CO4	Understand our State Executive & Elections system of India.
C05	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.



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Department of Civil Engineering

Course Title:	Indian Constitution					
Course Code:		CIE Marks	50			
Course Type (Theory/Practical /Integrated)	BIG@K107-207	SEE Marks	50			
Togehing Hours (Mook (L.T.D. S)	1.0.0.0	Total Marks	100 01 Theory			
Teaching nours week (L:1:1:5) 1:0:0:0 Exam hours 01 meory Total Hours of Pedagogy 15 hours Credits 01						
Course objectives	15 110015	cieuits	01			
The source INDIAN CONSTITUTION (22)	0.17 (27) will each let be	atudanta				
1 me course INDIAN CONSTITUTION (2210	JUI / Z / J will enable the	students,				
1. 10 Know about the basic structure of Indian Constitution.						
2. To know the Fundamental Rights	2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.					
3. To know about our Union Governm	To know about our Union Government, political structure & codes, procedures.					
4. To know the State Executive & Ele	ections system of India.					
5. To learn the Amendments and Em	ergency Provisions, other	important provisions	given by the constitution.			
Teaching-Learning Process						
These are sample Strategies, which teacher	r can use to accelerate the	attainment of the vari	ious course outcomes and			
make Teaching –Learning more effective: '	Гeachers shall adopt suita	ble pedagogy for effec	ctive teaching - learning			
process. The pedagogy shall involve the co	mbination of different me	thodologies which su	it modern technological			
tools.						
 Direct instructional method (Low, tools) 	/Old Technology), (ii) Flip	ped classrooms (High	/advanced Technological			
(iii) Blended learning (Combinatio	n of both) (iv) Enquiry a	nd evaluation based le	arning (v) Personalized			
learning (vi) Problems based lear	ning through discussion	ia evaluation based ie	arming, (v) r crsonanzeu			
an Apart from conventional locture m	othode various types of i	novativo toaching too	phylous through			
videos animation films may be ad	anted so that the delivere	d lesson can progress	the students In			
theoretical applied and	apted so that the delivere	a lesson can progress	the students in			
nractical skills						
Module-1	(03 hou	rs of pedagogy)				
Indian Constitution: Necessity of the Con	stitution. Societies before	and after the Constitu	ition adoption. Introduction			
to theIndian constitution, Making of the Co	onstitution, Role of the Co	nstituent Assembly.	r r			
	(00)	, , ,				
Module-2		irs of pedagogy)				
Salient features of India Constitution. Pre	amble of Indian Constitu	tion & Key concepts	of the Preamble.			
FundamentalRights (FR's) and its Rest	riction and limitations in o	lifferent Complex Situ	ations. building.			
Module-3	(03 hou	rs of pedagogy)				
Directive Principles of State Policy (DPS	P's) and its present rel	evance in Indian so	ociety. Fundamental			
Duties	Luiser Free sections - Deulisers		Description Descriptions			
and its Scope and significance in Nation, U	Inion Executive : Parliame	entary System, Union	Executive – President,			
Prime Minister, Union Cabinet.						
Parliament - IS and PS Parliamentary C	ommittees Important Da	rliamentary Termine	logies Indicial System of			
India,Supreme Court of India and other Co	urts, Judicial Reviews and	Judicial Activism.	iogics. Juuiciai Systelli Ol			
Module-5 (03 hours of nedagogy)						
State Executive and Coverner CM State (Cabinet, Legislature - VS &	k VP. Election Commis	ssion. Elections & Electoral			



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Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22IC017/27 the student will be able to:

C01	Analyse the basic structure of Indian Constitution.
CO2	Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
CO3	know about our Union Government, political structure & codes, procedures.
CO4	Understand our State Executive & Elections system of India.
CO5	Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

Department of Electrical & Electronics Engineering

Course Title:	Indian Constitution		
Course Code:		CIE Marks	50
Course Type (Theory/Practical /Integrated)	BICOK107-207	SEE Marks	50
	-	Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives :

The course INDIAN CONSTITUTION (22ICO17 / 27) will enable the students,

- 1. To know about the basic structure of Indian Constitution.
- 2. To know the Fundamental Rights (FR's), DPSP's and Fundamental Duties (FD's) of our constitution.
- 3. To know about our Union Government, political structure & codes, procedures.
- 4. To know the State Executive & Elections system of India.
- 5. To learn the Amendments and Emergency Provisions, other important provisions given by the constitution.

Teaching-Learning Process

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- (ii) Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and
 - practical skills.

Module-1	(03 hours of pedagogy)

Indian Constitution: Necessity of the Constitution, Societies before and after the Constitution adoption. Introduction to theIndian constitution, Making of the Constitution, Role of the Constituent Assembly.

Module-2	(03 hours of pedagogy)
Salient features of India Constitution. Preamble of Indian	Constitution & Key concepts of the Preamble.
FundamentalRights (FR's) and its Restriction and limit	ations in different Complex Situations. building.

Module-3 (03 hours of pedagogy)



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Directive Principles of State Policy (DPSP's) and its present relevance in Indian society. Fundamental Duties

and its Scope and significance in Nation, Union Executive : Parliamentary System, Union Executive – President, Prime Minister, Union Cabinet.

Module-4 (03 hours of pedagogy)

Parliament - LS and RS, Parliamentary Committees, Important Parliamentary Terminologies. Judicial System of India, Supreme Court of India and other Courts, Judicial Reviews and Judicial Activism.

Module-5 (03 hours of pedagogy)

State Executive and Governer, CM, State Cabinet, Legislature - VS & VP, Election Commission, Elections & Electoral Process Amendment to Constitution, and Important Constitutional Amendments till today. Emergency Provisions.

Course outcome (Course Skill Set)

At the end of the course 22ICO17/27 the student will be able to:

CO1	Ana	lyse tl	ne ba	asic s	truct	ure	of In	dian	Constitu	tion.	
	1						1 1		D D O D I	1 -	

CO2 Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.

CO3 know about our Union Government, political structure & codes, procedures.

CO4 Understand our State Executive & Elections system of India.

CO5 Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.



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Management and Entrepreneurship					
Course Code	21EE61	CIE Marks	.50		
Teaching Hours/Week (L:T:P: S)	3:0:0:0	SEE Marks	.50		
Total Hours of Pedagogy	40	Total Marks	100		
Credits	03	Exam Hours	03		
Total roots of recupying 40 Total starts 100 Credits 03 Exam Hours 03 Course objectives: (1)To introduce the field of management, task of the manager, importance of planning and types of planning, staff recruitment and selection process. (2)To discuss the ways in which work is allocation, structure of organizations, modes of communication and importance of managerial control in business. (3)To explain need of coordination between the manager and staff, the social responsibility of business and leadership. (4)To explain the role and importance of the entrepreneur in economic development and the concepts of entrepreneurship. (5)To explain various types of entrepreneurs and their functions, the myths of entrepreneurship and the factors required for capacity building for entrepreneurs. (6)To discuss methods for generating new business ideas and business opportunities in India and the importance of business plan. (8)To introduce the concepts of project management and discuss capitol building process. (9)To discuss about different institutions at state and central levels supporting business enterprises. Teaching-Learning Process (General Instructions) The attainment of the various course outcomes. 10)To discuss about different institutions at state and central levels supporting business enterprises. Teaching-Learning Process (General Instructions) These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes. 1. Lecturer method (L					
 Encourage collaborative (Group Let Ask at least three HOT (Higher orde Adopt Problem Based Learning (PB such as the ability to design, evaluate, p Introduce Topics in manifold repres Show the different ways to solve the come up with their own creative ways to Discuss how every concept can be a students' understanding. 	 Use of Video/Ammation to explain functioning of various concepts. Encourage collaborative (Group Learning) Learning in the class. Ask at least three HOT (Higher order Thinking) questions in the class, which promotes critical thinking. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop design thinking skills such as the ability to design, evaluate, generalize, and analyse information rather than simply recall it. Introduce Topics in manifold representations. Show the different ways to solve the same problem with different circuits/logic and encourage the students to come up with their own creative ways to solve them. Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the 				
	Module-1				
Management: Definition, Importance – Nature and Characteristics of Management, Management Functions, Roles of Manager, Levels of Management, Managerial Skills, Management & Administration, Management as a Science, Art &Profession. Planning: Nature, Importance and Purpose Of Planning, Types of Plans, Steps in Planning, Limitations of Planning: Decision Making – Meaning Types of Decisions, Steps in Planning, Limitations of					
Teaching-Learning Process Chall	k and Board, Power Point Presentation	i.			
Module-2					
Organizing and Staffing: Meani	ing, Nature and Characteristics	of Organization	- Process of		
Organization, Principles of Organization, Departmentalization, Committees – meaning, Types of Committees, Centralization Versus Decentralization of Authority and Responsibility, Span of Control (Definition only), Nature and Importance of Staffing, Process of Selection and Recruitment. Directing and Controlling: Meaning and Nature of Directing-Leadership Styles, Motivation Theories Communication – Meaning and Importance, Coordination- Meaning and Importance, Techniques of Coordination. Controlling – Meaning, Steps in Controlling.					
Teaching-Learning Process	halk and Board, Power Point Presental	bon.			
	Module-3				



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Department of Business Administration

RECRUITMENT AND SELECTION				
Course Code	22MBAHR303	CIE Marks	50	
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50	
Total Hours of Pedagogy	50	Total Marks	100	
Credits	04	Exam Hours	03	

Course Learning Objectives:

This course will enable the students

- · To recite the theories and various steps involved in Recruitment and Selection
- To describe and explain in her/his own words, the relevance and importance of Recruitment and Selection in the Organization
- · To apply and solve the workplace problems through Recruitment and Selection intervention
- To classify and categorize in differentiating between the best method to be adopted by organization related to Recruitment and Selection
- To compare and contrast different approaches of Recruitment and Selection framework for solving the complex issues and problems
- To design and develop an original framework and framework in dealing with the problems in the organization.

Module-1 (8 Hours)

Workforce Planning and Recruitment Analytics:

Concept of Work, Organisation's Work and Jobs; Millennials at the work place; Key Characteristics of Millennials; Types of Millennial; The Evolution of Work Structure; Organising the Work; Strategic Job Redesign and Its Benefits; Strategic Issues in Recruitment; What make Bad Recruitment; Overview of the Hiring Process; Recruitment Metrics; Factors Affecting Recruitment; Recruitment Strategy: An Internal Approach; Recruitment Strategy: An External Approach; Legal and Ethical Considerations; Organisational Best Practices.

Module-2 (9 Hours)

Job Analysis, Job Description and Job Design:

Identify the Job to Examine; Determine Appropriate Information Sources and Collect Job-Related Data; Job Description; Competency and Competency Ice Berg Model; Why Competency Based Recruitment; Sources of Recruitment; Different steps of job search; Motivational Job Specification; Creation of Functional Specification; Creation of Behavioural Specification; Employer branding; Social Media; Job Design.

Module-3 (9 Hours)

Job Evaluation:

The Job Evaluation Process; Obtain Job KSAOs, Qualifications, Working Conditions, and Essential Duties; Examine Compensable Factors Using the Rating/Weighting Evaluation Method; Determine Overall Job Value; Hay Group—Pioneer in Job Evaluation; Determining Compensation using Job Evaluation Data; Legal and Ethical Considerations for Job Evaluation; Online Salary Survey.

Module-4 (9 Hours)



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Selection and Interview Strategy:

Interview Strategy and Process; Millennials shaping the Recruitment landscape in the organizations; Strategies for recruiting and selecting Generation Y into the workforce Developing Effective. Interviewers; Interviewing Techniques; Legal and Ethical Considerations in the Interview Process; The overall BEI Process; Assessment Centre's; Simulations.

Module-5 (9 Hours)

Testing and Assessment:

Testing in Occupational Selection; Test related to Assessment of Knowledge, Skills, and Abilities; Personality Assessment; The Birkman method and MBTI® comparison; FIRO-B; Honesty and Integrity Assessment; Various Non-Interviewing Methods; Graphology; Skills Assessment; Games and Group Activity for Leadership Assessment; Administration of Tests and Assessments; Key Interviewer Skills.

Module-6 (7 Hours)

Making the Hire; Assessment of Candidate and Job Fit:

Unique Recruitment strategies; Biodata and Application Forms; Implications of Using Social Media Content in Hiring Decisions; Background Checks; Reference Checks; Pre-employment Testing; Making a Job Offer; Transitioning from Job Candidate to Employee; Induction; Placement.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

a) Tests (for 25Marks) and

b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- · Each full question is for 20 marks with 3 sub questions.
- · Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full questions from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.



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Course Code	22MBA UD 462	CIE Morke	50
Teaching Hours (U.P.SDA)	22000408405	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Evam Hours	03
Course Learning objectives:		L'Aun Hours	00
1. To understand the nature of various di	mensions of conflict.		
2. To learn various strategies and technic	ues to manage conflicts.		
3. To understand the importance and role	of negotiation in conflic	t resolution.	
4. To understand the importance of cross	-cultural and gender dime	ensions of negotiation.	1
Module-1 6 Hours			
Introduction: Conflict: Definition, Mea	aning, Theories, Types of	Conflicts - Productiv	ve (functional
and Destructive (dysfunctional). Ley	els of conflict – intra	personal, interperson	nal, group &
manningtional and inter Deserve	Structured Madels Ma	the should conflict	of or flint
organizational conflicts, Process and	Structural Models. My	ths about conflicts -	· of conflicts
cognitive (Pseudo conflict), process (sim	ple conflict) and Inter-pe	rsonal conflict (ego co	onflict), causes
of conflict: common causes oreanizatio	anal and internersonal of	conflict: traditional	Contemporar
and Integrationist Courses for work place	appliate Harassmant of	and disarimination	contemporary
and integrationist, causes for work place	connets - narassinent a	ind discrimination.	
Module-2 7 Hours	i l		
Analagy of Conflict: Stages of conflic	ter arlanana, namonal	nande laak of monot	ans hanafite a
Analogy of Connect: Stages of connect	is: gnevances- personal	needs, lack of moneta	ary benefits a
Incentives, promotion and recognition	n, harassment, discrimin	ation, prejudice and	Bias, identi
unconcern attitudes of administration, fr	ustration, escalation of Co	onflicts, and violence,	Cost and effe
of conflicts Perspectives of conflict - c	reanizational and individ	uals Spectrum of con	nflicts, Person
andiate aroun condicts labour con	fists assist and nelit	iant applicate Canti	ninets- i erson
connets, group connets, fabour con	micis, social and point	icar contricts, Contri	ngency conn
management process, Cost of Workplace	e Conflict, conflict mapping	ig and tracking	
Module-3 7 Hours			
Conflict Management: Nature of co	onflict Management, Ma	anaging conflict: The	omas conflic
Conflict Management: Nature of co	onflict Management, Ma	anaging conflict: The	omas conflic
Conflict Management: Nature of co resolution approach (Avoiding, Acc	onflict Management, Ma ommodating, Comprom	inaging conflict: Th ising, Competing,	omas conflic Collaboration
Conflict Management: Nature of co resolution approach (Avoiding, Acc behavioural style and conflict handling	onflict Management, Ma ommodating, Comprom , Cosier Schank model o	inaging conflict: The ising, Competing, of of conflict resolution.	omas conflic Collaboration Strategies fo
Conflict Management: Nature of co resolution approach (Avoiding, Acc behavioural style and conflict handling resolving Individual, Team and orga	onflict Management, Ma ommodating, Comprom , Cosier Schank model o mizational level conflic	anaging conflict: The ising, Competing, of of conflict resolution. t, Conflict Resolution	omas conflic Collaboration Strategies for on Process -
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Conflict Management: Nature of co resolution approach (Avoiding, Acc behavioural style and conflict handling resolving Individual, Team and orga Persuasion, Counselling and Reconcilia management – Listening, Mentoring, Me Intelligence). Conflict Regulation Reduc	onflict Management, Ma ommodating, Comprom , Cosier Schank model of mizational level conflic tion Skills, Negotiation a ediating, Negotiating, Cou tion, Resolution, Transfor	anaging conflict: The ising, Competing, of of conflict resolution. t, Conflict Resolution and Arbitration, Skil inselling, Diplomacy, rmation	omas conflic Collaboration Strategies for on Process - Is for conflic El (Emotional
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Conflict Management: Nature of conflict Management: Nature of conflict handling, Acceleration approach (Avoiding, Acceleration approach (Avoiding, Acceleration), and conflict handling resolving Individual, Team and orgate Persuasion, Counselling and Reconcilia management – Listening, Mentoring, Mentoring, Mentoring, Mentelligence). Conflict Regulation Reduct Module-4 6 Hourst Negotiation: Negotiations/ Negotiation Process. Prince Negotiations, negotiation process. Prince Pr	onflict Management, Ma ommodating, Comprom , Cosier Schank model of inizational level conflic- tion Skills, Negotiation a ediating, Negotiating, Cou- tion, Resolution, Transfor s n strategies –Meaning , iples for successful nego	anaging conflict: The ising, Competing, of of conflict resolution. t, Conflict Resolution and Arbitration, Skil inselling, Diplomacy, mation Six Foundations of tiations, Factors and of	omas conflic Collaboration Strategies fo on Process Ils for conflic El (Emotiona f Negotiation essential skill

Techniques of negotiation, issues in negotiations. Negotiation strategies: Strategy and tactics for



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Human Values

Department of Biotechnology

tific Foundations of Health

Scientific Foundations of	neann				
Course Title:	Scientific Foundations of Health				
Course Code:	BSFHK158/258	CIE Marks	50		
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50		
		Total Marks	100		
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory		
Total Hours of Pedagogy	15 hours	Credits	01		
Fourse ablestings					

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

- 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
- 2. To Build the healthy lifestyles for good health for their better future.
- 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
- To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
 To Prevent and fight against harmful diseases for good health through positive mindset

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

- Teachers shall adopt suitable pedagogy for effective teaching learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning,
 - (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. Module-1 (03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health,

Health belieft, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, and a second strength on the second and a second

Psychological disorders sheatods to improve good psychological near	a, changing available to good availa
Module-2	(03 hours of pedagogy)
Building of healthy lifestyles for better future: Developing her	althy diet for good health, Food & health, Nutritional
guidelines for good health, Obesity & overweight disorders and its m	anagement, Eating disorders, Fitness components for
health Wellness and physical function. How to avoid exercise injuries	•
Module-3	(03 hours of pedagogy)
Creation of Healthy and caring relationships : Building come	nunication skills, Friends and friendship - Education,
the value of relationship and communication skills, Relationships for	r Better or worsening of life, understanding of basic
instincts of life (more than a biology), Changing health behaviours the	rough social engineering.
Module-4	(03 hours of nedagogy)

Avoiding risks and harmful habits : Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non addictive people & their behaviors. Effects of addictions Such as..., how to recovery from addictions.

Module-5 (03 hours of pedagogy)

Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.



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BUHK408 – UHV for 2022 Scheme

Universal Hu	Semester	3 rd	
Course Code BUHK408		CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each	of the 01 mark. The	pattern of
 Course objectives: This course is intended to: To help the students app 'SKILLS' to ensure susta all human beings. To facilitate the develop profession as well as tow of the Human reality and of Universal Human Val To highlight plausible in human conduct, trustful interaction with Nature. This course is intended t the young enquiring min 	reciate the essential complementarity be ined happiness and prosperity which are vards happiness and prosperity based on the rest of existence. Such a holistic pe ues and movement towards value-based uplications of such a Holistic understand and mutually fulfilling human behaviour o provide a much-needed orientation inp ds.	tween 'VALUF e the core aspira idents towards a correct under rspective form: living in a nate ling in terms of r and mutually put in value edu	2S' and ations of life and rstanding s the basis ural way. ethical enriching neation to
Teaching-Learning Process These are sample Strategies, which to outcomes. 1. The methodology of this con- and rational study of the hu	(General Instructions) eachers can use to accelerate the attainment urse is explorational and thus universally adaptal nan being vis-à-vis the rest of existence.	of the various co ble. It involves a s	urse ystematic
 In addition to the traditional adopted so that the activities 	lecture method, different types of innovative tea will develop students' theoretical and applied s	aching methods m kills.	ay be
3. State the need for UHV act	vities and its present relevance in the society an	d Provide real-life	examples.
Support and guide the stude	nts for self-study activities.		
 You will also be responsible documenting students' prog 	for assigning homework, grading assignments a ress in real activities in the field.	and quizzes, and	
This process of self-explora with, and then to continue w	tion takes the form of a dialogue between the tea ithin the student in every activity, leading to con	ther and the stude	ents to begin tion.
7. Encourage the students for g	group work to improve their creative and analytic	cal skills.	
	Module-1		
Introduction to Value Educat	ion	(;	3 hours)
Right Understanding, Relations Education) Understanding V	ship and Physical Facility (Holistic Deve alue Education, Self-exploration as	elopment and the Process f	he Role of for Value
and Prosperity – Current Scena	rio. Method to Fulfil the Basic Human	Aspirations	appmess

Module-2



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BUHK408 – UHV for 2022 Scheme

Harmony in the Family and Society :

Harmony in the Nature/Existence :

Harmony in the Human Being :(3 hours)Understanding Human being as the Co-existence of the Self and the Body, Distinguishing
between the Needs of the Self and the Body, The Body as an Instrument of the Self,
Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure
self-regulation and Health

Module-3

(3 hours)

Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to-Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order

Module-4

(3 hours)

Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Module-5

Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours)Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis forHumanistic Education, Humanistic Constitution and Universal Human Order, Competence inProfessional Ethics Holistic Technologies, Production Systems and Management Models-TypicalCase Studies, Strategies for Transition towards Value-based Life and Profession

Course outcome (Course Skill Set)

At the end of the course, students are expected to become more aware of themselves, and their surroundings (family, society, nature);

- They would become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
- They would have better critical ability.
- They would also become sensitive to their commitment towards what they have understood (human values, human relationship and human society).
- It is hoped that they would be able to apply what they have learnt to their own self in different day-to-day settings in real life, at least a beginning would be made in this direction.

Expected to positively impact common graduate attributes like:

- 1. Ethical human conduct
- 2. Socially responsible behaviour
- 3. Holistic vision of life
- 4. Environmentally responsible work
- 5. Having Competence and Capabilities for Maintaining Health and Hygiene
- 6. Appreciation and aspiration for excellence (merit) and gratitude for all



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Department of Information Science & Engineering

Scientific Foundations of Health

- To Build the healthy lifestyles for good health for their better future.
- 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
- To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
 To Prevent and fight against harmful diseases for good health through positive mindset

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

- Teachers shall adopt suitable pedagogy for effective teaching learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning,
 - (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. Module-1 (03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health,

Health belieft, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, and a second state of the second s And a second descent the second second And the second second second second .

asternation discretes statutes to militare foor balence from the static custom	ig beauti navits tos good seatur.
Module-Z	(03 hours of pedagogy)
Building of healthy lifestyles for better future: Developing healthy diet f	for good health, Food & health, Nutritional
guidelines for good health, Obesity & overweight disorders and its management	t, Eating disorders, Fitness components for
health Wellness and physical function. How to avoid exercise injuries	
Module-3	(03 hours of pedagogy)
Creation of Healthy and caring relationships : Building communication	skills, Friends and friendship - Education,
the value of relationship and communication skills, Relationships for Better or	worsening of life, understanding of basic
instincts of life (more than a biology), Changing health behaviours through social	il engineering.
Module-4	(03 hours of pedagogy)

Avoiding risks and harmful habits : Characteristics of health compromising behaviors, Recognizing and avoiding of addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive people and non addictive people & their behaviors. Effects of addictions Such as..., how to recovery from addictions.

Module-5

(03 hours of pedagogy)

Preventing & fighting against diseases for good health: How to protect from different types of infections, How to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.



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BSCK307 – Social Connect & Responsibility			3 rd
	e & syllabus for 5 rd sem		
Lourse Lode	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1	SEE Marks	
Total Hours of Pedagogy	40 hour Practical Session +15 hour	Total Marks	100
	Planning		
Examination nature	For CIE Assessment - Activities Report Evaluation by College		
(No SEE – Only CIE)	NSS		
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

Course objectives: The course will enable the students to:

- 1. Provide a formal platform for students to communicate and connect to the surrounding.
- 2. create a responsible connection with the society.
- 3. Understand the community in general in which they work.
- 4. Identify the needs and problems of the community and involve them in problem –solving.
- 5. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 6. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **1.** In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- 2. State the need for activities and its present relevance in the society and Provide real-life examples.
- 3. Support and guide the students for self-planned activities.
- 4. You will also be responsible for assigning homework, grading assignments and quizzes, and documentingstudents' progress in real activities in the field.
- 5. Encourage the students for group work to improve their creative and analytical skills.

Contents :

The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellowhuman beings, nature, society, and the world at large.

The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

In the following a set of activities planned for the course have been listed:

Social Connect & Responsibility -Contents



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Part I:

Plantation and adoption of a tree:

Plantation of a tree that will be adopted for four years by a group of BE / B.Tech students. (ONE STUDENT ONE TREE)They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - – Objectives, Visit, case study, report, outcomes.

Part II :

Heritage walk and crafts corner:

Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms – – Objectives, Visit, case study, report, outcomes.

Part III :

Organic farming and waste management:

Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus –

Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes.



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Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions) .		

Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basisof Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- 1. The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- 2. In addition to the traditional lecture method, different types of innovative teaching methods may beadopted so that the activities will develop students' theoretical and applied skills.
- **3.** State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- 4. Support and guide the students for self-study activities.
- **5.** You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- 6. This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- 7. Encourage the students for group work to improve their creative and analytical skills.

Module-1

Introduction to Value Education

(3 hours)

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human

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Aspirations

Module-2

(3 hours)

(3 hours)

Harmony in the Human Being : Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

Module-3

Harmony in the Family and Society :

(3 hours) Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to- Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human

Order

Module-4

Harmony in the Nature/Existence :

Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment

among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Module-5

Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours) Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis forHumanistic Education, Humanistic Constitution and Universal Human Order, Competence inProfessional Ethics Holistic Technologies, Production Systems and Management Models-Typical Case Studies, Strategies for Transition towards Value-based Life and Profession



CHILDREN'S EDUCATION SOCIETY(Regd.)

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Department of Mechanical Engineering

Scientific Foundations of Health

Course Title:	Scientific Foundations of	t Health		
Course Code:	BSFHK158/258	CIE Marks	50	
Course Type (Theory/Practical /Integrated)	incory	SEE Marks	50	
Teaching Hours (Week (1. T.P. 5)	1:0:0:0	Evam Hours	01 Theory	
Total Hours of Pedagogy	15 hours	Credits	01	
Total Hours of Pedagogy 15 hours Credits 01 Course objectives The course Scientific Foundations of Health (22SFH18/28) will enable the students, 01 1 To know about Health and wellness (and its Beliefs) & It's balance for positive mindset. 01 2 To Build the healthy lifestyles for good health for their better future. 01 3 To Create a Healthy and caring relationships to meet the requirements of good/social/positive life. 01 4 To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future 01 5 To Prevent and fight against harmful diseases for good health through positive mindset 11 Teaching-Learning Process These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective: Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology) (ii) Finned classrooms (Hish/advanced Technological tools).				
 (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (v) Parsonalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods. Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. 				
Mo	dule-1	(03	nours of pedagogy)	
Good Health & It's balance for posit	ive mindset: Health -Impor	tance of Health, Sectors Health S	Influencing factors of Health, fourth, Health & Democritics	
Psychological disorders-Methods to improve	good psychological health, Ch	anging health hab	its for good health.	
Module-Z (03 hours of pedagogy)				
Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional				
guidelines for good health, Obesity & overw	eight disorders and its manage	ment, Eating disc	eders, Fitness components for	
health Wellness and physical function. How	to avoid exercise injuries	_	-	
Mod	ule-3	(03 h	ours of pedagogy)	
Creation of Healthy and caring relatio	nships : Building communic	ation skills, Frien	is and friendship - Education,	
the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic				
instincts of life (more than a biology), Changi	ng health behaviours through	social engineering	<u>.</u>	
Mod	ule-4	(03)	hours of pedagogy)	
Avoiding risks and harmful habits : Cl	haracteristics of health compre	omising behaviors	Recognizing and avoiding of	
addictions, How addiction develops, Types of	of addictions, influencing fact	ors of addictions,	Differences between addictive	
people and non addictive people δt their beha	viors. Effects of addictions Suc	chas, how to re	ecovery from addictions.	
Mod	lule-5	(03)	hours of pedagogy)	
Preventing & fighting against diseases for good health: How to protect from different types of infections, How to				
reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality				
of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.				



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Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions) .		

Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basisof Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- 8. The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- **9.** In addition to the traditional lecture method, different types of innovative teaching methods may beadopted so that the activities will develop students' theoretical and applied skills.
- **10.** State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- **11.** Support and guide the students for self-study activities.
- **12.** You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- **13.** This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- 14. Encourage the students for group work to improve their creative and analytical skills.

Module-1

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Introduction to Value Education (3 hours)
Right Understanding, Relationship and Physical Facility (Holistic Development and the
Role of Education) Understanding Value Education, Self-exploration as the Process for
Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations,
Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human
Aspirations
Module-2
Harmony in the Human Being :(3 hours)
Understanding Human being as the Co-existence of the Self and the Body, Distinguishing
between the Needs of the Self and the Body, The Body as an Instrument of the Self,
Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to
ensure self-regulation and Health
Module-3
Harmony in the Family and Society : (3 hours)
Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational
Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in
Human-to- Human Relationship, Understanding Harmony in the Society, Vision for the
Universal Human
Order
Module-4
Harmony in the Nature/Existence : (3 hours)
Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual
Fulfilment
among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The
Holistic Perception of Harmony in Existence
Module-5
Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours)
Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis
forHumanistic Education, Humanistic Constitution and Universal Human Order,
Competence inProfessional Ethics Holistic Technologies, Production Systems and
Management Models-Typical

CHILDREN'S EDUCATION SOCIETY(Regd.)

Case Studies, Strategies for Transition towards Value-based Life and Profession

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Department of Computer Science & Engineering

Scientific Foundations of Health

Course Title:	Scientific Foundations of Health		
Course Code:	BSFHK158/258	CIE Marks	SO
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
	_	Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives

- The course Scientific Foundations of Health (22SFH18/28) will enable the students,
 - 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
 - 2. To Build the healthy lifestyles for good health for their better future.
 - 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
 - 4. To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
 - 5. To Prevent and fight against harmful diseases for good health through positive mindset

Module-1

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

Teachers shall adopt	t suitable pedagogy f	for effective teaching	s - learning process.	The pedagogy shall involve the	
combination of diffe	cent methodologies	which suit modern to	chnological tools.		

- (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning.
- (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.

(03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality,

Psychological disorders-Method	to improve go	ood psychological health	 Changing health habits 	for good health.
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 Module-2
 (03 hours of pedagogy)

 Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health. Wellness and nhysical function. How to avoid exercise injuries. Module-3
 (03 hours of pedagogy)

Creation of Healthy and caring relationships : Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviours through social engineering.

Module-4	(03 hours of pedagogy)
Avoiding risks and harmful habits : Characteristics	of health compromising behaviors, Recognizing and avoiding of
addictions, How addiction develops, Types of addictions,	influencing factors of addictions, Differences between addictive
people and non addictive people & their behaviors. Effects	of addictions Such as, how to recovery from addictions.
Module-5	(03 hours of pedagogy)
Preventing & fighting against diseases for good he	ealth: How to protect from different types of infections, How to

reventing of lighting against diseases for good meanin. Now to protect nois dimension types of intections, now to reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.

Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCQ (multiple choice questions).		

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Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enrichinginteraction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- 15. The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- 16. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted so that the activities will develop students' theoretical and applied skills.
- 17. State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- 18. Support and guide the students for self-study activities.
- 19. You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- **20.** This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- 21. Encourage the students for group work to improve their creative and analytical skills.

Module-1

Introduction to Value Education

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations

Module-2

Harmony in the Human Being :

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

(3 hours)

(3 hours)



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Module-3

Harmony in the Family and Society : (3 hours) Harmony in the Family - the Basic Unit of Human Interaction, 'Trust' - the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to- Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human Order Module-4 Harmony in the Nature/Existence : (3 hours) Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Module-5

Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours) Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis forHumanistic Education, Humanistic Constitution and Universal Human Order, Competence inProfessional Ethics Holistic Technologies, Production Systems and Management Models-Typical

Case Studies, Strategies for Transition towards Value-based Life and Profession



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BSCK307 – Social Connect & Responsibility		Semester	3 rd
2022 Scheme & syllabus for 3 rd sem			
Course Code	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1 SEE		
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	100
Examination nature	For CIE Assessment - Activities Report Evaluation by College		
(No SEE – Only CIE)	NSS		
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

Course objectives: The course will enable the students to:

- 7. Provide a formal platform for students to communicate and connect to the surrounding.
- 8. create a responsible connection with the society.
- 9. Understand the community in general in which they work.
- 10. Identify the needs and problems of the community and involve them in problem –solving.
- 11. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 12. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- 6. In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- 7. State the need for activities and its present relevance in the society and Provide real-life examples.
- 8. Support and guide the students for self-planned activities.
- **9.** You will also be responsible for assigning homework, grading assignments and quizzes, and documentingstudents' progress in real activities in the field.
- **10.** Encourage the students for group work to improve their creative and analytical skills.

Contents:

The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellowhuman beings, nature, society, and the world at large.

The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

In the following a set of activities planned for the course have been listed:

Social Connect & Responsibility -Contents



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Part I:

Plantation and adoption of a tree:

Plantation of a tree that will be adopted for four years by a group of BE / B.Tech students. (ONE STUDENT ONE TREE)They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - - Objectives, Visit, case study, report, outcomes.

Part II :

Heritage walk and crafts corner:

Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms – – Objectives, Visit, case study, report, outcomes.

Part III :

Organic farming and waste management:

Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus –

Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes.



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Department of Electrical and Communication Engineering

Scientific Foundations of Health				
Course Title:	Scientific Foundations of Health			
Course Code:	BSFHK158/258 CIE Marks 50			
Course Trans (The course of the course of th	Theory	SEE Marks	50	
Course Type [Theory/Practical/Integrated]	_	Total Marks	100	
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory	
Total Hours of Pedagogy	15 hours	Credits	01	

Course objectives

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

- 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
- 2. To Build the healthy lifestyles for good health for their better future.
- 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
- 4. To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
- 5. To Prevent and fight against harmful diseases for good health through positive mindset

Module-7

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the

- combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools), (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning,
 - (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary
 - learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. Module-1

(03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality,

Psychological disorders-Methods to improve good psychological health. Changing health habits for good health.

(03 hours of pedagogy)

Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health Wellness and physical function. How to avoid exercise iniuries. Module-3 (03 hours of pedagogy)

Creation of Healthy and caring relationships : Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviours through social engineering.

Modu	le-4	(03 hours of pedagogy)			
Avoiding risks and harmful habits : Cha	racteristics of health compromising	behaviors, Recognizing and avoiding of			
addictions, How addiction develops, Types of	addictions, How addiction develops, Types of addictions, influencing factors of addictions, Differences between addictive				
people and non addictive people & their behavi	ors. Effects of addictions Such as,	how to recovery from addictions.			
Modu	le-5	(03 hours of pedagogy)			
Preventing & fighting against diseases for good health: How to protect from different types of infections, How to					
reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality					

of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.



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Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the guestion paper is MCO (multiple choice guestions) .		

Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life • and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enrichinginteraction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **22.** The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- **23.** In addition to the traditional lecture method, different types of innovative teaching methods may beadopted so that the activities will develop students' theoretical and applied skills.
- 24. State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- 25. Support and guide the students for self-study activities.
- 26. You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- 27. This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- 28. Encourage the students for group work to improve their creative and analytical skills.

Module-1

Introduction to Value Education

(3 hours)

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations



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(3 hours)

(3 hours)

(3 hours)

Module-2

Harmony in the Human Being :

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

Module-3

Harmony in the Family and Society :

Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to- Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human

Order

Module-4

Harmony in the Nature/Existence :

Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment

among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Module-5

Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours) Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis forHumanistic Education, Humanistic Constitution and Universal Human Order,

Competence inProfessional Ethics Holistic Technologies, Production Systems and Management Models-Typical

Case Studies, Strategies for Transition towards Value-based Life and Profession



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BSCK307 – Social Connect & Responsibility		Semester	3 rd
2022 Scheme & syllabus for 3 rd sem			
Course Code	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1 SEE Marks		
Total Hours of Pedagogy	40 hour Practical Session +15 hour	Total Marks	100
	Planning		
Examination nature	For CIE Assessment - Activities Report Evaluation by College		
(No SEE – Only CIE)	NSS		
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

Course objectives: The course will enable the students to:

- 13. Provide a formal platform for students to communicate and connect to the surrounding.
- 14. create a responsible connection with the society.
- 15. Understand the community in general in which they work.
- 16. Identify the needs and problems of the community and involve them in problem –solving.
- 17. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 18. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **11.** In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- **12.** State the need for activities and its present relevance in the society and Provide real-life examples.
- 13. Support and guide the students for self-planned activities.
- 14. You will also be responsible for assigning homework, grading assignments and quizzes, and documentingstudents' progress in real activities in the field.
- **15.** Encourage the students for group work to improve their creative and analytical skills.

Contents:

The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellowhuman beings, nature, society, and the world at large.

The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

In the following a set of activities planned for the course have been listed:

Social Connect & Responsibility -Contents



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Part I:

Plantation and adoption of a tree:

Plantation of a tree that will be adopted for four years by a group of BE / B.Tech students. (ONE STUDENT ONE TREE)They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - - Objectives, Visit, case study, report, outcomes.

Part II :

Heritage walk and crafts corner:

Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms – – Objectives,Visit, case study, report, outcomes.

Part III :

Organic farming and waste management:

Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus –

Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes.



CHILDREN'S EDUCATION SOCIETY(Regd.)

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Department of Artificial Intelligence and Machine Learning

Scientific Foundations of Health

Course Title:	Scientific Foundations of Health			
Course Code:	BSFHK158/258	CIE Marks	50	
Course Type (Theory (Provided) (Interested))	Theory	SEE Marks	50	
Course type (theory/practical/integrated)		Total Marks	100	
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory	
Total Hours of Pedagogy	15 hours	Credits	01	
Course objectives The course Scientific Foundations of Healt 1. To know about Health and wellness 2. To Build the healthy lifestyles for an	ch (22SFH18/28) will enable th (and its Beliefs) & It's balance and health for their better future	e students, e for positive min	dset.	
3 To Create a Healthy and caring relati	ionships to most the requireme	er ents of good/social	/nositiva life	
4 To leave about Auxiding risks and he	muful habits in their campus a	nd outside the car	mus for their bright future	
 To Prevent and fight against harmful 	diseases for good health through	ich positive minds	et	
To Provent and fight against named diverses for good nearly positive minister Teaching-Learning Process These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective: Teachers shall adopt suitable podagogy for effective teaching - learning process. The podagogy shall involve the combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools), (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning, (vi) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods. Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. Module-1 (03 hours of pedagogy) Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health & Society, Health & family, Health & Personality,				
Mod	iule-Z	(03)	hours of pedagogy)	
Building of healthy lifestyles for better	future: Developing healthy	diet for good heal	th, Food & health, Nutritional	
guidelines for good health, Obesity & overw	eight disorders and its manage	ment, Eating disc	eders, Fitness components for	
health Wellness and physical function. How	to avoid exercise injuries.			
Mod	ule-3	(03 h	ours of pedagogy)	
Creation of Healthy and caring relatio	nships : Building communic	ation skills, Frien	is and friendship - Education,	
the value of relationship and communication	skills, Relationships for Bett	er or worsening o	of life, understanding of basic	
instincts of life (more than a biology), Changing health behaviours: through social engineering.				
Mod	ule-4	(03)	hours of pedagogy)	
Avoiding risks and harmful habits : Ci	haracteristics of health compre	omising behaviors	, Recognizing and avoiding of	
addictions, How addiction develops, Types of	of addictions, influencing fact	ors of addictions,	Differences between addictive	
people and non addictive people δt their beha	viors. Effects of addictions Suc	chas, how to re	ecovery from addictions.	
Mod	Module-5 (03 hours of pedagogy)			
Preventing & fighting against diseases	for good health: How to pe	rotect from differe	ant types of infections, How to	
reduce risks for good health, Reducing risks & coping with chronic conditions, Management of chronic illness for Quality				
of his, Health & Wellness of youth a challenge for upcoming future, Measuring of health & wealth status.				



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Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCO (multiple choice questions) .		

Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basisof Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enrichinginteraction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **29.** The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- **30.** In addition to the traditional lecture method, different types of innovative teaching methods may beadopted so that the activities will develop students' theoretical and applied skills.
- **31.** State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- **32.** Support and guide the students for self-study activities.
- **33.** You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- **34.** This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- **35.** Encourage the students for group work to improve their creative and analytical skills.

Module-1

Introduction to Value Education

(3 hours)

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations



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(3 hours)

(3 hours)

(3 hours)

Module-2

Harmony in the Human Being :

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

Module-3

Harmony in the Family and Society :

Harmony in the Family – the Basic Unit of Human Interaction, 'Trust' – the Foundational Value in Relationship, 'Respect' – as the Right Evaluation, Other Feelings, Justice in Human-to- Human Relationship, Understanding Harmony in the Society, Vision for the Universal Human

Order

Module-4

Harmony in the Nature/Existence :

Understanding Harmony in the Nature, Interconnectedness, self-regulation and Mutual Fulfilment

among the Four Orders of Nature, Realizing Existence as Co-existence at All Levels, The Holistic Perception of Harmony in Existence

Module-5

Implications of the Holistic Understanding – a Look at Professional Ethics : (3 hours) Natural Acceptance of Human Values, Definitiveness of (Ethical) Human Conduct, A Basis forHumanistic Education, Humanistic Constitution and Universal Human Order,

Competence inProfessional Ethics Holistic Technologies, Production Systems and Management Models-Typical

Case Studies, Strategies for Transition towards Value-based Life and Profession

BSCK307 – <mark>Socia</mark>	l Connect & Responsibility	Semester	3 rd
2022 Scheme & syllabus for 3 rd sem			
Course Code	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1	SEE Marks	
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	100
Examination nature	For CIE Assessment - Activities Report Evaluation by College		
(No SEE – Only CIE)	NSS		
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

Course objectives: The course will enable the students to:

19. Provide a formal platform for students to communicate and connect to the surrounding.

- 20. create a responsible connection with the society.
- 21. Understand the community in general in which they work.
- 22. Identify the needs and problems of the community and involve them in problem –solving.
- 23. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 24. Develop competence required for group-living and sharing of responsibilities & gain skills
- in mobilizing community participation to acquire leadership qualities and democratic attitudes.



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General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **16.** In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- 17. State the need for activities and its present relevance in the society and Provide real-life examples.
- 18. Support and guide the students for self-planned activities.
- **19.** You will also be responsible for assigning homework, grading assignments and quizzes, and documentingstudents' progress in real activities in the field.
- **20.** Encourage the students for group work to improve their creative and analytical skills.

Contents :

The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellowhuman beings, nature, society, and the world at large.

The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

In the following a set of activities planned for the course have been listed:

Social Connect & Responsibility -Contents

Part I:

Plantation and adoption of a tree:

Plantation of a tree that will be adopted for four years by a group of BE / B.Tech students. (ONE STUDENT ONE TREE)They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - - Objectives, Visit, case study, report, outcomes.

Part II :

Heritage walk and crafts corner:

Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms – – Objectives, Visit, case study, report, outcomes.

Part III :

Organic farming and waste management:

Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus –



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Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes.


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Department of Mechatronics

Scientific Foundations of Health

Course Title:	Scientific Foundations of Health		
Course Code:	BSFHK158/258	CIE Marks	50
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	50
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

- 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
- 2. To Build the healthy lifestyles for good health for their better future.
- 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
- 4. To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
- 5. To Prevent and fight against harmful diseases for good health through positive mindset

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

- Teachers shall adopt suitable pedagogy for effective teaching learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools.
 - (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),
 - (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning,
 - (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary learning Tools and techniques, (viii) Use of audio visual methods.

Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills. Module-1 (03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health,

Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality, Psychological disorders-Methods to improve good psychological health, Changing health habits for good health.

Module-Z	(03 hours of pedagogy)
Building of healthy lifestyles for better future: D	eveloping healthy diet for good health, Food & health, Nutritional
guidelines for good health, Obesity & overweight disord	lers and its management, Eating disorders, Fitness components for
health. Wellness and physical function. How to avoid ex-	ercise initiaties
Module-3	(03 hours of pedagogy)
Creation of Healthy and caring relationships : E	uilding communication skills, Friends and friendship - Education,
the value of relationship and communication skills, Rel	ationships for Better or worsening of life, understanding of basic
instincts of life (more than a biology), Changing health b	ekaviours through social engineering.
instincts of life (more than a biology), Changing health b Module-4	ekaviours: through social engineering. (03 hours of pedagogy)
instincts of life (more than a biology), Changing health b Module-4 Avoiding risks and harmful habits : Characteristic	ehaviours: through social engineering. (03 hours of pedagogy) as of health compromising behaviors, Recognizing and avoiding of
instincts of life (more than a biology), Changing health b Module-4 Avoiding risks and harmful habits : Characteristic addictions, How addiction develops, Types of addiction	ehaviours: through social engineering. (03 hours of pedagogy) is of health compromising behaviors, Recognizing and avoiding of s, influencing factors of addictions, Differences between addictive
instincts of life (more than a biology), Changing health b Module-4 Avoiding risks and harmful habits : Characteristic addictions, How addiction develops, Types of addiction people and non addictive people & their behaviors. Effec	ekaviours: through social engineering. (03 hours of pedagogy) as of health compromising behaviors, Recognizing and avoiding of s, influencing factors of addictions, Differences between addictive ts of addictions Such as, how to recovery from addictions.
instincts of life (more than a biology), Changing health b Module-4 Avoiding risks and harmful habits : Characteristic addictions, How addiction develops, Types of addiction people and non addictive people & their behaviors. Effec Module-5	ekaviours: through social engineering. (03 hours of pedagogy) as of health compromising behaviors, Recognizing and avoiding of s, influencing factors of addictions, Differences between addictive ts of addictions Such as, how to recovery from addictions. (03 hours of pedagogy)
instincts of life (more than a biology), Changing health b Module-4 Avoiding risks and harmful habits : Characteristic addictions, How addiction develops, Types of addiction people and non addictive people & their behaviors. Effec Module-5 Preventing & fighting against diseases for good	ekaviours: through social engineering. (03 hours of pedagogy) as of health compromising behaviors, Recognizing and avoiding of s, influencing factors of addictions, Differences between addictive ts of addictions Such as, how to recovery from addictions. (03 hours of pedagogy) health: How to protect from different types of infections, How to

of life, Health & Wellness of youth : a challenge for upcoming future, Measuring of health & wealth status.

Universal Human Values (UHV)		Semester	3 rd
Course Code	BUHK408	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:1	SEE Marks	50
Total Hours of Pedagogy	15 hour Theory Session +15 hour Self study	Total Marks	100
Credits	01	Exam Hours	01 Hour
Examination type (SEE)	SEE paper shall be set for 50 questions, each of the 01 mark. The pattern of the question paper is MCO (multiple choice questions) .		

CHILDREN'S EDUCATION SOCIETY(Regd.) THE OXFORD COLLEGE OF ENGINEERING (Recognised by the Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi.

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Course objectives:

This course is intended to:

- To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
- To facilitate the development of a Holistic perspective among students towards life and profession as well as towards happiness and prosperity based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basisof Universal Human Values and movement towards value-based living in a natural way.
- To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually fulfilling human behaviour and mutually enriching interaction with Nature.
- This course is intended to provide a much-needed orientation input in value education to

the young enquiring minds.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **36.** The methodology of this course is explorational and thus universally adaptable. It involves a systematicand rational study of the human being vis-à-vis the rest of existence.
- **37.** In addition to the traditional lecture method, different types of innovative teaching methods may beadopted so that the activities will develop students' theoretical and applied skills.
- **38.** State the need for UHV activities and its present relevance in the society and Provide real-life examples.
- **39.** Support and guide the students for self-study activities.
- **40.** You will also be responsible for assigning homework, grading assignments and quizzes, anddocumenting students' progress in real activities in the field.
- **41.** This process of self-exploration takes the form of a dialogue between the teacher and the students to beginwith, and then to continue within the student in every activity, leading to continuous selfevolution.
- **42.** Encourage the students for group work to improve their creative and analytical skills.

Module-1

Introduction to Value Education

Right Understanding, Relationship and Physical Facility (Holistic Development and the Role of Education) Understanding Value Education, Self-exploration as the Process for Value Education, Continuous Happiness and Prosperity – the Basic Human Aspirations, Happiness and Prosperity – Current Scenario, Method to Fulfil the Basic Human Aspirations

Module-2

Harmony in the Human Being :

Understanding Human being as the Co-existence of the Self and the Body, Distinguishing between the Needs of the Self and the Body, The Body as an Instrument of the Self, Understanding Harmony in the Self, Harmony of the Self with the Body, Programme to ensure self-regulation and Health

(3 hours)

(3 hours)



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Module-3

	hiouule b		
Harmony in the Family and	Society :	(3 hours	s)
Harmony in the Family – the F	Basic Unit of Human Interaction, 'Trust' – t	he Foundational	l
Value in Relationship, 'Respe	ct' – as the Right Evaluation, Other Feel	ings, Justice in	
Human-to- Human Relationsh	ip, Understanding Harmony in the Society	, Vision for the	
Universal Human		,	
Order			
	Module-4		
Harmony in the Nature/Exis	tence :	(3 hour	rs)
Understanding Harmony in the	e Nature, Interconnectedness, self-regulati	on and Mutual	1
Fulfilment			
among the Four Orders of Na	ture, Realizing Existence as Co-existence	at All Levels, Th	e
Holistic Perception of Harmony	y in Existence		
	Module-5		
Implications of the Holistic U	Inderstanding – a Look at Professional I	Ethics : (3 hour	s)
Natural Acceptance of Human	Values, Definitiveness of (Ethical) Human	Conduct, A Basis	5
forHumanistic Education, Hur	nanistic Constitution and Universal Hum	an Order,	
Competence inProfessional Et	hics Holistic Technologies, Production Sys	tems and	
Management Models-Typical			
Case Studies, Strategies for Tra	nsition towards Value-based Life and Prof	ession	
BSCK307 – Socia	l Connect & Responsibility	Semester	
2022 Schem	e & syllabus for 3 rd sem		
Course Code	BSCK307	CIE Marks	
Teaching Hours/Week (L:T:P: S)	0:0:3:1	SEE Marks	
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	
Examination nature	For CIE Assessment - Activities Repor	t Evaluation by (Col
(NO SEE – ONLY CIE)	NSS Officer / HOD / Sports Dee	t / Any Dont	
Credits	01 - Credit	t / Ally Dept.	
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Course objectives: The course will enable the students to:

- 25. Provide a formal platform for students to communicate and connect to the surrounding.
- 26. create a responsible connection with the society.
- 27. Understand the community in general in which they work.
- 28. Identify the needs and problems of the community and involve them in problem –solving.
- 29. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 30. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.



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General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **21.** In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- **22.** State the need for activities and its present relevance in the society and Provide real-life examples.
- 23. Support and guide the students for self-planned activities.
- **24.** You will also be responsible for assigning homework, grading assignments and quizzes, and documentingstudents' progress in real activities in the field.
- 25. Encourage the students for group work to improve their creative and analytical skills.

Contents :

The course is mainly activity-based that will offer a set of activities for the student that enables them to connect with fellowhuman beings, nature, society, and the world at large.

The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

In the following a set of activities planned for the course have been listed:

Social Connect & Responsibility -Contents

Part I:

Plantation and adoption of a tree:

Plantation of a tree that will be adopted for four years by a group of BE / B.Tech students. (ONE STUDENT ONE TREE)They will also make an excerpt either as a documentary or a photo blog describing the plant's origin, its usage in daily life, its appearance in folklore and literature - - Objectives, Visit, case study, report, outcomes.

Part II :

Heritage walk and crafts corner:

Heritage tour, knowing the history and culture of the city, connecting to people around through their history, knowing the city and its craftsman, photo blog and documentary on evolution and practice of various craft forms – – Objectives, Visit, case study, report, outcomes.

Part III :

Organic farming and waste management:

Usefulness of organic farming, wet waste management in neighboring villages, and implementation in the campus –



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Objectives, Visit, case study, report, outcomes.

Part IV:

Water conservation:

Knowing the present practices in the surrounding villages and implementation in the campus, documentary or photoblog presenting the current practices – Objectives, Visit, case study, report, outcomes.

Part V :

Food walk:

City's culinary practices, food lore, and indigenous materials of the region used in cooking – Objectives, Visit, case study, report, outcomes.



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Department of Civil Engineering

Scientific Foundations of Health

Course Title:	Scientific Foundations of Health				
Course Code:	BSFHK158/258	CIE Marks	50		
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	SO		
		Total Marks	100		
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory		
Total Hours of Pedagogy	15 hours	Credits	01		

Course objectives

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

- 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
- 2. To Build the healthy lifestyles for good health for their better future.
- 3. To Create a Healthy and caring relationships to meet the requirements of good/social/positive life.
- 4. To learn about Avoiding risks and harmful habits in their campus and outside the campus for their bright future
- 5. To Prevent and fight against harmful diseases for good health through positive mindset

Module-1

Module-7

Teaching-Learning Process

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes and make Teaching -Learning more effective:

Teachers shall adopt suitable pedagogy for effective teaching - learning process. The pedagogy shall involve the combination of different methodologies which suit modern technological tools. (i) Direct instructional method (Low/Old Technology), (ii) Flipped classrooms (High/advanced Technological tools),

- (iii) Blended learning (Combination of both), (iv) Enquiry and evaluation based learning,
- (v) Personalized learning, (vi) Problems based learning through discussion, (vii) Following the method of expeditionary

learning Tools and techniques, (viii) Use of audio visual methods. Apart from conventional lecture methods, various types of innovative teaching techniques through videos, animation films may be adapted so that the delivered lesson can progress the students In theoretical applied and practical skills.

(03 hours of pedagogy)

Good Health & It's balance for positive mindset: Health -Importance of Health, Influencing factors of Health, Health beliefs, Advantages of good health, Health & Behavior, Health & Society, Health & family, Health & Personality,

Psychological disorders-Methods to improve good psychological health, Changing health habits for good health.

(03 hours of pedagogy)

Building of healthy lifestyles for better future: Developing healthy diet for good health, Food & health, Nutritional guidelines for good health, Obesity & overweight disorders and its management, Eating disorders, Fitness components for health Wellness and physical function. How to avoid exercise iniuries. Module-3 (03 hours of pedagogy)

Creation of Healthy and caring relationships : Building communication skills, Friends and friendship - Education, the value of relationship and communication skills, Relationships for Better or worsening of life, understanding of basic instincts of life (more than a biology), Changing health behaviours through social engineering.

Module-4	(03 hours of pedagogy)
Avoiding risks and harmful habits : Characteristics	of health compromising behaviors, Recognizing and avoiding of
addictions, How addiction develops, Types of addictions,	influencing factors of addictions, Differences between addictive
people and non addictive people δt their behaviors. Effects	of addictions Such as, how to recovery from addictions.
Module-5	(03 hours of pedagogy)
Preventing & fighting against diseases for good he	ealth: How to protect from different types of infections, How to
reduce risks for good health. Reducing risks & coning with	h chronic conditions. Management of chronic illness for Ouality

of life, Health & Wellness of youth :a challenge for upcoming future, Measuring of health & wealth status.



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BSCK307 – <mark>Socia</mark>	l Connect & Responsibility	Semester	3 rd
2022 Scheme & syllabus for 3 rd sem			
Course Code	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1	SEE Marks	
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	100
Examination nature (No SEE – Only CIE)	For CIE Assessment - Activities Report Ev NSS	valuation by (College
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

Course objectives: The course will enable the students to:

- 31. Provide a formal platform for students to communicate and connect to the surrounding.
- 32. create a responsible connection with the society.
- 33. Understand the community in general in which they work.
- 34. Identify the needs and problems of the community and involve them in problem -solving.
- 35. Develop among themselves a sense of social & civic responsibility & utilize their knowledgein finding practical solutions to individual and community problems.
- 36. Develop competence required for group-living and sharing of responsibilities & gain skills in mobilizing community participation to acquire leadership qualities and democratic attitudes.

General Instructions - Pedagogy :

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- **26.** In addition to the traditional lecture method, different types of innovative teaching methods may be adopted sothat the activities will develop students' theoretical and applied social and cultural skills.
- **27.** State the need for activities and its present relevance in the society and Provide real-life examples.
- 28. Support and guide the students for self-planned activities.
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Contents:

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The course will engage students for interactive sessions, open mic, reading group, storytelling sessions, and semester-longactivities conducted by faculty mentors.

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Part I:

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Department of Electrical & Electronics Engineering

Scientific Foundations of Health

Course Title:	Scientific Foundations o	f Health	
Course Code:	BSFHK158/258 CIE Marks 50		
Course Type (Theory/Practical /Integrated)	Theory	SEE Marks	SO
		Total Marks	100
Teaching Hours/Week (L:T:P: S)	1:0:0:0	Exam Hours	01 Theory
Total Hours of Pedagogy	15 hours	Credits	01

Course objectives

The course Scientific Foundations of Health (22SFH18/28) will enable the students,

- 1. To know about Health and wellness (and its Beliefs) & It's balance for positive mindset.
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Module-4	(03 hours of pedagogy)
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BSCK307 – <mark>Socia</mark>	l Connect & Responsibility	Semester	3 rd
2022 Scheme & syllabus for 3 rd sem			
Course Code	BSCK307	CIE Marks	100
Teaching Hours/Week (L:T:P: S)	0:0:3:1	SEE Marks	
Total Hours of Pedagogy	40 hour Practical Session +15 hour Planning	Total Marks	100
Examination nature	For CIE Assessment - Activities Report Ev	valuation by (College
(No SEE – Only CIE)	NSS		
	Officer / HOD / Sports Dept / Any Dept.		
Credits	01 - Credit		

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Department of Business Administration

Principles of Manager	ment and Organisa	ational Behaviour	
Course Code	22MBA11	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Objectives: This course will enable the students

- · To understand theories and models of Management and OB.
- · To classify and differentiate between various methods of problem solving.
- · To compile an adept framework for solving the problems at the workplace.
- · To acquaint the students with industry relevant skill sets.

Module-1 (8 Hours)

Introduction: Meaning, Objectives, Differences between Administration and Management, Levels of Management, Kinds of Managers, Managerial roles, History of Management, Recent trends in Management.

Module-2 (9 Hours)

Planning: Importance, Process, Benefits of Planning, Types of Plans, Planning tools and techniques. **Organising:** Meaning, Types of Organisation structures, Traditional structures, Directions in organisation structures.

Leading: Meaning, Nature, Traits and Behaviour, Contingency approaches to Leadership, Transformational leadership.

Controlling: Meaning, Importance, Steps in the control process, Types of Control.

Module-3 (9 Hours)

Organisational Behaviour: Introduction, Meaning, History of Organisational Behaviour, Organisational effectiveness, Organisational learning process, Stakeholders, Contemporary challenges for Organisations.

Module-4 (9 Hours)

Behavioural Dynamics: MARS Model of individual behaviour and performance, Types of Individual behaviour, Personality in Organisation, Values in the work place, Types of values, **Perception**, Meaning, Model of Perceptual process. Emotions in work place, Types of emotions, Circumplex Model of Emotion, Attitudes and Behaviour, Work-related stress and its management. **Motivation**, Meaning, Maslow's Hierarchy of Needs, Four Drive Theory of Motivation.

Module-5 (9 Hours)

Teams: Advantages of Teams, Model of Team Effectiveness, Stages of Team Development. Power, Meaning, Sources, and Contingencies of Power, Consequences of Power.

Module-6 (7 Hours)



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BUSIN	ESS COMMUNICATIO	DN	
Course Code	22MBA16	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03
Course Learning objectives:			
 To enable the students to become av potential to become successful mana To enable learners with the mechar English precisely and effectively. To introduce the students to some 	ware of their communicati agers. nics of writing and also he of the practices in mana	on skills and sensitiz elp them to draft bus agerial communicatio	the them to their siness letters in on those are in
 vogue. To prepare students to develop the business situations. To train Students towards drafting here. 	art of business communiousiness proposals.	ication with emphasi	is on analysing
Module-1 (7 Hours)			
Introduction: Meaning & Definiti Communication Process, Characteristics in management, Communication struct Communication in crisis. Communication Barriers to communication.	on, Role, Classificatio of successful communica- ure in organization, Com on and negotiation, Comm	n, Purpose of c ttion, Importance of c nmunication in conf unication in a cross-c	ommunication, communication lict resolution, cultural setting,
Module-2 (9 Hours)			
communication, Conversation control, communication. Modes of Oral Communi- Listening as a Communication Skill: Ap listening, Nonverbal communication: Me	 Reflection and Empaining Effectiveness of opproaches to listening, horeaning, classification. 	two sides of oral communication, b w to be a better lister	effective oral ner, Process of
Module-3 (9 Hours)			
Written Communication: Purpose of Approaching the writing process s communication Pre writing, Writing, Persuasive and Bad-news Messages. Types of Written Communication In B Types of Business Letters, Writing Rout Writing, Employee Reviews, Recommer	writing, Clarity in writin systematically: The 3X2 Revising. Audience an usiness: Business Letters tine And Persuasive Letter addition Letters, Thank Yo	 1g, Principles of eff 3 writing process alysis, Writing Pos : Introduction To Burs, Positive And Negau u Letters. 	ective writing, for business sitive, Neutral, usiness Letters, ative Messages
Module-4 (9 Hours)			
Business Reports: Purpose, Kinds and short and long reports Writing Prop Management: The press release, Press conference, Mec Group Communication: Meetings, Pla meetings. Meeting Documentation: Notice, Agen	1 Objectives of reports, osals: Structure & prep dia interviews. anning meetings, objective da and Resolution & Mine	Organization & Pre aration , Writing n es , participants , tim utes.	paring reports, nemos, Media ning , venue of
Module-5 (9 Hours)			
Case method of learning: Understand overcoming the difficulties of the case i analyzing the case , dos and don'ts for ca	ing the case method of 1 method, reading a case p ase preparation.	earning, different ty roperly, case analys	ypes of cases , is approaches ,

Employment Communication: Introduction, Writing CVs, Group discussion, Interview skills.



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HUMAN RE	SOURCE MANAGE	MENT	
Course Code	22MBA21	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of Pedagogy	50	Total Marks	100
Credits	04	Exam Hours	03

Course Learning objectives: The student will be able to

- · Recite the theories and various functions of Human Resources Management
- Describe and explain in her/his own words, the relevance and importance of Human Resources Management at workplace
- · Apply and solve the workplace problems through Human Resources Management intervention
- Compare and contrast different approaches of HRM for solving the complex issues and problems at the workplace
- Design and develop an original framework and model in dealing with the problems in the
 organization.

Module-1 (7 Hours)

Introduction HRM: Introduction, meaning, nature, scope of HRM, Importance and Evolution of the concept of HRM, Major functions of HRM, Principles of HRM. Human Resource Management and Personnel Management, Models of Human Resource Management, HRM in India, The Factors Influencing Human Resource Management, The HR Competencies, Human Resource Management and Firm Performance.

Module-2 (9 Hours)

HR Planning: Importance of HR Planning, Manpower Planning to HR Planning, Factors Affecting HR Planning, Benefits of HR Planning, HRP Process, Tools for Demand Forecasting, Attributes of an Effective HR Planning, Barriers to HR Planning, The Challenges for HR, Process of Job Analysis, Job Description and Job Evaluation.

Recruitment and Selection: Importance of Recruitment, Recruitment Policies, Factors Influencing Recruitment, Recruitment Process, Sources, Evaluation of Recruitment Process, Recruitment Strategy, Future Trends in Recruitment; Selection Process; Selection Tests; Factors Influencing Selections.

Module-3 (9 Hours)

Performance Management and Appraisal: Objectives of Performance Management, Performance Management and Performance Appraisal, Common Problems with Performance Appraisals, Performance Management Process, Types of Performance Rating Systems, Future of Performance Management.

Compensation and Benefits: Introduction, Definitions, Total Compensation, Total Rewards System, Forms of Pay, External and Internal Factors, Establishing Pay Rates, Employee Benefits.

Industrial Relations: Decent Workplace, International Labour Organisation, Industrial Relations, The Objectives of Industrial Relations, Approaches of Industrial Relations Systems, The Actors in Industrial Relations, Indian Context, Industrial Relations and Human Resource Management.

Module-4 (9 Hours)



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Human Resource Management in Small and Medium Enterprises: Introduction to SMEs, The Difference in Adoption of Human Resource Management, SMEs and Large Firms, Indian Experience, Impact of Weak Adoption of Human Resource Management in SMEs,

Human Resource Management in the Service Sector: Introduction, The Emergence of the Services Sector, Implications for Human Resource, Management Function, Differences Between Services Sector and the Manufacturing Sector, Difference in Human Resource Management in Services and Manufacturing Sectors, Human Resource Management and Service Quality Correlation, Trade Unions in Services Sector, Models of Union Strategies.

Module-5 (9 Hours)

Human Resource Management and Innovations: Factors Affecting the Innovation Process in organisations, Current Trends in Human Resource Management, Innovative Human Resource Management Practices in India, Sustainable and innovative Human Resource Management.

Module-6 (7 Hours)

Future trends in Human Resource Management: Hybrid work model, Employee skill development, Internal mobility, Diversity and inclusion in workforce, People analytics, Employee well-being, Multi-generational workforces and All-in-One HR tools.

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing marks for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements (passed) and earned the credits allotted to each course if the student secures not less than 50% in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

There shall be a maximum of 50 CIE Marks. A candidate shall obtain not less than 50% of the maximum marks prescribed for the CIE.

CIE Marks shall be based on:

a) Tests (for 25Marks) and

b) Assignments, presentations, Quiz, Simulation, Experimentation, Mini project, oral examination, field work and class participation etc., (for 25 Marks) conducted in the respective course. Course instructors are given autonomy in choosing a few of the above based on the subject relevance and should maintain necessary supporting documents for same.

Semester End Examination:

The SEE question paper will be set for 100 marks and the marks scored will be proportionately reduced to 50.

- The question paper will have 8 full questions carrying equal marks.
- · Each full question is for 20 marks with 3 sub questions.
- · Each full question will have sub question covering all the topics.
- The students will have to answer five full questions; selecting four full questions from question number one to seven in the pattern of 3, 7 & 10 Marks and question number eight is compulsory.



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INNOVATION AND DESIGN THINKING			
Course Code	22MBA402	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course Learning objectives:

- · To familiarise Design Thinking (DT) and its phases
- To enable the students to become aware of the evolution, concepts & models of Design Thinking.
- · To enable learners with the context, methods and mindsets pertaining to Design Thinking.
- · To equip students to the opportunities to ideate and find solutions by applying DT.

Module-1 (6 Hours)

Introduction, Design Thinking as a Solution, The Value of Design Thinking, A Look at the History of Design Thinking, A Look at the History of Design Thinking, Four Core Principles of Successful Innovation, A Model of the Design Innovation Process, Seven Modes of the Design Innovation Process, Understanding Methods.

Module-2 (9 Hours)

Sense Intent: Mindsets, Sensing Changing Conditions, Seeing Overviews, Foreseeing Trends, Reframing Problems, Forming an Intent, Sense Intent: Methods, Buzz Reports, Popular Media Scan, Key Facts, Innovation Sourcebook, Trends Expert Interview, Keyword Bibliometrics, Ten Types of Innovation Framework, Innovation Landscape, Trends Matrix, Convergence Map, From To Exploration, Initial Opportunity Map, Offering-Activity-Culture Map, Intent Statement.

Know Context: Mindsets, Knowing Context History, Understanding Frontiers, Seeing System Overviews, Understanding Stakeholders, Using Mental Models, Know Context: Methods, Contextual Research Plan, Popular Media Search, Publications Research, Eras Map, Innovation Evolution Map, Financial Profile, Analogous Models, Competitors- Complementors Map, Ten Types of Innovation Diagnostics, Industry Diagnostics, SWOT Analysis, Subject Matter Experts Interview, Interest Groups Discussion.

Module-3 (6 Hours)

Know People: Mindsets, Observing Everything, Building Empathy, Immersing in Daily Life, Listening Openly, Looking for Problems and Needs.

Know People: Methods, Research Participant Map, Research Planning Survey, User Research Plan, Five Human Factors, POEMS, Field Visit, Video Ethnography, Ethnographic Interview, User Pictures Interview, Cultural Artifacts, Image Sorting, Experience Simulation, Field Activity, Remote Research, User Observations Database.

Module-4 (7 Hours)

Frame Insights: Mindsets, Exploring Systems, Looking for Patterns, Constructing Overviews, Identifying Opportunities, Developing Guiding Principles.

Frame Insights: Methods, Observations to Insights, Insights Sorting, User Observation Database



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Master of Computer Applications

	Muster			
		Software Engineering		
Course Code		22MCA23	CIE Marks	50
Teaching Hours	/Week (L:P:SDA)	4:0:0	SEE Marks	50
Total Hours of I	Pedagogy	50	Total Marks	100
Credits		04	Exam Hours	03
Course Learni Outline Identify	ng objectives: software engineering princ ethical and professional is	iples and activities involved in building sues and explain why they are of concer	large software progr n to software engine	rams. ers.
 Explain 	the fundamentals of object	oriented concepts.		C-
 Describ requirer Differer 	e the process of requirements validation.	nts gathering, requirements classificatio	on, requirements spe	cification and
- Differen	the distinctions between	didation testing and defect testing	·	
 Discuss 	the distinctions between va	alidation testing and defect testing.		
		Module-1		
Teaching- Learning Process	aching- arning ocess Chalk and board, Active Learning, Problem based learning Modulo 2			
Agile Methode	Plan-Driven and Agile De	velopment Extreme Programming /	gile Project Manag	ement scaling agile
methods. Requ document, Req Requirement v	uirement Engineering: F uirements specification, I alidation, Requirement m	unctional and non-functional requi Requirements engineering processes, anagement	rements, The Soft Requirement elicit	ware requirements ation and analysis,
Teaching- Learning Process	Chalk and board, Activ	ve Learning, Problem based learning		
		Module-3		
What is object modelling hist concepts; Link models; Practi Abstract class;	orientation? What is OO ory, modelling as design and associations concept cal tips. Advanced object Multiple inheritance; Met	development? OO themes; Evidence n Technique: Modelling; abstraction s; Generalization and inheritance; A s s and class concepts; Associations er adata; Reification; Constraints; Derive	for usefulness of O ; the three model ample class model; nds; N-array associa ed data; packages; p	0 development; 00 s. Object and class Navigation of class ation; Aggregation, oractical tips
Teaching-	Chalk and board, Active I	earning, Problem based learning		
Learning				
Process				



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	Module-4
System Mod engineering I UML. Design	els: Context models, Interaction models. Structural models. Behavioural models. Model-driven Design and Implementation: Introduction to RUP, Design Principles. Object-oriented design using the patterns. Implementation issues. Open source development.
Teaching- Learning Process	Chalk and board, Active Learning, Problem based learning
	Module-5
Software Tes	ting: Development testing, Test-driven development, Release testing ,User testing . Test Automation.
Software Evo	lution: Evolution processes. Program evolution dynamics. Software maintenance. Legacy system
management	
Teaching-	Chalk and board, Active Learning, Problem based learning
Learning	
Process	

10.08.2023

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Credits corre

EES-24.06.2023

Assessment Details (both CIE and SEE)

The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 50% of the maximum marks. Minimum passing marks in SEE is 40% of the maximum marks of SEE. A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 50% (50 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together.

Continuous Internal Evaluation:

- 1. Three Unit Tests each of 20 Marks
- 2. Two assignments each of 20 Marks or one Skill Development Activity of 40 marks to attain the COs and POs

The sum of three tests, two assignments/skill Development Activities, will be scaled down to 50 marks

CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.



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	Software Project Mana	gement	
Course Code	22MCA414	CIE Marks	50
Teaching Hours/Week (L:P:SDA)	2:0:0:2	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course Learning objectives:

- Apply the practices and methods for successful software project management
- Identifytechniquesforrequirements, policies and decision making for effective resource management
- Illustrate the evaluation techniques for estimating cost, bene fits, schedule and risk
- · Devise a framework for software project management plan for a ctivities, risk, monitoring and control

• 5.	Design a framework to manage people	
	Module-1	
INTRODUCTIO	N TO SOFTWARE PROJECT MANAGEMENT	
Introduction, V	Why is Software Project Management important? What is a Project?, Contract Management, Activities	
Covered by Software Project Management, Plans, Methods and Methodologies, Some ways of categorizing software		
projects, Stake	eholders, Setting Objectives, Business Case, Project Success and Failure, What is Management?	
Management C	ontrol, Traditional versus Modern Project Management Practices	
Teaching-	Chalk and Talk/PPT/Web Content	
Learning		
Process		
	Module-2	
PROJECT EVAL	JUATION & FINANCE	
Evaluation of I	Individual Projects, Cost Benefit Evaluation Techniques, Risk Evaluation, Programme Management,	
Managing allocation of Resources within Programmes, Financial Accounting-An overview- Accounting concepts, Principles & Standards, Ledger posting, Trial balance, Profit and Loss account Balance sheet		
Teaching-	Chalk and Talk/PPT/Web Content	
Learning		
Process		
	Module-3	
ACTIVITY PI	ANNING	
Objectives of Activity Planning, When to Plan, Project Schedules, Sequencing and Scheduling Activities,		
Network Planning Models, Forward Pass- Backward Pass, Identifying critical path, Activity Float,		
Shortening Project Duration Activity on Amour Naturarks Disk Management Nature of Pisk Categories		

Shortening Project Duration, Activity on Arrow Networks Risk Management, Nature of Risk, Categories of Risk, A framework for dealing with Risk, Risk Identification, Risk analysis and prioritization, risk planning and risk monitoring.

Teaching-	Chalk and Talk/PPT/Web Content
Learning	
Process	



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	Module-4
MONITORING	GAND CONTROL
Creating the	Framework, Collecting the Data, Review, Project Termination Review, Visualizing Progress,
Cost Monitor	ing, Earned Value Analysis, Prioritizing Monitoring, Getting Project Back To Target, Change
Control, Softw	ware Configuration Management
Teaching-	Chalk and Talk/PPT/Web Content
Learning	
Process	
	Module-5
MANAGING P	PEOPLE AND WORKING IN TEAMS
Introduction,	Understanding Behavior, Organizational Behavior:A Background, Selecting the Right
Damage Care	the Jak Jackmention in the Dest Matheda Mativation. The Oldham Uselman Jak

Person for the Job, Instruction in the Best Methods, Motivation, The Oldham-Hackman Job Characteristics Model, Stress-Health and Safety Working In Teams, Becoming a Team, Decision Making,

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Leadership.	
Teaching	Chalk and Talk / PPT / Wah Content
reaching-	chaik and Taik/TTT/ web content
Learning	
Process	
Assessmer	t Details (both CIE and SEE)
The weightag	e of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The
minimum pas	sing mark for the CIE is 50% of the maximum marks. Minimum nassing marks in SEE is 40% of the

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Continuous Internal Evaluation:

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Environment and Sustainability

Department of Biotechnology

I/II Semester

ENC	JINEERING CHEMISTR	Y	
Course Code	21CHE12/22	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	3Hour

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

6. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nernst equation, Numerical problems based on Nernst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.

Energy storage Systems: Introduction, Classification of batteries (primary, secondary and reserved batteries). Construction, working and applications of Li-ion batteries. Advantages of Li-ion battery as



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	Module-4
Green Chen	nistry and Alternative energy resources
Green Chem and Carbon chemistry -by Various gree with example Solvent-free Synthesis of i) <i>A</i> ii) Par Indus Green fuel: applications cell (H ₂ SO ₄ a	istry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur (Mansion the impact of these pollutants on environment), Basic principles of green rief discussion on 12 principles of green chemistry. In chemical approaches – Microwave synthesis, Bio catalysed reaction (only explanation es), reactions- advantages and conditions typical organic compounds by conventional and green route; Adipic acid – Conventional synthesis from Benzene, Green synthesis from glucose. racetamol- Conventional and Green synthesis from Phenol strial applications of Green Chemistry Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel as electrolyte).
Solar Energ	y:
Introduction,	construction, working and applications of photovoltaic cell.
Teaching Learning process	Chalk and talk/power point presentation - Basic principles of green chemistry Videos: Various green chemical approaches, Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell.
5	Module-5
Water Cher	mistry, chemical analysis and Instrumental methods of analysis
Water chen Introduction	nistry: 1. sources and impurities in water, Potable water; meaning and specifications (as per WHO

Teaching Learning	Chalk and talk/power point presentation - Basic principles of green chemistry Videos: Various green chemical approaches.
process	Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell.
일	Module 5

standards). Hardness of water, types, determination of hardness using EDTA titration, numerical problems on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD of waste water sample and Numerical problems on COD.

Methods of Chemical Analysis:

Volumetric Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric analysis, primary and secondary standards. Requirement of a primary standard solution, units of standard solutions- Definition of normality, molarity, molality, mole fraction, ppm.

Instrumental methods of analysis:

Introduction, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Potentiometry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base)

Teaching Chalk and talk/power point presentation - principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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MICROBIOLOGY Semester				
Course Code	BBT304	CIE Marks	50	
Teaching Hours/Week (L: T:P: S)	3:0:0	SEE Marks	50	
Total Hours of Pedagogy	40	Total Marks	100	
Credits 03 Exam Hours				
Examination type (SEE)	Examination type (SEE) Theory			
 Course objectives: To understand the details of classification, structural features and functional aspects of prokaryotic and eukaryoticmicroorganisms. To learn different techniques of microscopy and be able to describe microbial techniques for growth, cultivation and characterization of microorganisms. To explain microbial metabolism, growth and control of microorganisms. To describe and relate the occurrence of microbes caused diseases. To be able to study occurrence and role of general microflora of air, water and soil. Teaching-Learning Process (General Instructions) These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes. Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflectiveand questioning /inquiry-based teaching. Instructions with interactions in classroom lectures (physical/hybrid). Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools. Flipped classroom sessions (~10% of the classes). Industrial visits, Guests talks and competitions for learning beyond the syllabus. Students' participation through audio-video based content creation for the syllabus (as assignments). Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes. 				
	Module-1 (8 hours)			
OVERVIEW OF MICROBIOLOGY AND MICROORGANISMS: Scope and History of Microbiology (Major milestones). Prokaryotes, Archaea and Eukaryotes. Microbial diversity and Taxonomy. Classification, characteristics and reproduction of Bacteria, Viruses, Fungi, Protozoa, Algae. General features of true bacteria (Rickettsia, Mycoplasma and Chlamydia), Prions, Spirochetes, Actinomycetes.				
	Module-2 (8 hours)			
METHODS AND TECHNIQUES IN MICROBIOLOGY: Microscopy: Bright-Field, Dark-Field, Phase-Contrast, Acoustic, Fluorescence, Electron Microscopy (SEM, TEM). Micrometry. Media: types and preparation. Pure culture Techniques (streak-plate, spread plate, pour plate). Staining techniques (Simple and differential).				
	Module-3 (8 hours)			
MICROBIAL GROWTH, METABOLISM AND CONTROL: Microbial growth Phases, Factors affecting the growth, growth measurement and enumeration. Metabolism; Primary and Secondary metabolites with examples, metabolic pathways important in microorganisms- Respiration and Fermentation (EMP, HMP, ED, Phospho ketolase, Mixed acid, TCA).				

Control of growth (Sterilization and disinfection techniques).



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Module-4 (8 hours)

MICROBIOLOGY AND DISEASES:

Common diseases caused by microbes: viruses (Polio, H1N1, SARS, Covid-19, HIV, Hepatis), bacteria (TB, Cholera, Typhoid, Pneumonia, Plague, Diphtheria, *E. coli* infections), Protozoans (Malaria, Leishmaniasis and Amebiasis). Common types of fungal infections (ringworm, yeast infection). Microbiome and gut health.

PLANT PHYSIOLOC	Semester	III	
Course Code	BBT306D	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	3
Examination type (SEE)	Theory	,	

Course objectives:

- To learn the fundamental so plant physiology
- To explore the roles of various phytohormones and their action mechanisms
- To study the plant environment interactions

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry-based teaching.
- Instructions with interactions in classroom lectures (physical/hybrid).
- Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- Flipped classroom sessions (~10% of the classes).
- Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- Students' participation through audio-video based content creation for the syllabus (as assignments).
- Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- Students' seminars (in solo or group) /oral presentations.

Module-1 (8 Hours)

Introduction to Plant Physiology: Definition and scope of plant physiology, Plant anatomy and morphology, Plant growth and development, Water Relations and Mineral Nutrition, Water potential and its measurement, Water uptake and transport in plants, Mineral nutrients and their roles in plant growth, Nutrient uptake and transport mechanisms.

Module-2 (8 Hours)

Photosynthesis, Respiration and Energy Metabolism: Light absorption and chlorophyll pigments, Photosynthetic pigments and their functions, Calvin cycle and carbon fixation, Factors affecting photosynthesis, Respiration and Energy Metabolism - Cellular respiration and ATP production, Glycolysis, Krebs cycle, and electron transport chain, Aerobic and anaerobic respiration.

Module-3 (8 Hours)

Plant Hormones: Introduction to phytohormones, Auxins: functions and physiological effects, Gibberellins: functions and physiological effects, cytokinins: functions and physiological effects, Abscisic acid: functions and physiological effects, Ethylene: functions and physiological effects.

Module-4 (8 Hours)



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Plant Growth, Development & plant movements: Seed germination and dormancy, Photomorphogenesis and photoperiodism, Flowering and reproduction, Senescence and aging, Tropisms: phototropism, gravitropism, thigmotropism, Nastic movements: nyctinasty, eismonasty, Movements in response to environmental cues.

Module-5 (8 Hours)

Plant-Environment Interactions and Stress Physiology: Plant responses to abiotic stress (e.g., temperature, light, drought), Plant responses to biotic stress (e.g., pathogens, herbivores), Plant defence mechanisms, Signal transduction pathways in stress responses, Plant responses to light and photomorphogenesis, Plant responses to temperature, Water, and nutrients

Course outcome (Course Skill Set)

- At the end of the course, the student will be able to:
- 1. comprehend the fundamental principles of plant physiology.
- 2. Examining the mechanisms of plant hormone action.
- 3. Analysing the interaction between phytohormones and the environment.

BIOPESTICIDES AI	Semester	IV	
Course Code	BBT456D	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	1:0:0:0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	1
Examination type (SEE)	Theory		

Course objectives:

• To familiarize the students on biopesticides and biofertilizers that are free from harmful chemicals and are more environment friendly for the purposes of achieving better crop production

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry based teaching.
- Instructions with interactions in classroom lectures (physical/hybrid).
- Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- Flipped classroom sessions (~10% of the classes).
- Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- Students' participation through audio-video based content creation for the syllabus (as assignments).
- Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- Students' seminars (in solo or group) /oral presentations.

Module-1 (3 Hours)

PATHOGENS AND PESTS MANAGEMENT:

Pathogens and Pests Management, Natural Enemies, Reduviids and Their Merits in Biological Control, Weaver Ants and Biocontrol of the Nuisance Pest Luprops tristis (Coleoptera: Tenebrionidae), Ground Beetles (Coleoptera: Carabidae): Their Potential as Bio-agents in Agroecosystems, Eco-friendly Control of Three Common Mosquito Larvae Species by Odonata Nymphs, Spiders as Potential Eco-friendly Predators Against Pests.

Module-2 (3 Hours)

BIOFERTILIZERS:

Types and importance of biofertilizers, Biopesticides and bioagents in agriculture and organic farming system, History of biofertilizers production Classification of biofertilizers microorganisms used in biofertilizers production



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Module-3 (3 Hours)

NITROGEN FIXATION:

Concept of Nitrogen fixation. Structure and characteristic features of bacterial biofertilizers - *Azotobacter, Bacillus, Rhizobium; Cynobacterial* biofertilizers - Anabaena, and fungal biofertilizers - VAM.

Module-4 (3 Hours)

BIOPESTICIDES :

General account of microbes used as bioinsecticides and their advantages over synthetic pesticides, *Bacillus thuringiensis*, Mechanism of phosphate solubilization and phosphate mobilization, K solubilization. Botanicals: botanical pesticides, and biorationales. Botanicals and their uses. Plant Essential Oils and Pest Management **Module-5 (3 Hours)**

PRODUCTION AND QUALITY CONTROL :

Strain selection, sterilization, growth and fermentation, mass production of biofertilizers. Storage, shelf life, quality control and marketing. Factors influencing the efficacy of biofertilizers/Biopesticides, FCO specifications and quality control of biofertilizers. Application technology for seeds, seedlings, tubers, etc.

BIOLOGY	Semester	IV	
Course Code	BBOK407	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	3
Examination type (SEE)	Theory		

Course objectives:

- To familiarize the students with the basic biological concepts and their engineering applications.
- To enable the students with an understanding of biodesign principles to create novel devices and structures.
- To provide the students an appreciation of how biological systems can be re-designed as substitute products for natural systems.
- To motivate the students to develop interdisciplinary vision of biological engineering.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

- Explanation via real life problem, situation modelling, and deliberation of solutions, hands-on sessions, reflective and questioning /inquiry-based teaching.
- Instructions with interactions in classroom lectures (physical/hybrid).
- Use of ICT tools, including YouTube videos, related MOOCs, AR/VR/MR tools.
- Flipped classroom sessions (~10% of the classes).
- Industrial visits, Guests talks and competitions for learning beyond the syllabus.
- Students' participation through audio-video based content creation for the syllabus (as assignments).
- Use of gamification tools (in both physical/hybrid classes) for creative learning outcomes.
- Students' seminars (in solo or group) /oral presentations.

Module-1 (8 Hours)



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INTRODUCTION TO BIOLOGY:

The cell: the basic unit of life, Structure and functions of a cell. The Plant Cell and animal cell, Prokaryotic and Eukaryotic cell, Stem cells and their application. Biomolecules: Properties and functions of Carbohydrates, Nucleic acids, proteins, lipids. Importance of special biomolecules; Enzymes (Classification (with one example each), Properties and functions), vitamins and hormones.

Module-2 (8 Hours)

BIOMOLECULES AND THEIR APPLICATIONS (QUALITATIVE):

Carbohydrates (cellulose-based water filters, PHA and PLA as bioplastics), Nucleic acids (DNA Vaccine for Rabies and RNA vaccines for Covid19, Forensics – DNA fingerprinting), Proteins (Proteins as food – whey protein and meat analogs, Plant based proteins), lipids (biodiesel, cleaning agents/detergents), Enzymes (glucose-oxidase in biosensors, lignolytic enzyme in bio-bleaching).

Module-3 (8 Hours)

HUMAN ORGAN SYSTEMS AND BIO DESIGNS (QUALITATIVE):

Brain as a CPU system (architecture, CNS and Peripheral Nervous System, signal transmission, EEG, Robotic arms for prosthetics. Engineering solutions for Parkinson's disease). Eye as a Camera system (architecture of rod and cone cells, optical corrections, cataract, lens materials, bionic eye). Heart as a pump system (architecture, electrical signalling - ECG monitoring and heart related issues, reasons for blockages of blood vessels, design of stents, pace makers, defibrillators). Lungs as purification system (architecture, gas exchange mechanisms, spirometry, abnormal lung physiology - COPD, Ventilators, Heart-lung machine). Kidney as a filtration system (architecture, mechanism of filtration, CKD, dialysis systems).

Module-4 (8 Hours)

NATURE-BIOINSPIRED MATERIALS AND MECHANISMS (QUALITATIVE):

Echolocation (ultrasonography, sonars), Photosynthesis (photovoltaic cells, bionic leaf). Bird flying (GPS and aircrafts), Lotus leaf effect (Super hydrophobic and self-cleaning surfaces), Plant burrs (Velcro), Shark skin (Friction reducing swim suits), Kingfisher beak (Bullet train). Human Blood substitutes - hemoglobin-based oxygen carriers (HBOCs) and perflourocarbons (PFCs).

Module-5 (8 Hours)

TRENDS IN BIOENGINEERING (QUALITATIVE):

Muscular and Skeletal Systems as scaffolds (architecture, mechanisms, bioengineering solutions for muscular dystrophy and osteoporosis), scaffolds and tissue engineering, Bioprinting techniques and materials, 3D printing of ear, bone and skin. 3D printed foods. Electrical tongue and electrical nose in food science, DNA origami and Biocomputing, Bioimaging and Artificial Intelligence for disease diagnosis. Self-healing Bioconcrete (based on bacillus spores, calcium lactate nutrients and biomineralization processes) and Bioremediation and Biomining via microbial surface adsorption (removal of heavy metals like Lead, Cadmium, Mercury, Arsenic).



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Module-5 (8 hours)

MICROBIOLOGY OF AIR, WATER & SOIL

Aerobiology, Air sampling techniques. and commonly found atmospheric microbe profile. Water sampling techniques, Microbiology of potable water and wastewater treatment. Microbiology of soil: Soil fertility, Biofertilizers: VAM, Rhizobium and Azotobacter. Biogeochemical cycles. Case studies.

Course outcome (Course Skill Set)

- 1. Be able to classify microorganism along with their structural and functional roles
- 2. Apply learning of microscopy and microbial techniques in identification and enumeration
- 3. Identify microbes through use of appropriate culture, characterize them under given conditions and study
- the microbial growth along with its control
- 4. Describe and relate the occurrence of microbes caused diseases.
- 5. Explain the occurrence and role of general microflora of air, water and soil.

B. E. BIOTECHNOLOGY					
Outcome Based Education (OBE) and Choice Based Credit System (CBCS)					
SEMESTER - VII BIOFTHICS BIOSAFETY & IDD					
Course Code 18BT741 CIE Marks 40					
Teaching Hours/Week (L:T:P)(3:0:0)SEE Marks60					
Credits 03 Exam Hours 03				03	
 Course Learning Objectives: : This To introduce the biosafety re To understand the ethical co To emphasize on IPR issues a Module-1 BIOTECHNOLOGY AND SOCIETY Introduction to science, technolog developing and developed countries sharing, environmental sustainab relations, globalization and developed for the Indian Biotechnological research Course Learning Objectives: This and the statement of the Indian Biotechnological research 	course will enable s gulations oncepts in biotechno and need for knowle gy and society, is s. Ownership, mono ility, public vs. pi lopment divide. H res orch and industries.	tudents logy dge in patents in biote sues of access-Case poly, traditional know ivate funding, biote Public acceptance is	chnology studies/e ledge, bio chnology sues for	experiences from odiversity, benefit in international • biotechnology:	
Module-2					
 BIOETHICS & LEGAL ISSUES: Principles of bioethics: Legality, morality and ethics, autonomy, human rights, beneficence, privacy, justice, equity etc. The expanding scope of ethics from biomedical practice to biotechnology, bioethics vs. business ethics, ethical dimensions of IPR, technology transfer and other global biotech issues. The legal, institutional and socioeconomic impacts of biotechnology; biotechnology and social responsibility, Public education to increase the awareness of bioethics with regard to generating new forms of life for informed decision making – with case studies. Module-3 					



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BIOSAFETY CONCEPTS AND ISSUES:
Ethical conflicts in biotechnology - interference with nature, fear of unknown, unequal distribution of
risks and benefits of biotechnology, Rational vs. subjective perceptions of risks and benefits, relationship
between risk, hazard, exposure and safeguards, Biotechnology and biosafety concerns at the level of
individuals, institutions,
society, region, country and the world. The Cartagena protocol on biosafety. Biosafety management.
Ethical implications of biotechnological products and techniques.
Module-4
REGULATIONS:
Biosafety assessment procedures in India and abroad. International dimensions in biosafety,
bioterrorism and convention on biological weapons. <mark>Social and ethical implications of biological</mark>
weapons. Biosafety regulations and national and international guidelines with regard to recombinant
DNA technology. Guidelines for research
in transgenic plants. Good manufacturing practice and Good lab practices (GMP and GLP). National and
international regulations for food and pharma products.
Module-5
IPR, PATENTS AND PATENT LAWS:
IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of
IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights
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IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in
IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms.
 IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to
 IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to Describe the rules governing manufacture, use/import/exportand storage of
 IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to Describe the rules governing manufacture, use/import/exportand storage of hazardous microorganisms/genetically engineered organisms or cells.
 IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to Describe the rules governing manufacture, use/import/exportand storage of hazardous microorganisms/genetically engineered organisms or cells. Describe the ethical issues related to biotechnology research
 IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to Describe the rules governing manufacture, use/import/exportand storage of hazardous microorganisms/genetically engineered organisms or cells. Describe the ethical issues related to biotechnology research Explain the various forms of IPR, methods of application of Patents, Protection of Plant varieties
IPR, PATENTS AND PATENT LAWS: Intellectual property rights-TRIP- GATT International conventions patents Methods of application of patents Legal implications Biodiversity and farmer rights Objectives of the patent system Basic principles and general requirements of patent law Biotechnological inventions and patent law .Legal development-Patentable subjects and protection in biotechnology .The patenting of living organisms. Course Outcomes: At the end of the course the student will be able to • Describe the rules governing manufacture, use/import/exportand storage of hazardous microorganisms/genetically engineered organisms or cells. • Describe the ethical issues related to biotechnology research • Explain the various forms of IPR, methods of application of Patents, Protection of Plant varieties and farmer rights

patenting biotechnological inventions and innovations

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V Semester

Environmental Studies				
Course Code	21CIV57	CIE Marks	50	
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50	
Total Hours of Pedagogy	15	Total Marks	100	
Credits	01	Exam Hours	01	

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

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Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake. Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

Teaching-Learning	Chalk and talk, PowerPoint presentation and animation tools
Process	

Module-2

Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Chalk and talk, powerpoint presentation and animatic Process	n tools
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Module-3

Environmental Pollution (Sources, Impacts, Corrective and Preventive measures, Relevant Environmental Acts, Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil Pollution and Air Pollution.

Waste Management & Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous wastes; E-wastes; Industrial and Municipal Sludge.

Module-4

Global Environmental Concerns (Concept, policies and case-studies): Ground water depletion/recharging, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology.

Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	

1



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Module-5
Latest Developments in Environmental Pollution Mitigation Tools (Concept and
Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental
Management Systems, ISO14001; Environmental Stewardship- NGOs. Field work: Visit to an
Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste
water treatment Plant; ought to be Followed by understanding of process and its brief
documentation.
Teaching-Learning Chalk and talk, power point presentation and animation tools Process Process
Course outcome (Course Skill Set)
At the end of the course the student will be able to :
CO1: Understand the principles of ecology and environmental issues that apply to air, land,
and water issues on a global scale,
CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a
problem or question related to the environment.
 CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic
components.
• CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the
realities that managers face when dealing with complex issues.
Assessment because (both the and SEE)
The weightage of commons internal beautation (CE) is 50% and to be setset. End the term of the CE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed
to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student
secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), and a minimum of 40% (40
marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination)
taken together
Continuous Internal Evaluation:
Three Unit Tests each of 20 Marks (duration 01 hour)
1. First test at the end of 5 th week of the semester
2. Second test at the end of the 10 th week of the semester
3. Third test at the end of the 15 th week of the semester
Two assignments each of 10 Marks
4. First assignment at the end of 4^{th} week of the semester
5. Second assignment at the end of 9 th week of the semester
Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks
(auration of nours) f = 4 the and of the 12 th week of the comparison
6. At the end of the 15 st week of the senester The sum of three starts the assignments and usiz (seminar/group discussion will be out of 100 marks and will be
The sum of the etests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks
to have less stressed CIE the portion of the syllabus should not be common /repeated for any of the methods of
the CIE. Each method of CIE should have a different svllabus portion of the course).
CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the
outcome defined for the course.
Semester End Examination:
Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the
subject (duration 01 hours)
Question paper pattern:
1. The Question paper will have 50 objective questions.



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Department of Information Science & Engineering

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	Environmental Studies	6	
Course Code	21CIV57	CIE Marks	50
Teaching Hours/Week (L:T:	P: S) 1+2+0+0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	01
Course objectives: • To create environ • To gain knowledg	mental awareness among the students. e on different types of pollution in the en	vironment.	
Teaching-Learning Proces These are sample Strate	s (General Instructions) egies; which teacher can use to accele	rate the attainment o	of the various
course outcomes.			
1 . Apart from conv	entional lecture methods various type	es of innovative teach	ing techniques
through videos,	and animation films may be adopte	d so that the delive	red lesson can
progress the stu	dents in theoretical, applied and pract	tical skills.	
2. Environmental a	wareness program for the in house ca	ampus	
3 Encourage colla	porative (Group Learning) Learning in	the class	
4 Sominars surpri	so tosts and Quizzos may be arranged	l for students in resr	activa subjects
	se tests and Quizzes may be all anget	i for students in resp	ective subjects
to develop skills.			
	Module-1		
Ecosystems (Structure	and Function): Forest, Desert, We	tlands. River. Ocea	nic and Lake.
Biodiversity: Types Va	lue: Hot-spots: Threats and Conservat	tion of highliversity I	Forest Wealth
and Defensetation	ine, not spots, inclus and conserva-	cion of bloch croity, i	orest wearin,
			1
leaching-Learning	Chalk and talk, PowerPoint presenta	ition and animation f	tools
1100035	Module-2		
Advances in Energy S	ystems (Merits, Demerits, Global Sta	tus and Application	s): Hydrogen,
Solar OTEC Tidal and	Wind		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Natural Decourse Man	gament (Concent and sees studies).	Disastar Managamar	t Custainable
Natural Resource Maila	agement (Concept and case-studies):	Disaster Managemer	it, sustainable
Mining,case studiesng,	and Carbon Trading.		
Teaching-Learning Process	Chalk and talk, powerpoint presenta	tion and animation t	tools
	Module-3		
Environmental Pollu	tion (Sources, Impacts, Corrective an	nd Preventive measu	ires, Relevant
Environmental Acts, Ca	ase-studies): Surface and Ground Wa	ter Pollution; Noise	pollution; Soil
Pollution and Air Pollu	tion		
Wasto Managament	& Dublic Health Accests, Dia madia	Wastes Colid was	to: Hazardaua
waste Management o	x Fublic Hearth Aspects . Bio-medica	ai wastes, soliu was	te, mazaruous
wastes; E-wastes; Indu	strial and Municipal Sludge.		
Feaching-Learning Process	Chalk and talk, powerpoint presenta	tion and animation t	tools
	Module-4		
Global Environmenta	al Concerns (Concept, policies a	nd case-studies):	Ground water
depletion/recharging. (limate Change; Acid Rain; Ozone Dep	letion; Radon and Flu	loride problem
in drinking water. Rese	ttlement and rehabilitation of people	Environmental Tovi	cology
Teaching-Learning	Chalk and talk now maint presents	tion and animation i	cology.
Process	chark and tark, powerpoint presenta	and and annihilation	.0015

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Module-5			
Latest Developments in Environmental Pollution Mitigation Tools (Concept and			
Applications): G.I.S. & Remote Sensing, Environment Impact Assessment, Environmental			
Management Systems, ISO14001; Environmental Stewardship- NGOs. Field work: Visit to an			
Environmental Engineering Laboratory or Green Building or Water Treatment Plant or Waste			
water treatment Plant; ought to be Followed by understanding of process and its brief			
documentation.			
Teaching-Learning Chalk and talk, power point presentation and animation tools Process Process			
Course outcome (Course Skill Set)			
 At the end of the course the student will be able to : CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale, CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment. CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic 			
 components. CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues. 			
Assessment Details (both CIE and SEE)			
The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50) in the semester-end examination(SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken to academic			
Continuous Internal Evaluation:			
Three Init Tests each of 20 Marks (duration 01 hour)			
1. First test at the end of 5 th week of the semester			
 Second test at the end of the 10th week of the semester 			
3. Third test at the end of the 15 th week of the semester			
Two assignments each of 10 Marks			
 First assignment at the end of 4th week of the semester 			
5. Second assignment at the end of 9 th week of the semester			
Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks			
(duration 01 hours)			
6. At the end of the 13 th week of the semester			
The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be			
scaled down to 50 marks (to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.			
 Semester End Examination: Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (duration 01 hours) Question paper pattern: 1. The Question paper will have 50 objective questions. 			

2



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CONSERVATION OF NATURAL RESOURCES			
Course Code	21CV654	CIE Marks	50
Teaching Hours/Week (L:T:P:	5) 2+2+0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	3	Exam Hours	3
Course objectives: Make the s	tudents to learn		
1. Learn types of land fo	rms, soil conservation and sustainable land u	ise planning.	
2. Apprehend water resources, types, distribution, planning and conservation. Water pollution and types of uses.			
3. Know the types of minerals and rocks.			
4. Know the atmospheri	c composition of air, pollution and effects	on human beings, animals	s and plants. Air
pollution control.			
5. Apprehend basics of t	iodiversity and ecosystems.		
Teaching-Learning Process (General Instructions) These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes. 1. Power point Presentation 2. Video tube, NPTEL materials 3. Quiz/Assignments/Open book test to develop skills 4. Adopt problem based learning (PBL)to develop analytical and thinking skills 5. Encourage collaborative learning, site visits related to subject and impart practical knowledge 6. Mini projects Module-1 Land: Land as a resource, types of lands, conservation of land forms, deforestation, effect of land use changes. Soil health, ecological and economic importance of soil, impact of soil degradation on agriculture and food security, need for soil conservation, sustainable land use planning. Teaching-Learning Process Chalk and talk, PowerPoint Presentation & PBL			
Module-2			
Water: Global water resource	s Indian water resources Resources syst	em planning Water use	sectors- domestic
industrial, agriculture. Water d	eficit and water surplus basins in India equi	table distribution. Inter-ba	sin water transfers
Interlinking of rivers – Himalayan component, peninsular component, issues involved. Ground water its potential in			
India, conjunctive use, rechar	ge of ground water. Contamination of gro	und water, sea water ing	ress, problems and
solutions.			
Teaching-Learning Process	Chalk and talk, PowerPoint Presentation	& PBL	
Module-3			
Air: Introduction, composition, sources and classification of air pollutants, National Ambient Air quality standards			
(NAAQS), Air quality index, effects of air pollution on human health. Economic effects of air pollution. Control of air			
pollution by equipment, smoke and its control. Ozone depletion -impacts, photochemical changes.			
Teaching-Learning Process	Chalk and talk, PowerPoint Presentation	and Model preparation	
Module-4			



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Biodiversity: Introduction, Flora	a and Fauna, Importance of biodiversity, Economic values-medicinal plants, drugs,	
fisheries biogeochemical cycling.	. Threat to biodiversity, natural & anthropogenic disturbance, habitat loss. Conservation	
of biodiversity, National parks,	, wild life sanctuaries, zoological gardens, gene banks, pollen culture, ecological	
restoration, social forestry. Ecos	ystem: Definition, Types: forest, grass land, marine, desert, wetlands, estuarine, lotic,	
lentic. Abiotic & biotic components of ecosystem.		
Teaching-Learning Process	Chalk and talk, PowerPoint Presentation and Field visits	
Module-5		
	Module-5	
Global warming: concept, indica	Module-5 ators, factor and effects. Global climate change-indicators, health impacts, effect on	
Global warming: concept, indica biodiversity. Introduction to glob	Module-5 ators, factor and effects. Global climate change-indicators, health impacts, effect on pal efforts in conservation of biodiversityEIA regulations in India, status of EIA in	
Global warming: concept, indica biodiversity. Introduction to glob India, list of projects needing en	Module-5 ators, factor and effects. Global climate change-indicators, health impacts, effect on bal efforts in conservation of biodiversityEIA regulations in India, status of EIA in nvironmental clearance under EIA notifications. Case study of hydro power/ thermal	
Global warming: concept, indica biodiversity. Introduction to glob India, list of projects needing en power projects	Module-5 ators, factor and effects. Global climate change-indicators, health impacts, effect on bal efforts in conservation of biodiversityEIA regulations in India, status of EIA in nvironmental clearance under EIA notifications. Case study of hydro power/ thermal	

B. E. ELECTRICAL AND ELECTRONICS ENGINEERING CHOICE BASED CREDIT SYSTEM (CBCS) AND OUTCOME BASED EDUCATION (OBE) SEMESTER – VII

DISASTERS MANAGEMENT (OPEN ELECTIVE)			
Course Code	18EE753	CIE Marks	40
Teaching Hours/Week (L:T:P)	(3:0:0)	SEE Marks	60
Credits	03	Exam Hours	03

Disaster Management Plan (DMP): - General.

Cyclones and their Hazard Potential: Classification of Low-Pressure Systems, Statistics of Cyclonic Storms Over Indian Seas, Movement of Cyclqnes in Indian Seas, Storm Surges.

Module-2

India Meteorological Department and Cyclone Warnings in India: Hazard Potential of Cyclonic Storms, Cyclone Prediction and Dissemination of Warnings, Dissemination of Cyclone Warnings, Cydone Warnings through INSAT, Port Warnings with Day and Night hoisting Sib'Tlals.

Cyclones Disaster Management – Plan: Hazard Potentials Associated with Cyclones, Vulnerability Reduction, Early Warning.

Module-3



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Action Plan for Cyclone Disaster Management.

Role of Different Institutions in Natural Disaster Management: Role of Zilla Parishad, Role of PRA Groups in Disaster Management, Role of NGOs, Self Help Groups in Disaster Management, Role of Red Cross in Disaster Management.

The Role of Defence and other Services in Disaster Management: Role of Air Force in Disaster Management, Role of Medical and Health Department in Cyclone disaster management, National Disaster Response Force (NDRF), Role of Remote Sensing in Disaster Management, Role of Broadcast, Educational Media in disaster management.

Module-4

4Floods: Water Wealth of India, Definition of Flood, Role of Central Water Commission, Monsoons, Flood Warning Signals and Precautionary Actions, Water Purification Technologies in Flood Affected Areas.

Drought: Meteorological Drought, Breaks in the Monsoon, Drought Management Plan, Drought Years for Different Met Subdivision of India, Drought Assessment, Drought Parameters, Role of Banking, Insurance, Microfinance in drought mitigation, Drought Monitoring, Drought Research Unit (IMD), Rainwater harvesting.

Module-5

Earth quakes: Interior Structure of the Earth, Plate Techtonics, Seismcity of India, Earthquake Forecast and disaster management, Tsunamis, Landslides and Avalanches, Volcanoes.

Hazards associated with Convective Clouds: Climatology of World Thunderstorms, Lightning, Some Effects of Electric Shock, Favours and Frownings of Thunderstorms, Hailstorms, Tornadoes, Waterspouts, Dust-Devils, Nowcasting, Summer Thunderstorms over India, Cold Waves and Heat Waves - Cold Waves in India, Heat Waves in India.

Course Outcomes: At the end of the course the student will be able to:


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ENGINEERING CHEMISTRY						
Course Code	21CHE12/22	CIE Marks	50			
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50			
Total Hours of Pedagogy	40	Total Marks	100			
Credits	03	Exam Hours	3Hour			

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nernst equation, Numerical problems based on Nernst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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	Module-4
Green Che	mistry and Alternative energy resources
Green Chen and Carbon chemistry -l Various gre with examp Solvent-free Synthesis of i) ii) Pa Indu Green fuel	nistry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur (Mansion the impact of these pollutants on environment), Basic principles of green orief discussion on 12 principles of green chemistry. en chemical approaches – Microwave synthesis, Bio catalysed reaction (only explanation les), ereactions- advantages and conditions f typical organic compounds by conventional and green route; Adipic acid – Conventional synthesis from Benzene, Green synthesis from glucose. racetamol- Conventional and Green synthesis from Phenol strial applications of Green Chemistry - Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting), and
applications cell (H ₂ SO ₄	in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel as electrolyte).
Solar Ener	87:
Introduction	, construction, working and applications of photovoltaic cell.
Teaching Learning process	Chalk and talk/power point presentation - Basic principles of green chemistry Videos: Various green chemical approaches, Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell.
	Module-5
Water Che Water che Introductio standards), problems o Oxygen De COD.	emistry; chemical analysis and instrumental methods of analysis mistry: n, sources and impurities in water, Potable water; meaning and specifications (as per WHO Hardness of water, types, determination of hardness using EDTA titration, numerical on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical emand (COD), determination of COD of waste water sample and Numerical problems on
Methods o Volumetri analysis, pr standard so Instrumen Introductio Potentiome of strong ad	f Chemical Analysis: c Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric rimary and secondary standards. Requirement of a primary standard solution, units of lutions- Definition of normality, molarity, molality, mole fraction, ppm. tal methods of analysis: n, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, try, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture cid and a weak acid with a strong base)
Teaching	Chalk and talk/power point presentation - principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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Department of Mechanical Engineering

Annexure-II 1

Electric and Hyb	orid Vehicle Technology	Semester	3
Course Code	BME306A	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	3
Examination type (SEE)	Theo	ry	
 To understand the models, To understand the differen To understand the differen management. 	describe hybrid vehicles and thei t possible ways of energy storage t strategies related to hybrid vehic	r performance. :le operation & energy	
 Adopt different types PowerPoint presentatio Chalk and Talk method f Adopt flipped classroom Adopt collaborative (Gro Adopt Problem Based I develops thinking skills 	of teaching methods to deve ns and Videodemonstrations or S or Problem Solving. a teaching method. oup Learning) learning in the clas Learning (PBL), which fosters st such asevaluating, generalizing, a	lop the outcomes t Simulations. s. cudents' analytical ski and analyzing informa	hrougl Ils and tion.
27.10 PM	Module-1		
Introduction to Electric Vehicle A brief history of Electric and Hy and the dynamic equations for the vehicles, limitations of EV and H battery, cell and hazardous materi	e (EV) & Hybrid Vehicle(HV): brid vehicles, basic architecture of hy vehicle, types of HV and EV, advar V, impact on environment of EV and al and their impact on environment.	ybrid drive train, vehicle tages over conventional l HV technology, dispose	motion al of
	Module-2		
Power Management and Energy Power and Energy management st sources, energy storage, battery be cells, their characteristics, Super c energy storage devices, Selection	y Sources of EV and HV: trategies and its general architecture ased energy storage, Battery Manage apacitor based energy storage, flywl of the energy storage technology.	of EV and HV, various b ment Systems (BMS), fu neel, hybridization of var	attery iel ious
	Module-3		
DC and AC Machines & Driver Various types of motors, selection characteristics, Permanent magne drive and characteristics, switcher characteristics, mechanical and ele	s in EV & HV: and size of motors, Induction moto et motor drives and characteristics, E d reluctance motors and characteris ectrical connections of motors.	or drives and control Grushed & Brushless DO tics, IPM motor drives	C motor and



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V Semester

Environmental Studies						
Course Code	21CIV57	CIE Marks	50			
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50			
Total Hours of Pedagogy	15	Total Marks	100			
Credits	01	Exam Hours	01			

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

	Module-1					
Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.						
Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth,						
and Deforestation.						
Teaching-Learning Process	Chalk and talk, PowerPoint presentation and animation tools					
	Module-2					
Advances in Energy Sy	ystems (Merits, Demerits, Global Status and Applications): Hydrogen,					
Solar, OTEC, Tidal and	Wind.					
Natural Resource Mana	agement (Concept and case-studies): Disaster Management, Sustainable					
Mining,case studiesng, and Carbon Trading.						
Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools					
Module-3						
Environmental Pollu	tion (Sources, Impacts, Corrective and Preventive measures, Relevant					
Environmental Acts, Ca	ase-studies): Surface and Ground Water Pollution; Noise pollution; Soil					
Pollution and Air Pollu	tion.					
Waste Management &	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous					
wastes; E-wastes; Indu	strial and Municipal Sludge.					
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools					
Process						
	Module-4					
Global Environmenta	al Concerns (Concept, policies and case-studies): Ground water					
depletion/recharging, C	limate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem					
in drinking water; Rese	ttlement and rehabilitation of people, Environmental Toxicology.					
Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools					



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Activity Based Learning (Suggested Activities in Class)/ Practical Based learning •

Semester VI

			12			
RENEWABLE ENERGY POWER PLANTS (OPEN ELECTIVE)						
Course Code		21ME652	CIE Marks	50		
Teaching Hours	Week (L:T:P:S)	3-0-0-0	SEE Marks	50		
Total Hours of	Pedagogy	40	Total Marks	100		
Credits		03	Exam Hours	03		
Course objectiv	/es:					
 To intr 	oduce the concepts a	nd principles of solar energy, its	radiation, collect	ion, storage and application.		
 To und 	lerstand application a	spects of Wind, Biomass, Geoth	ermal, hydroelec	tric and Ocean energy.		
 To exa 	mine energy sources	and systems, including fossil fue	els and nuclear e	nergy, and then focus on other		
forms	of alternate energy so	ources.				
	den de					
Teaching-Learn	ing Process (General	Instructions)				
These are samp	le Strategies, which t	eacher can use to accelerate the	attainment of th	e various course outcomes.		
1. Adopt	different types of tea	ching methods to develop the o	utcomes through	PowerPoint presentations and		
Video	demonstrations or Sir	nulations.		2		
2. Chalk	and Talk method for P	roblem Solving.				
3. Adopt	at flipped classroom teaching method.					
4. Adopt	collaborative (Group	Learning) learning in the class.				
5. Adopt	Problem Based Learn	ning (PBL), which fosters stude	nts' analytical sk	ills and develops thinking skills		
such a	s evaluating, generaliz	zing, and analyzing information.	<i>.</i>			
		Module-1				
Introduction:	Energy sources (incl	uding fossil fuels and nuclear	energy), India's	production and reserves of		
commercial ene	ergy sources, need for	r nonconventional energy source	es. energy alterna	atives. Indian and global energy		
scenario.			, .,	, , ,,		
Solar Radiation	a & Measurement: [Extra-Terrestrial radiation, spec	tral distribution	of extra-terrestrial radiation.		
solar constant.	solar radiation at th	ne earth's surface, beam, diffu	se and global ra	diation, solar radiation data.		
Pyrometer, sh	ading ring Pyrhelion	neter, sunshine recorder, sch	ematic diagrams	, and principle of working,		
actinometer an	d bolometer.	· · · · · · · · · · · · · · · · · · ·	_			
Teaching- 1	. Power-point Presen	tation,				
Learning 2	. Video demonstratio	n or Simulations.				
Process 3	. Chalk and Talk are u	sed for Problem Solving. /White	board			
		Module-2				
Solar Radiation	Geometry: Flux on	a plane surface, latitude, declin	ation angle, surf	ace azimuth angle, hour angle,		
zenith angle, so	olar altitude angle, ex	pressions for the angle betwee	n the incident be	eam and the normal to a plane		
surface (No der	ivation) local apparen	t time, apparent motion of sun,	day length, num	erical problems.		
Solar Thermal S	Systems: Flat plate co	llector, Evacuated Tubular Colle	ctor, Solar air coll	ector, Solar concentrator, Solar		
distillation, Sola	ar cooker, Thermal en	ergy storage systems, Solar Pond	d, Solar Chimney	(Tower).		
Solar Photovol	taic Systems: Introd	uction, Solar cell Fundamentals	, Characteristics	and classification, Solar cell:		
Module, panel	and array construction	n.				
Teaching-	1. Power-point Pres	entation,				
Learning	2. Video demonstra	tion or Simulations,				

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Process	3. Chalk and Talk are used for Problem Solving. /White board
	Module-3
Wind Energy problems as: and vertical aspects, num Energy from	Properties of wind, availability of wind energy in India, wind velocity and power from wind; major sociated with wind power, wind machines; Types of wind machines and their characteristics, horizontal axis windmills, elementary design principles; coefficient of performance of a windmill rotor, design herical examples. Biomass: Energy plantation, biogas production from organic wastes by anaerobic fermentation,
description of	of bio-gas plants, transportation of biogas, problems associated with bio-gas production, application of
biogas, appli	cation of biogas in engines, cogeneration plant, advantages & disadvantages.
Teaching- Learning Process	 Power-point Presentation, Video demonstration or Simulations, Chalk and Talk are used for Problem Solving. /White board
	Module-4
Hydroelectri numericals, S spill way and Tidal Power: harnessing ti Energy from	c plants: Advantages & disadvantages of waterpower, Hydrographs and flow duration curves- storage and pondage, General layout of hydel power plants- components such as Penstock, surge tanks, draft tube and their applications, pumped storage plants, Detailed classification of hydroelectric plants. Tides and waves as energy suppliers and their mechanics, fundamental characteristics of tidal power, dal energy, limitations of tidal energy.
Teaching-	1. Power-point Presentation.
Learning Process	2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving. /White board
	Module-5
Ocean Therr associated w Geothermal Estimates of pressured re	nal Energy Conversion: Principle of working, Rankine cycle, OTEC power stations in the world, problems ith OTEC, case studies. energy: Introduction, Principle of working, types of geothermal stations with schematic diagram Geothermal Power, Nature of geothermal fields, Geothermal resources, Hydrothermal, Resources Geo esources, Hot dry rock resources of petro-thermal systems, Magma Resources-Interconnection of
geothermal Geothermal	fossil systems, Advantages, and disadvantages of geothermal energy over other energy forms, stations in the world
Teaching- Learning Process	 Power-point Presentation, Video demonstration or Simulations, Chalk and Talk are used for Problem Solving. /White board
Course outco At the end of Des App Ana app	ome (Course Skill Set) The course the student will be able to : cribe the various forms of non-conventional energy resources. Iy the fundamental knowledge of mechanical engineering to design various renewable energy systems lyze the implications of renewable energy forms for selecting an appropriate system for a specific lication
• Disc	uss on the environmental aspects and impact of non-conventional energy resources, in comparison with

various conventional energy systems, their prospects and limitations.



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Choice Based C	B. E. MECHANICAL ENG	SINEERING	
enotee based en	SEMESTER - V	III	
	ENERGY ENGINEE	RING	
Course Code	18ME81	CIE Marks	40
Teaching Hours /Week (L:T:P)	3:0:0	SEE Marks	60
Credits	03	Exam Hours	03
Course Learning Objectives: Understand energy scenar Learn about energy conve Study the principles of rer	rio, energy sources and thei rsion methods newable energy conversion	r utilization systems.	
Module-1			
STEAM GENERATORS Coal and supercritical pressures, LaMount, Ponds, Accessories such as Superh Module-2	ash handling, Generation , Benson, Velox, Loeffer, S neaters, De-superheater, Ec	of steam using forced circul chmidt steam generators, Coo onomizers, Air preheaters.	ation, high and ling towers and
collectors, Focussing collectors, Sc Biomass Energy: Photosynthesis, Biogas production from organic v models, factors affecting bio ga Module-3	olar pond, Solar electric pow photosynthetic oxygen pro vastes by anaerobic fermer s generation. Thermal g	ver generation-Solar photovoltai duction, energy plantation. Bio ntation, Bio gas plants-KVIC, Jan asification of biomass, updraft	cs. Chemical Route: ta, Deenbhandu and downdraft
Geothermal Energy: Forms of g	eothermal energy, Dry st	eam, wet steam, hot dry rock	and magmatic
chamber systems.			
Tidal Energy: Tidal power, Site	e selection, Single basin	and double basin systems, A	Advantages and
disadvantages of tidal energy.			
Wind Energy: Wind energy-Advar wind energy conversion systems, mill rotor, Applications of wind en	ntages and limitations, wind horizontal and vertical axis ergy.	evelocity and wind power, Basic wind mills, coefficient of perform	components of mance of a wind
Module-4			
Hydroelectric plants: Advantages numericals, Storage and pondage, tanks, spill way and draft tube hydroelectric plants, water hamm Ocean Thermal Energy: Ocean th associated with OTEC.	& disadvantages of water General layout of hydel po and their applications, pu er. ermal energy conversion, P	power, Hydrographs and flow wer plants- components such as mped storage plants, Detailed rinciple and working of Rankine	duration curves- Penstock, surge classification of cycle, Problems
Module-5			
NUCLEAR ENERGY Principles of re the reactors, Chain reaction, Mo components of a nuclear reactor reactor, Sodium graphite reactor reactor, Radiation hazards, Shieldi Course Outcomes: At the end of t	elease of nuclear energy-Fu deration, breeding, Multip and materials, Brief desci r, Fast Breeder reactor, H ing, Nuclear waste, Radioac he course the student will b	sion and fission reactions. Nucle lication and thermal utilization ription-Pressurized water reactor omogeneous graphite reactor tive waste disposal. the able to:	ear fuels used in factors. General or, Boiling water and gas cooled
CO1: Understand the construct	tion and working of steam	generators and their accessories	•
	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	<u></u>	201



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I/II Semester

ENGINEERING CHEMISTRY					
Course Code	21CHE12/22	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50		
Total Hours of Pedagogy	40	Total Marks	100		
Credits	03	Exam Hours	3Hour		

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nemst equation, Numerical problems based on Nemst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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Module-4 Green Chemistry and Alternative energy resources Green Chemistry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur and Carbon (Mansion the impact of these pollutants on environment), Basic principles of green chemistry -brief discussion on 12 principles of green chemistry. Various green chemical approaches - Microwave synthesis, Bio catalysed reaction (only explanation with examples). Solvent-free reactions- advantages and conditions Synthesis of typical organic compounds by conventional and green route; Adipic acid - Conventional synthesis from Benzene, Green synthesis from glucose. 1) Paracetamol- Conventional and Green synthesis from Phenol ii) Industrial applications of Green Chemistry Green fuel: Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and applications in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel cell (H2SO4 as electrolyte). Solar Energy: Introduction, construction, working and applications of photovoltaic cell. Chalk and talk/power point presentation - Basic principles of green chemistry Teaching Videos: Various green chemical approaches, Learning process Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell. Module-5 Water Chemistry, chemical analysis and Instrumental methods of analysis Water chemistry: Introduction, sources and impurities in water, Potable water; meaning and specifications (as per WHO standards), Hardness of water, types, determination of hardness using EDTA titration, numerical problems on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD of waste water sample and Numerical problems on COD. Methods of Chemical Analysis: Volumetric Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric analysis, primary and secondary standards. Requirement of a primary standard solution, units of standard solutions- Definition of normality, molarity, molality, mole fraction, ppm. Instrumental methods of analysis: Introduction, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Potentiometry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base)

Teaching Chalk and talk/power point presentation – principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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Department of Computer Science & Engineering

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V Semester

Process

Environmental Studies					
Course Code	21CIV57	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50		
Total Hours of Pedagogy	15	Total Marks	100		
Credits	01	Exam Hours	01		

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

 Module-1

 Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.

 Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

 Teaching-Learning

 Process

Module-2

Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools	
	* 100 to	_

	Module-3
Environmental Pollu	tion (Sources, Impacts, Corrective and Preventive measures, Relevant
Environmental Acts, Ca	ase-studies): Surface and Ground Water Pollution; Noise pollution; Soil
Pollution and Air Pollu	tion.
Waste Management &	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous
wastes; E-wastes; Indu	strial and Municipal Sludge.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	
	Module-4
Global Environmenta	Il Concerns (Concept, policies and case-studies): Ground water
depletion/recharging, C	limate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem
in drinking water: Rese	ttlement and rehabilitation of people. Environmental Toxicology.

Teaching-Learning Chalk and talk, powerpoint presentation and animation tools



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B. E. ELECTRICAL AND ELECTRONICS ENGINEERING CHOICE BASED CREDIT SYSTEM (CBCS) AND OUTCOME BASED EDUCATION (OBE) SEMESTER - VII **DISASTERS MANAGEMENT (OPEN ELECTIVE)** Course Code 18EE753 CIE Marks 40 (3:0:0)Teaching Hours/Week (L:T:P) SEE Marks 60 Credits 03 Exam Hours 03 Disaster Management Plan (DMP): - General. Cyclones and their Hazard Potential: Classification of Low-Pressure Systems, Statistics of Cyclonic Storms Over Indian Seas, Movement of Cyclones in Indian Seas, Storm Surges. Module-2 India Meteorological Department and Cyclone Warnings in India: Hazard Potential of Cyclonic Storms, Cyclone Prediction and Dissemination of Warnings, Dissemination of Cyclone Warnings, Cydone Warnings through INSAT, Port Warnings with Day and Night hoisting Sib'Tlals. **Cyclones Disaster Management – Plan:** Hazard Potentials Associated with Cyclones, Vulnerability Reduction, Early Warning. Module-3 Action Plan for Cyclone Disaster Management. Role of Different Institutions in Natural Disaster Management: Role of Zilla Parishad, Role of PRA Groups in Disaster Management, Role of NGOs, Self Help Groups in Disaster Management, Role of Red Cross in Disaster Management. The Role of Defence and other Services in Disaster Management: Role of Air Force in Disaster Management, Role of Medical and Health Department in Cyclone disaster management, National Disaster Response Force (NDRF), Role of Remote Sensing in Disaster Management, Role of Broadcast, Educational Media in disaster management Module-4 4Floods: Water Wealth of India, Definition of Flood, Role of Central Water Commission, Monsoons, Flood Warning Signals and Precautionary Actions, Water Purification Technologies in Flood Affected Areas. Drought: Meteorological Drought, Breaks in the Monsoon, Drought Management Plan, Drought Years for Different Met Subdivision of India, Drought Assessment, Drought Parameters, Role of Banking, Insurance, Microfinance in drought mitigation, Drought Monitoring, Drought Research Unit (IMD), Rainwater harvesting, Module-5 Earth quakes: Interior Structure of the Earth, Plate Techtonics, Seismcity of India, Earthquake Forecast and disaster management, Tsunamis, Landslides and Avalanches, Volcanoes. Hazards associated with Convective Clouds: Climatology of World Thunderstorms, Lightning, Some Effects of Electric Shock, Favours and Frownings of Thunderstorms, Hailstorms, Tornadoes, Waterspouts, Dust-Devils, Nowcasting, Summer Thunderstorms over India, Cold Waves and Heat Waves - Cold Waves in India, Heat Waves in India.

Course Outcomes: At the end of the course the student will be able to:



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I/II Semester

ENGINEERING CHEMISTRY				
Course Code	21CHE12/22	CIE Marks	50	
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50	
Total Hours of Pedagogy	40	Total Marks	100	
Credits	03	Exam Hours	3Hour	

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nemst equation, Numerical problems based on Nemst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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	Module-4
Green Chen	nistry and Alternative energy resources
Green Chemi and Carbon chemistry -br	istry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur (Mansion the impact of these pollutants on environment), Basic principles of green rief discussion on 12 principles of green chemistry.
with example	es),
Solvent-free Synthesis of i) A ii) Par Indus Green fuel:	reactions- advantages and conditions typical organic compounds by conventional and green route; Adipic acid – Conventional synthesis from Benzene, Green synthesis from glucose. acetamol- Conventional and Green synthesis from Phenol trial applications of Green Chemistry Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and
applications cell (H ₂ SO ₄ a	in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel as electrolyte).
Solar Energ	y:
Introduction,	construction, working and applications of photovoltaic cell.
Teaching Learning process	Chalk and talk/power point presentation - Basic principles of green chemistry Videos: Various green chemical approaches, Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell.
5	Module-5
Water Chen Water chen Introduction standards), 1 problems or Oxygen Der COD.	mistry, chemical analysis and Instrumental methods of analysis nistry: , sources and impurities in water, Potable water; meaning and specifications (as per WHO Hardness of water, types, determination of hardness using EDTA titration, numerical n hardness of water. Definition of Biological oxygen demand (BOD) and Chemical mand (COD), determination of COD of waste water sample and Numerical problems on
Methods of Volumetric analysis, pri standard soli Instrument Introduction Potentiomet	Chemical Analysis: Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric mary and secondary standards. Requirement of a primary standard solution, units of utions- Definition of normality, molarity, molality, mole fraction, ppm. al methods of analysis: b, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, ry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture
of strong act	id and a weak acid with a strong base) Chalk and talk/power point presentation – principles of titrimetric analysis, requirement
PROFESSION	of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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Department of Electrical and Communication Engineering

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V Semester

Environmental Studies			
Course Code	21CIV57	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	01

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

 Module-1

 Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.

 Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

 Teaching-Learning Process

 Chalk and talk, PowerPoint presentation and animation tools

Module-2

Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools

	Module-3
Environmental Pollu	tion (Sources, Impacts, Corrective and Preventive measures, Relevant
Environmental Acts, Ca	ase-studies): Surface and Ground Water Pollution; Noise pollution; Soil
Pollution and Air Pollu	tion.
Waste Management &	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous
wastes; E-wastes; Indu	strial and Municipal Sludge.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	
	Module-4
Global Environmenta	Il Concerns (Concept, policies and case-studies): Ground water
depletion/recharging, C	limate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem
in drinking water; Rese	ttlement and rehabilitation of people, Environmental Toxicology.

Teaching-Learning Chalk and talk, powerpoint presentation and animation tools Process



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Department of Mechatronics

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V Semester

Process

Environmental Studies			
Course Code	21CIV57	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	01

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
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- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

 Module-1

 Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.

 Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

 Teaching-Learning Process

 Module-2

 Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools	
	Modulo-2	1

	Module-3
Environmental Pol	ution (Sources, Impacts, Corrective and Preventive measures, Relevant
Environmental Acts,	Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil
Pollution and Air Pol	lution.
Waste Management	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous
wastes; E-wastes; Ind	lustrial and Municipal Sludge.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	
	Module-4
Global Environmer	tal Concerns (Concept, policies and case-studies): Ground water
depletion/recharging	, Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem

in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology. Teaching-Learning Chalk and talk, powerpoint presentation and animation tools

1



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I/II Semester

ENGINEERING CHEMISTRY				
Course Code	21CHE12/22	CIE Marks	50	
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50	
Total Hours of Pedagogy	40	Total Marks	100	
Credits	03	Exam Hours	3Hour	

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nemst equation, Numerical problems based on Nemst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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Module-4 Green Chemistry and Alternative energy resources Green Chemistry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur and Carbon (Mansion the impact of these pollutants on environment), Basic principles of green chemistry -brief discussion on 12 principles of green chemistry. Various green chemical approaches - Microwave synthesis, Bio catalysed reaction (only explanation with examples). Solvent-free reactions- advantages and conditions Synthesis of typical organic compounds by conventional and green route; Adipic acid - Conventional synthesis from Benzene, Green synthesis from glucose. 1) Paracetamol- Conventional and Green synthesis from Phenol ii) Industrial applications of Green Chemistry Green fuel: Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and applications in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel cell (H2SO4 as electrolyte). Solar Energy: Introduction, construction, working and applications of photovoltaic cell. Chalk and talk/power point presentation - Basic principles of green chemistry Teaching Videos: Various green chemical approaches, Learning process Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell. Module-5 Water Chemistry, chemical analysis and Instrumental methods of analysis Water chemistry: Introduction, sources and impurities in water, Potable water; meaning and specifications (as per WHO standards), Hardness of water, types, determination of hardness using EDTA titration, numerical problems on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD of waste water sample and Numerical problems on COD. Methods of Chemical Analysis: Volumetric Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric analysis, primary and secondary standards. Requirement of a primary standard solution, units of standard solutions- Definition of normality, molarity, molality, mole fraction, ppm. Instrumental methods of analysis: Introduction, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Potentiometry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base)

Teaching Chalk and talk/power point presentation – principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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Department of Civil Engineering

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V Semester

Process

Environmental Studies			
Course Code	21CIV57	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50
Total Hours of Pedagogy	15	Total Marks	100
Credits	01	Exam Hours	01

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

 Module-1

 Ecosystems (Structure and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.

 Biodiversity: Types, Value; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth, and Deforestation.

 Teaching-Learning Process

 Chalk and talk, PowerPoint presentation and animation tools

 Module-2

 Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

 Natural Dependence of Conservation dependence of Conservation Diserter Memory Process

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools
	M - L-L- 2

	Module-3
Environmental Pollu	tion (Sources, Impacts, Corrective and Preventive measures, Relevant
Environmental Acts, Ca	ase-studies): Surface and Ground Water Pollution; Noise pollution; Soil
Pollution and Air Pollu	tion.
Waste Management &	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous
wastes; E-wastes; Indu	strial and Municipal Sludge.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	
	Module-4
Global Environmenta	al Concerns (Concept, policies and case-studies): Ground water
depletion/recharging, C	limate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem
in drinking water; Rese	ttlement and rehabilitation of people, Environmental Toxicology.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools

1



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VI Semester

	A	LTERNATE BUILD	ING MATERIALS	
Course Code		21CV646	CIE Marks	50
Teaching Hou S)	urs/Week (L:T:P:	2+2+0	SEE Marks	50
Total Hours of	of Pedagogy	40	Total Marks	100
Credits		3	Exam Hours	03
Course obj 1. understand building mat 2. study the 3. Study the 4. understand	ectives: This course d environmental issues erials various masonry block alternative building ma d the alternative building	will enable students due to building materi s, masonry mortar and aterials in the present c ng technologies which	to: als and the energy consur structural behavior of ma ontext. are followed in present or	nption in manufacturing sonry under compression. onstruction field.
Teaching-Le These are sar 1, Blac 2, Reg	arning Process (Gene nple Strategies, which t kboard teaching/Pov ular review of studer	ral Instructions) macher can use to accele werPoint presentation its by asking question	erate the attainment of the is (if needed) ns based on topics cover	various course outcomes. red in the class,
		Modul	e-1	
production Transporta Framed C concepts. F Teaching- Learning Process	and environmen tion Energy for Bui onstruction, Mason Recycling of Industri 1.Blackboard teach 2.Regular review o	tal Implications. Iding Materials; Mai ry Construction. R al and Buildings Was ing/PowerPoint press f students by asking (Embodied Energy in intenance Energy for E esources for Building stes. Biomass Resource: entations (if needed) questions based on topic	n Building Materials: Buildings.BUILDINGS 9 Materials, Alternative s for buildings. cs covered in the class,
		Modul	e-2	
Elements of Elements of of masonry of Fal- G block Structural M mortars, class Uses of maso compressive masonry: F compression	Structural Masonry, M mits' characteristics of s and Stabilized mud b Masonry Mortars: Mo sification of mortars a onry, masonry bonding strength, Strength of F lexure and shear, Ela a elements subjected to	: lasonry materials, requi- bricks, stones, clay bl- lock. Manufacture of s ortars, cementations ma- s per BIS, characteristi t, Compressive strengtl Prisms/wallets and wall astic properties of ma- o axial load.	irements ocks, concrete blocks, sto tabilized blocks. aterials, sand, natural & m cs and requirements of ma a of masonry elements, Fa is, Effect of brick bond on sonry materials and mas	ae boulders, lateriteBlocks, anufactured, types of ortar, selection of mortar. actors affecting a strength, Bond strength of sonry, Design of masonry
Teaching- Learning Process	1.Blackboard tea 2.Regular review	ching/PowerPoint pr of students by askin	esentations (if needed) g questions based on to	pics covered in the class.
	12	Modul	~ 3	
Alternate B Lime, Pozz synthetic, I synthetic, P wastes, Typ wastes, Con	uilding Materials: olana cements, Raw 1 Properties and applicat roperties and applicat bes of industrial and n struction and demoliti-	naterials, Manufacturi ations. Fiber reinforce ions. Building materia nine wastes, Propertie on wastes.	ng process, Properties a ed plastics, Matrix mate als from agro and indust s and applications. Mason	nd uses. Fibers- metal and erials, Fibers organic and rial wastes ,Types of agro nry blocks using industrial

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I/II Semester

ENGINEERING CHEMISTRY					
Course Code	21CHE12/22	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50		
Total Hours of Pedagogy	40	Total Marks	100		
Credits	03	Exam Hours	3Hour		

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nemst equation, Numerical problems based on Nemst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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Module-4 Green Chemistry and Alternative energy resources Green Chemistry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur and Carbon (Mansion the impact of these pollutants on environment), Basic principles of green chemistry -brief discussion on 12 principles of green chemistry. Various green chemical approaches - Microwave synthesis, Bio catalysed reaction (only explanation with examples). Solvent-free reactions- advantages and conditions Synthesis of typical organic compounds by conventional and green route; Adipic acid - Conventional synthesis from Benzene, Green synthesis from glucose. 1) Paracetamol- Conventional and Green synthesis from Phenol ii) Industrial applications of Green Chemistry Green fuel: Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and applications in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel cell (H2SO4 as electrolyte). Solar Energy: Introduction, construction, working and applications of photovoltaic cell. Chalk and talk/power point presentation - Basic principles of green chemistry Teaching Videos: Various green chemical approaches, Learning process Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell. Module-5 Water Chemistry, chemical analysis and Instrumental methods of analysis Water chemistry: Introduction, sources and impurities in water, Potable water; meaning and specifications (as per WHO standards), Hardness of water, types, determination of hardness using EDTA titration, numerical problems on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD of waste water sample and Numerical problems on COD. Methods of Chemical Analysis: Volumetric Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric analysis, primary and secondary standards. Requirement of a primary standard solution, units of standard solutions- Definition of normality, molarity, molality, mole fraction, ppm. Instrumental methods of analysis: Introduction, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Potentiometry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base)

Teaching Chalk and talk/power point presentation – principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base



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Department of Electrical & Electronics Engineering

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V Semester

Process

Environmental Studies					
Course Code	21CIV57	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	1+2+0+0	SEE Marks	50		
Total Hours of Pedagogy	15	Total Marks	100		
Credits	01	Exam Hours	01		

Course objectives:

- To create environmental awareness among the students.
- To gain knowledge on different types of pollution in the environment.

Teaching-Learning Process (General Instructions)

These are sample Strategies; which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Apart from conventional lecture methods various types of innovative teaching techniques through videos, and animation films may be adopted so that the delivered lesson can progress the students in theoretical, applied and practical skills.
- 2. Environmental awareness program for the in house campus
- 3. Encourage collaborative (Group Learning) Learning in the class.
- 4. Seminars, surprise tests and Quizzes may be arranged for students in respective subjects to develop skills.

	Module-1
Ecosystems (Structure	and Function): Forest, Desert, Wetlands, River, Oceanic and Lake.
Biodiversity: Types, Va	lue; Hot-spots; Threats and Conservation of biodiversity, Forest Wealth,
and Deforestation.	
Teaching-Learning Process	Chalk and talk, PowerPoint presentation and animation tools

Module-2

Advances in Energy Systems (Merits, Demerits, Global Status and Applications): Hydrogen, Solar, OTEC, Tidal and Wind.

Natural Resource Management (Concept and case-studies): Disaster Management, Sustainable Mining, case studiesng, and Carbon Trading.

Teaching-Learning Process	Chalk and talk, powerpoint presentation and animation tools	
	M . L. L. O	

	Module-3
Environmental Poll	ution (Sources, Impacts, Corrective and Preventive measures, Relevant
Environmental Acts,	Case-studies): Surface and Ground Water Pollution; Noise pollution; Soil
Pollution and Air Poll	ution.
Waste Management	& Public Health Aspects: Bio-medical Wastes; Solid waste; Hazardous
wastes; E-wastes; Ind	ustrial and Municipal Sludge.
Teaching-Learning	Chalk and talk, powerpoint presentation and animation tools
Process	
	Module-4
Global Environmen	tal Concerns (Concept, policies and case-studies): Ground water
depletion/recharging,	Climate Change; Acid Rain; Ozone Depletion; Radon and Fluoride problem

in drinking water; Resettlement and rehabilitation of people, Environmental Toxicology. **Teaching-Learning** Chalk and talk, powerpoint presentation and animation tools

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Module-5				
Latest Developments	in Environmental Poll	ution Mitigation	Tools (Concept and	
Applications): G.I.S. &	Remote Sensing, Environ	ment Impact Ass	essment, Environmental	
Management Systems,	ISO14001; Environmental S	tewardship- NGOs	. Field work: Visit to an	
Environmental Enginee	ring Laboratory or Green B	uilding or Water T	reatment Plant or Waste	
water treatment Plant;	; ought to be Followed by	[,] understanding c	f process and its brief	
documentation.				
Teaching-Learning	Chalk and talk, power point	presentation and a	animation tools	
Process	Y	F		
Course outcome (Course Sk	cill Set)			
At the end of the course	the student will be able to :			
 CO1: Understand th 	e principles of ecology and e	environmental issu	es that apply to air, land,	
and water issues on	a global scale,			
 CO2: Develop critica 	al thinking and/or observation	on skills, and apply	them to the analysis of a	
problem or question	n related to the environment			
CO3: Demonstrate e	cology knowledge of a comp	olex relationship be	etween biotic and a biotic	
components.				
• • CO4: Apply their e	cological knowledge to illus	trate and graph a p	problem and describe the	
realities that manag	ers face when dealing with o	omplex issues.		
Assessment Details (bo	oth CIE and SEE)			
The weightage of Continuou	is Internal Evaluation (CIE) is 50	% and for Semester	End Exam (SEE) is 50%. The	
minimum passing mark for t	he CIE is 40% of the maximum ma	rks (20 marks out of 5	60). A student shall be deemed	
to have satisfied the academ	ic requirements and earned the c	redits allotted to each	subject/ course if the student	
secures not less than 35% (1	8 Marks out of 50)in the semester	-end examination(SEE	E), and a minimum of 40% (40	
marks out of 100) in the sum	total of the CIE (Continuous Intern	ial Evaluation) and SE	E (Semester End Examination)	
taken together	124			
Continuous Internal Evalua	ition:			
Three Unit Tests each of 20 M	Aarks (duration 01 hour)			
1. First test at the end o	of 5 th week of the semester			
2. Second test at the en	d of the 10 th week of the semester			
3. Third test at the end	of the 15 th week of the semester			
Two assignments each of 10	Marks			
4. First assignment at t	he end of 4 ^m week of the semester			
5. Second assignment a	it the end of 9 th week of the semes	er		
Group discussion/Seminar/q	luiz any one of three suitably plan	ned to attain the COs a	nd POs for 20 Marks	
(duration 01 hours)				
6. At the end of the 13 ^u	week of the semester			
The sum of three tests, two as	ssignments, and quiz/seminar/gro	oup discussion will be o	but of 100 marks and will be	
scaled down to 50 marks				
(to have less stressed CIE, th	e portion of the synabus should no	ot be common / repeate	d for any of the methods of	
the CIE. Each method of CIE	should have a different syllabus p	Section of the course j.		
cit methods /question pa	per is designed to attain the t	interent levels of bi	bom's taxonomy as per the	
outcome defined for the co	uise.			
Somoctor End Evamina	tion			
Theory CEE will be as durt	d by University on you the set of	lad timatable with	nmon question nonors for the	
ubject (duration 01 hours)	a by oniversity as per the schedu	ied unnetable, with con	nmon question papers for the	
Question paper patterns	les s			
ouestion babel battern:				

1. The Question paper will have 50 objective questions.



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Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

Semester VI

Course Code	21ME652	CIE Marks	50
Teaching Hours/Week (L:T:P: S)	3-0-0-0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03

Course objectives:

- To introduce the concepts and principles of solar energy, its radiation, collection, storage and application.
- To understand application aspects of Wind, Biomass, Geothermal, hydroelectric and Ocean energy.
- To examine energy sources and systems, including fossil fuels and nuclear energy, and then focus on other forms of alternate energy sources.

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

- 1. Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Video demonstrations or Simulations.
- 2. Chalk and Talk method for Problem Solving.
- 3. Adopt flipped classroom teaching method.
- 4. Adopt collaborative (Group Learning) learning in the class.
- Adopt Problem Based Learning (PBL), which fosters students' analytical skills and develops thinking skills such as evaluating, generalizing, and analyzing information.

Module-1

Introduction: Energy sources (including fossil fuels and nuclear energy), India's production and reserves of commercial energy sources, need for nonconventional energy sources, energy alternatives, Indian and global energy scenario.

 Solar Radiation & Measurement: Extra-Terrestrial radiation, spectral distribution of extra-terrestrial radiation, solar cadiation, solar radiation at the earth's surface, beam, diffuse and global radiation, solar radiation data.

 Pyrometer, shading ring Pyrheliometer, sunshine recorder, schematic diagrams, and principle of working, actionemeter.

 Teaching 1. Power-point Presentation,

 Learning
 2. Video demonstration or Simulations,

 Process
 3. Chalk and Talk are used for Problem Solving. /White board

Solar Radiation Geometry: Flux on a plane surface, latitude, declination angle, surface azimuth angle, hour angle, zenith angle, solar altitude angle, expressions for the angle between the incident beam and the normal to a plane surface (No derivation) local apparent time, apparent motion of sun, day length, numerical problems.

Solar Thermal Systems: Flat plate collector, Evacuated Tubular Collector, Solar air collector, Solar concentrator, Solar distillation, Solar cooker, Thermal energy storage systems, Solar Pond, Solar Chimney (Tower).

Solar Photovoltaic Systems: Introduction, Solar cell Fundamentals, Characteristics and classification, Solar cell: Module, panel and array construction.

Teaching- 1. Power-point Presentation,

Learning 2. Video demonstration or Simulations,



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Process	3. Chalk and Talk are used for Problem Solving. /White board
	Module-3
Wind Energy	: Properties of wind, availability of wind energy in India, wind velocity and power from wind; major
problems as	sociated with wind power, wind machines; Types of wind machines and their characteristics, horizontal
and vertical	axis windmills, elementary design principles; coefficient of performance of a windmill rotor, design
aspects, num	erical examples.
Energy from	Biomass: Energy plantation, biogas production from organic wastes by anaerobic fermentation,
description of	of bio-gas plants, transportation of biogas, problems associated with bio-gas producti <mark>on, application of</mark>
biogas, appli	cation of biogas in engines, cogeneration plant, advantages & disadvantages.
Teaching-	1. Power-point Presentation,
Learning	2. Video demonstration or Simulations,
Process	3. Chalk and Talk are used for Problem Solving. /White board
	Module-4
Hydroelectri	c plants: Advantages & disadvantages of waterpower, Hydrographs and flow duration curves-
numericals, S	torage and pondage, General layout of hydel power plants- components such as Penstock, surge tanks,
spill way and	draft tube and their applications, pumped storage plants, Detailed classification of hydroelectric plants.
Tidal Power:	Tides and waves as energy suppliers and their mechanics, fundamental characteristics of tidal power,
harnessing ti	dal energy, limitations of tidal energy.
Energy from	ocean waves: Wave energy conversion, Wave energy technologies, advantages, and disadvantages.
Teaching-	1. Power-point Presentation,
Learning	2. Video demonstration or Simulations,
Process	3. Chalk and Talk are used for Problem Solving. /White board
	Module-5
Ocean Thern	nal Energy Conversion: Principle of working, Rankine cycle, OTEC power stations in the world, problems
associated w	ith OTEC, case studies.
Geothermal	energy: Introduction, Principle of working, types of geothermal stations with schematic diagram
Estimates of	Geothermal Power, Nature of geothermal fields, Geothermal resources, Hydrothermal, Resources Geo
pressured re	sources, Hot dry rock resources of petro-thermal systems, Magma Resources-Interconnection of
geothermal	fossil systems, Advantages, and disadvantages of geothermal energy over other energy forms,
Geothermal	stations in the world
Teaching-	1. Power-point Presentation,
Learning	2. Video demonstration or Simulations,
Process	3. Chalk and Talk are used for Problem Solving. /White board
Course outco	me (Course Skill Set)
At the end of	the course the student will be able to :
• Desc	cribe the various forms of non-conventional energy resources.
 App 	ly the fundamental knowledge of mechanical engineering to design various renewable energy systems
 Ana 	yze the implications of renewable energy forms for selecting an appropriate system for a specific
appl	ication
 Disc vario 	uss on the environmental aspects and impact of non-conventional energy resources, in comparison with bus conventional energy systems, their prospects and limitations.



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I/II Semester

ENGINEERING CHEMISTRY					
Course Code	21CHE12/22	CIE Marks	50		
Teaching Hours/Week (L:T:P: S)	2:2:0	SEE Marks	50		
Total Hours of Pedagogy	40	Total Marks	100		
Credits	03	Exam Hours	3Hour		

Course Objectives: The course will enable the students to

CLO1: Impart the basic knowledge of chemistry and its principles involved in electrochemistry, energy storage devices and its commercial applications.

CLO2: Understand the basic principles of corrosion and its prevention, metal finishing and its technological importance

CLO3: Master the knowledge of synthesis, properties and utilization of engineering materials like polymers & Nano materials.

CLO4: Apply the knowledge of Green Chemistry principles for production of chemical compounds. understanding the concepts of alternative energy sources.

CLO5: Understand the basic concepts of water chemistry & theory, basic principle and applications of volumetric analysis and analytical instruments.

Pedagogy (General Instructions):

These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes.

 Lecturer method (L) does not mean only traditional lecture method, but different type of teaching methods may be adopted to develop the outcomes.

2. Show Video/animation films to explain methods of synthesis of nanomaterials.

4. Encourage collaborative (Group Learning) Learning in the class

5. Ask at least three HOTS (Higher order Thinking) questions in the class, which promotes critical thinking

6. Adopt Problem Based Learning (PBL), which fosters students' Analytical skills, develop thinking skills such as the ability to evaluate, generalize, and analyse information rather than simply recall it.

7. Topics will be introduced in a multiple representation.

Show the different ways to solve the same problem and encourage the students to come up with their own creative ways to solve them.

Discuss how every concept can be applied to the real world - and when that's possible, it helps improve the students' understanding.

Module-1

Electrochemistry and energy storage systems:

Electrochemistry: Introduction, EMF of cell, Free Energy, Single electrode potential-Derivation of Nemst equation, Numerical problems based on Nemst Equation (E, E° & Ecell).

Reference Electrodes: Introduction, construction, working and applications of calomel electrode, ion selective electrodes: Introduction, construction, working and applications of Glass electrode, determination of pH using Glass electrode.



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Module-4 Green Chemistry and Alternative energy resources Green Chemistry: Introduction, definition, Major environmental pollutants - Oxides Nitrogen, Sulphur and Carbon (Mansion the impact of these pollutants on environment), Basic principles of green chemistry -brief discussion on 12 principles of green chemistry. Various green chemical approaches - Microwave synthesis, Bio catalysed reaction (only explanation with examples). Solvent-free reactions- advantages and conditions Synthesis of typical organic compounds by conventional and green route; Adipic acid - Conventional synthesis from Benzene, Green synthesis from glucose. 1) Paracetamol- Conventional and Green synthesis from Phenol ii) Industrial applications of Green Chemistry Green fuel: Hydrogen-production (Photo electrocatalytic and photo catalytic water splitting) and applications in hydrogen fuel cells. Construction, working and applications of Methanol-Oxygen fuel cell (H2SO4 as electrolyte). Solar Energy: Introduction, construction, working and applications of photovoltaic cell. Chalk and talk/power point presentation - Basic principles of green chemistry Teaching Videos: Various green chemical approaches, Learning process Self-study material: Atom economy-synthesis of ethylene oxide and methyl methacrylate. Advantages & disadvantages of photovoltaic cell. Module-5 Water Chemistry, chemical analysis and Instrumental methods of analysis Water chemistry: Introduction, sources and impurities in water, Potable water; meaning and specifications (as per WHO standards), Hardness of water, types, determination of hardness using EDTA titration, numerical problems on hardness of water. Definition of Biological oxygen demand (BOD) and Chemical Oxygen Demand (COD), determination of COD of waste water sample and Numerical problems on COD. Methods of Chemical Analysis: Volumetric Analysis: Introduction, principles of titrimetric analysis, requirement of titrimetric analysis, primary and secondary standards. Requirement of a primary standard solution, units of standard solutions- Definition of normality, molarity, molality, mole fraction, ppm. Instrumental methods of analysis: Introduction, Theory, Instrumentation and applications of Colorimetry, Flame Photometry, Potentiometry, Conductometry (Strong acid with strong base, weak acid with a strong base, mixture of strong acid and a weak acid with a strong base)

Teaching Chalk and talk/power point presentation – principles of titrimetric analysis, requirement of titrimetric analysis, Classification of titrimetric analysis, Ostwald's theory of acid-base