KIET GROUP OF INSTITUTIONS

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.TECH 1ST YEAR COURSE BOOKLET

Session 2024-25

Ver. 1.1



Delhi-NCR, Ghaziabad-Meerut Road Ghaziabad-201206

Computer Science and Engineering (CSE)/Computer Science (CS)/ Computer Science and Information Technology (CSIT)/ Information **Technology** (IT)

S No.	Course	Subject Name	Academi	ing (AL)	Credits	
	Type		-	-	-	
			L	1	Р	
1	BS	Calculus for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices /	3	0	0	3
		Environmental Chemistry	2	0	0	2
3	ES	Programming For Problem Solving	3	0	0	3
4	PC	Discrete Structures & Theory of Logic/	3	0	0	3
		Computer Organization & Logic Design				
5	ES	IoT and Embedded Systems/	2	0	0	2
		Design & Realization				
6	ES	Design Thinking	1	0	0	1
Lab/Prac	ctical					
7	BS/PC	Semiconductor Physics and Devices Lab/	0	0	2	1
		Computer Organization & Logic Design Lab				
8	ES	Programming For Problem Solving Lab	0	0	4	2
9	ES	IoT and Embedded Systems Lab/	0	0	2	1
		Design & Realization Lab				
10	PC	Web Designing Lab	0	0	2	1
11	HS	Communication Skills /	0	0	4	2
		Foreign Language				
12	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC
Induction	n					
13	MC	Career Pathway*	0	0	2*	NC
14	MC	Ethics & Professional Competency*	0	0	2*	NC
			15	1	16	23

1st Semester

Design Thinking, IoT and Embedded Systems, Self-Growth, Indian Knowledge System and Web Designing Lab will be evaluated through activity-based assessments

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc. Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

S No.	Course Type	Subject Name	Academ	ing (AL)	Credits	
			L	Т	Р	
1	BS	Linear Algebra for Engineers	3	1	0	4
2	BS	Environmental Chemistry / Semiconductor Physics and Devices	2 3	0 0	0 0	2 3
3	ES	Data Structure	3	0	0	3
4	PC	Computer Organization & Logic Design / Discrete Structures & Theory of Logic	3	0	0	3
5	ES	Design & Realization/ IoT and Embedded Systems	2	0	0	2
Lab/Pra	ctical					
6	PC/BS	Computer Organization & Logic Design Lab/ Semiconductor Physics and Devices Lab	0	0	2	1
7	ES	Data Structures Lab	0	0	2	1
8	ES	Design & Realization Lab/ IoT and Embedded Systems Lab	0	0	2	1
9	ES	Python for Engineers	0	0	4	2
10	HS	Foreign Language / Communication Skills	0	0	4	2
11	ES	Innovation and Entrepreneurship	0	0	2	1
12	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			13	1	18	22

2nd Semester

IoT and Embedded Systems, Innovation and Entrepreneurship, Indian Knowledge System and Self Growth will be evaluated through activity-based assessments.

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.

Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc. . Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3

Computer Science & Engineering (AI)/ Computer Science & Engineering (AI & ML)

1st Semester

S No.	Course Type	Subject Name	Academ	ing (AL)	Credits	
	-712		L	Т	Р	
1	BS	Calculus for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices / Environmental Chemistry	3 2	0 0	0 0	3 2
3	ES	Programming For Problem Solving	3	0	0	3
4	PC	Discrete Structures & Theory of Logic/ Computer Organization & Logic Design	3	0	0	3
5	ES	IoT and Embedded Systems/ Introduction to AI	2	0	0	2
6	ES	Design Thinking	1	0	0	1
Lab/Prac	ctical					
7	BS/PC	Semiconductor Physics and Devices Lab/ Computer Organization & Logic Design Lab	0	0	2	1
8	ES	Programming For Problem Solving Lab	0	0	4	2
9	ES/PC	IoT and Embedded Systems Lab/ Introduction to AI Lab	0	0	2	1
10	PC	Web Designing Lab	0	0	2	1
11	HS	Communication Skills / Foreign Language	0	0	4	2
12	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC
Induction	a					
13	MC	Career Pathway*	0	0	2*	NC
14	MC	Ethics & Professional Competency*	0	0	2*	NC
			15	1	16	23

Design Thinking, IoT and Embedded Systems, Self-Growth, Indian Knowledge System and Web Designing Lab will be evaluated through activity-based assessments

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.
 Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

2nd Semester

S No.	Course Type	Subject Name	Academic Learning (AL)			Credits
			L	Т	Р	
1	BS	Linear Algebra for Engineers	3	1	0	4
2	BS	Environmental Chemistry / Semiconductor Physics and Devices	2 3	0 0	0 0	2 3
3	ES	Data Structure	3	0	0	3
4	PC	Computer Organization & Logic Design / Discrete Structures & Theory of Logic	3	0	0	3
5	PC/ES	Introduction to AI / IoT and Embedded Systems	2	0	0	2
Lab/Prac	tical					
б	PC/BS	Computer Organization & Logic Design Lab/ Semiconductor Physics and Devices Lab	0	0	2	1
7	ES	Data Structures Lab	0	0	2	1
8	PC/ES	Introduction to AI Lab/ IoT and Embedded Systems Lab	0	0	2	1
9	ES	Python for Engineers	0	0	4	2
10	HS	Foreign Language / Communication Skills	0	0	4	2
11	ES	Innovation and Entrepreneurship	0	0	2	1
12	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			13	1	18	22

IoT and Embedded Systems, Innovation and Entrepreneurship, Indian Knowledge System and Self Growth will be evaluated through activity-based assessments

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.

Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.
 Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3

Electronics & Communication Engineering (ECE)

1st Semester

S No.	Course	Subject Name	Academ	ic Learn	ing (AL)	Credits					
	Type										
			L	Т	Р						
	Da		_	-	-						
1	BS	Calculus for Engineers	3	1	0	4					
2	BS	Environmental Chemistry	2	0	0	2					
3	ES	Programming For Problem Solving	3	0	0	3					
4	PC	Computer Organization & Logic Design	3	0	0	3					
5	ES	Design & Realization	2	0	0	2					
6	PC	Intelligent Health Care Systems	1	0	0	1					
7	ES	Design Thinking	1	0	0	1					
Lab/Pra	ctical										
8	ES	Programming For Problem Solving Lab	0	0	4	2					
9	PC	Computer Organization & Logic Design Lab	0	0	2	1					
10	ES	Design & Realization Lab	0	0	2	1					
11	PC	Intelligent Health Care Systems Lab	0	0	2	1					
12	HS	Communication Skills /	0	0	4	2					
		Foreign Language									
13	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC					
Inductio	n										
14	MC	Career Pathway*	0	0	2*	NC					
15	MC	Ethics & Professional Competency*	0	0	2*	NC					
16	MC	Electronics Workshop & PCB Design*	0	0	2*	NC					
			15	1	16	23					

Design Thinking, Self-Growth and Indian Knowledge System will be evaluated through activity-based assessments.

Self Growth: Yoga Activities/NSS/NCC/Sports etc. Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

2nd Semester

S No.	Course	Subject Name	Academic Learning (AL)			Credits
	Type					
			L	Т	Р	
1	BS	Linear Algebra for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices	3	0	0	3
3	ES	Data Structure	3	0	0	3
4	ES	IoT and Embedded Systems	2	0	0	2
5	ES	Explorations in Electrical Engineering	2	0	0	2
Lab/Pra	ctical					
6	BS	Semiconductor Physics and Devices Lab	0	0	2	1
7	ES	Data Structures Lab	0	0	2	1
8	ES	IoT and Embedded Systems Lab	0	0	2	1
9	ES	Python for Engineers	0	0	4	2
10	HS	Foreign Language /	0	0	4	2
		Communication Skills				
11	ES	Innovation and Entrepreneurship	0	0	2	1
12	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			13	1	18	22

IoT and Embedded Systems, Innovation and Entrepreneurship, Indian Knowledge System, and Self Growth will be evaluated through activity-based assessments

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.

Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc. •

Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3.

Electrical and Electronics Engineering (EEE)

1st Semester

S No.	Course Type	Subject Name	Academ	ing (AL)	Credits	
			L	Т	Р	
1	BS	Calculus for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices	3	0	0	3
3	ES	Programming For Problem Solving	3	0	0	3
4	ES	Explorations in Electrical Engineering	2	0	0	2
5	ES	IoT and Embedded Systems	2	0	0	2
6	ES	Design Thinking	1	0	0	1
Lab/Pra	ctical					
7	BS	Semiconductor Physics and Devices Lab	0	0	2	1
8	ES	Programming For Problem Solving Lab	0	0	4	2
9	ES	Explorations in Electrical Engineering Lab	0	0	2	1
10	ES	IoT and Embedded Systems Lab	0	0	2	1
11	HS	Communication Skills /	0	0	4	2
		Foreign Language				
12	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC
Induction	n					
13	MC	Ethics & Professional Competency*	0	0	2*	NC
14	MC	Career Pathway*	0	0	2*	NC
			14	1	16	22

IoT and Embedded Systems, Design Thinking, Self-Growth and Indian Knowledge System will be evaluated through activity-based assessments. Self Growth: Yoga Activities/ NSS/NCC/Sports etc. Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

2nd Semester

S No.	Course Type	Subject Name	Academ	ing (AL)	Credits	
			L	Т	Р	
1	BS	Linear Algebra for Engineers	3	1	0	4
2	BS	Environmental Chemistry	2	0	0	2
3	ES	Data Structure	3	0	0	3
4	ES	Design & Realization	2	0	0	2
5	PC	Emerging Technologies for Engineers	2	0	0	2
6	PC	Digital Logic Design	2	0	0	2
Lab/Pra	ctical					
7	ES	Data Structures Lab	0	0	2	1
8	PC	Emerging Technologies for Engineers Lab	0	0	2	1
9	ES	Design & Realization Lab	0	0	2	1
10	ES	Python for Engineers	0	0	4	2
11	HS	Foreign Language /	0	0	4	2
		Communication Skills				
12	ES	Innovation and Entrepreneurship	0	0	2	1
13	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			14	1	18	23

Innovation and Entrepreneurship, Indian Knowledge System and Self Growth will be evaluated through activity-based assessments. ٠

Self Growth: Yoga Activities/ NSS/NCC/Sports etc.

Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

• Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3

Electrical and Computer Engineering (ELCE)

1st Semester

S No.	Course Type	Subject Name	Academ	Credits		
			L	Т	Р	
1	BS	Calculus for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices	3	0	0	3
3	ES	Programming For Problem Solving	3	0	0	3
4	ES	IoT and Embedded Systems	2	0	0	2
5	ES	Explorations in Electrical Engineering	2	0	0	2
6	ES	Design Thinking	1	0	0	1
Lab/Prac	ctical					
7	BS	Semiconductor Physics and Devices Lab	0	0	2	1
8	ES	Programming For Problem Solving Lab	0	0	4	2
9	ES	IoT and Embedded Systems Lab	0	0	2	1
10	ES	Explorations in Electrical Engineering Lab	0	0	2	1
11	HS	Communication Skills /	0	0	4	2
		Foreign Language				
12	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC
Induction	1					
13	MC	Ethics & Professional Competency*	0	0	2*	NC
14	MC	Career Pathway*	0	0	2*	NC
			14	1	16	22

• IoT and Embedded Systems, Design Thinking, Self-Growth and Indian Knowledge System will be evaluated through activity-based assessments.

Self Growth: Yoga Activities/ NSS/NCC/Sports etc.

 Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

2nd Semester

S No.	Course Type	Subject Name	Academ	ing (AL)	Credits	
			L	Т	Р	
1	BS	Linear Algebra for Engineers	3	1	0	4
2	BS	Environmental Chemistry	2	0	0	2
3	ES	Data Structure	3	0	0	3
4	PC	Computer Organization and Logic Design	3	0	0	3
5	ES	Design & Realization	2	0	0	2
Lab/Pra	ctical					
6	ES	Data Structures Lab	0	0	2	1
7	PC	Computer Organization and Logic Design Lab	0	0	2	1
8	ES	Design & Realization Lab	0	0	2	1
9	ES	Python for Engineers	0	0	4	2
10	HS	Foreign Language /	0	0	4	2
		Communication Skills				
11	ES	Innovation and Entrepreneurship	0	0	2	1
12	PC	Electrical Engineering Workshop	0	0	2	1
13	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			13	1	20	23

• Innovation and Entrepreneurship, Indian Knowledge System and Self Growth will be evaluated through activity-based assessments.

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.

Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.
 Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3

Mechanical Engineering (ME)

1st Semester

S No.	Course Type	Subject Name	Academic Learning (AL)			Credits
			L	Т	Р	
1	BS	Calculus for Engineers	3	1	0	4
2	BS	Semiconductor Physics and Devices	3	0	0	3
3	ES	Programming For Problem Solving	3	0	0	3
4	ES	Explorations in Electrical Engineering	2	0	0	2
5	ES	IoT and Embedded Systems	2	0	0	2
6	ES	Design Thinking	1	0	0	1
Lab/Pra	ctical					
7	BS	Semiconductor Physics and Devices Lab	0	0	2	1
8	ES	Programming For Problem Solving Lab	0	0	4	2
9	ES	Explorations in Electrical Engineering Lab	0	0	2	1
10	ES	IoT and Embedded Systems Lab	0	0	2	1
11	HS	Communication Skills /	0	0	4	2
		Foreign Language				
12	MC	Self-Growth/ Indian Knowledge System	0	0	2	NC
Induction	a					
13	MC	Career Pathway*	0	0	2*	NC
14	MC	Ethics & Professional Competency*	0	0	2*	NC
			14	1	16	22

IoT and Embedded Systems, Design Thinking, Self-Growth and Indian Knowledge System will be evaluated through activity-based assessments. Self-Growth: Yoga Activities/ NSS/NCC/Sports etc. Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc.

2nd Semester

S No.	Course Type	Subject Name	Academ	Credits		
			L	Т	Р	
1	BS	Differential Equations & Complex Integration	3	1	0	4
2	BS	Environmental Chemistry	2	0	0	2
3	ES	Data Structure	3	0	0	3
4	ES	Design & Realization	2	0	0	2
5	PC	Emerging Technologies for Engineers	2	0	0	2
6	PC	Engineering Mechanics	2	0	0	2
Lab/Pra	ctical				-	
7	ES	Data Structures Lab	0	0	2	1
8	ES	Design & Realization Lab	0	0	2	1
9	PC	Emerging Technologies for Engineers Lab	0	0	2	1
10	ES	Innovation and Entrepreneurship	0	0	2	1
11	ES	Python for Engineers	0	0	4	2
12	HS	Foreign Language /	0	0	4	2
		Communication Skills				
13	MC	Indian Knowledge System/Self Growth	0	0	2	NC
			14	1	18	23

• Innovation and Entrepreneurship, Indian Knowledge System and Self Growth will be evaluated through activity-based assessments.

Self-Growth: Yoga Activities/ NSS/NCC/Sports etc.

 Indian Knowledge System: Indian Aesthetics (including Music and Music Instruments)/ Strategic Lessons from Bhagavad Gita/Leadership from Ramayana/Ayurved/Astronomy/ Astrology/Indian Vision for Human Society (Vishva Kalyan thru Vasudhaiva Kutumbkam)/Sanskrit/ Vedic Math/ Classical Dance etc. • Summer Internship (4-week) on Social Problems during summer break after Semester-2 and same will be assessed/evaluated in the Semester-3

Theory Courses Detail Syllabus

Theory Course Code: K24MA101L Theory Course Name: Calculus for Engineers L T P C													
Course Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)/	CSE(AII	ML)/EC	E/EEE/I	ELCE/M	Е			3	1 0	4
Pre-requisite: NA													
Course Objectives:													
1. The objective of thi	s course	is to fam	iliarize tł	ne gradua	te engin	eers with	techniqu	ies of mu	ıltivariate	e analysis	of real	comple	x and
vector functions in o	calculus.												
2. It aims to impart th	e knowle	dge of to	ools from	intermed	diate to a	dvanced	level that	t will en	able the	n to hand	lle com	olex pro	olems
and its applications	so that th	ney would	d find use	eful in the	eir discip	lines.							
Course Outcome: After	er comple	tion of th	ne course	, the stud	lent will	be able to	C						
1. Apply the concept of	of partial	different	iation in a	applicatio	on of hor	nogeneou	us and co	mposite	functions	5.			
2. Apply knowledge o	f partial o	lifferenti	ation in e	xtrema, s	series exp	pansion o	of functio	ns and Ja	acobians.				
3. Construct the transf	ormation	s using tl	he concep	ot of anal	yticity ar	nd harmo	nicity of	complex	function	s.			
4. Employ the concept	t of multi	ple integ	ration to	find the a	area of bo	ounded re	egion.						
5. Apply the concept of vector differentials to study the properties of point functions.													
CO-PO Mapping (Sca	le 1: Lov	v, 2: Me	dium, 3:	High)		_	-						
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	i
C01	2	2	2	-	-	-	-	1	-	-	•	2	
CO2	2	2	2	-	-	-	-	1	-	-	-	2	
CO3	3	2	2	-	-	-	-	1	-	-	-	1	
CO4	3	2	2	-	-	-	-	1	-	-	-	1	
CO5 3 2 2 1 - 1													
Unit 1 Differential Calculus I 09 hours													
Introduction of Limits,	continuit	y and dif	ferentiab	ility for f	unction of	of two va	riables, H	ligher or	der Partia	al derivati	ves, Eu	ler's The	eorem
for homogeneous funct	ions, Tota	al derivat	tive of co	mposite 1	functions	5.	· · · ·	C					
Unit 2		Differe	ential Ca	lculus II								09 ho	ours
Taylor's and Maclaurin	1 expansi	on for fu	inction of	f two vai	riables, J	acobians	, properti	es of Ja	cobian (v	vithout p	oof) H	essian M	latrix,
Maxima & minima for	function	of two va	ariables.							-			
Unit 3		Compl	ex Varia	ble – Dif	fferentia	tion						09 ho	ours
Functions of complex v	ariable, I	Limit, Co	ntinuity a	and differ	rentiabili	ty, Analy	tic functi	ons, Cau	ichy- Rie	mann equ	ations	Cartesia	n and
Polar form), Harmonic	function,	Conform	nal mapp	ing, Mob	ius trans	formatio	n.		5	1			
Unit 4	,	Multip	le Integr	al								09 ho	ours
Evaluation of double in	tegrals, c	change of	f order of	integrat	ion, Cha	nge of va	ariable (d	ouble -ir	tegral).	Applicatio	on of do	uble int	egrals
to find the area of a reg	ion.	U		C	,	e	,		0 /				e
Unit 5		Vector	differen	tiation								09 ho	ours
Scalar point function,	Vector po	oint func	tion, Gra	dient of	a scalar	field, Di	rectional	derivati	ves, App	lication of	of diver	gence, c	url to
solenoidal and irrotation	nal vector	rs respec	tively.										
									Tota	l Lecture	Hours	45 ho	ours
Textbook:												•	
1. B. V. Ramana, Hig	her Engi	neering N	Aathemat	ics, McC	Braw-Hill	l Publish	ing Comp	any Ltd	., 2017				
2. B. S. Grewal, High	er Engin	eering M	athematio	es, Khanı	na Publis	her, 2020	0.						
3. R K. Jain & S R K.	. Iyenger,	Advanc	ed Engin	eering M	athemati	cs, Naros	sa Publisł	ning Hou	se 2017.				
Reference Books:													
1. Dan Hamilton, Cal	culus 1 -	Differen	tiation an	d Integra	ation, Ha	milton E	ducation	Guides 2	2018.				
2. Maurice D. Weir, J	oel Hass	, Frank R	. Giorda	no, Thom	nas' Calc	ulus, Pea	rson, 200	2.					
3. Peter V. O'Neil, A	dvanced	Engineer	ing Math	ematics,	Thomson	n (Cenga	.ge) Learr	ning, 200	7.				
4 F Kreyszig Adva	nced Eng	ineering	Mathema	tics John	n Wilev /	& Sons '	2015						

4. E. Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons, 2015.

Mode of	Evaluatio	n						
Μ	SE			C	A		ESE	Total
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5		
40	40	5	5	5	5	5		
8	80			Best of	4 (20)		100	200

CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.

Theory Course Code:	or Physi	cs and D	evices	L	Т	Р	С							
Course Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)/	CSE(AI	ML)/EC	E/EEE/I	ELCE/M	IE			3	0	0	3
Pre-requisite: NA														
Course Objectives:														
To impart the technica	al aspect	of semic	onductor	Physics	and dev	ices to e	ngineerii	ng gradu	ates so th	nat they a	re able	to	assess	and 3
contribute to the soluti	on of tec	hnical a	nd engine	ering pro	oblems the	hat are b	ased on	broad pr	inciples c	of Physics	s incluc	ling	solid	state
physics, semiconductor	rs, optoel	ectronics	devices a	and Quar	ntum Phy	vsics.								
Course Outcome: Afte	er comple	etion of t	he course	, the stuc	lent will	be able t	0							
1. Illustrate the basic	concept of	of crystal	line mate	rials and	their app	propriate	use.							
2. Apply the fundame	entals of t	basic sem	nconduct	or Physic	cs on trar	isistor an	Id MOSF	EI.						
 Appry the concepts of semiconductor Physics in aspect of solar cent and Zener thoug. Implementing of semiconductor Physics to study various characteristics of optoelectronic devices. 														
 5. Apply the concept of Quantum Physics to study various phenomenon. 														
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)														
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO1	l	PO12	
CO1	2	1	-	-	-	2	2	-	-	2	-		3	
CO2	3	2	-	-	-	2	2	-	-	2	-		3	
CO3	3	2	-	-	-	2	2	-	-	2	-		3	
CO4	3	2	-	-	-	2	2	-	-	2	-		3	
CO5	2	1	-	-	-	-	-	-	-	1	-		2	
Unit 1		Crysta	l Structu	ires								(09 ho	urs
Distinction between cr	ystalline,	Polycry	stalline, a	and Amo	rphous 1	naterials	, Space 1	attice, ba	asis, Unit	cell, Lat	tice pa	ram	eter, s	seven
crystal systems and Fo	urteen B	ravais la	ttices, Di	amond c	rystal str	ucture, I	Packing f	actor (cu	ibic, body	and fac	e), Latt	ice	planes	s and
Miller Indices, Bragg's	law.											-		
Unit 2		Semice	onductor	S					<u>a</u> 1				11 ho	urs
Band Theory of Solids	, Fermi-I	Jirac dis	tribution,	Free cai	rier dens	sity (elec	trons and	d holes),	Conduct	vity of se	emicon	duct	tors, F	ermi
MOSEET I V abaracte	extrinsic	semicon	auctors,	Bipolar j	unction	transisto	r, p-n-p	and n-p-	-n transis	tors, Intr	oauctic	on o	I FEI	and
Unit 3	fishes, C	Somio	nductin	a Dovico	s.							1	00 ho	1180
Solar Cell: Photovoltai	c effect	Construe	tion and	working	s of solar	cell LV	/ charact	eristics	of solar c	ell Conv	ersion	effi	ciency	uis Fill
factor. Applications of	solar cell	s. Photoc	letectors:	Principle	e of photo	odetector	r. Constri	uction an	d working	of photo	odiode	and	PIN d	liode.
Applications of photod	etectors.			11110121	or phot		, comou		a worning	5 of photo				,
Unit 4		Optoe	lectronic	Devices								(08 ho	urs
Light Emitting Diode	(LED): D	birect and	l indirect	band ga	p semico	onductor	s, Electro	on-hole p	oair genei	ation and	l recon	ıbin	ation,	non-
radiative and radiative	recombi	nation ir	semicor	ductors,	Differer	nces betw	veen hon	no and h	ietero jun	ction LE	Ds, Co	nstr	uctior	1 and
working of homo junct	ion LED,	Charact	eristics, q	uantum e	efficiency	y, advant	tages, and	d applica	tions of L	ED.		-		
Unit 5Quantum Mechanics08 hours														
Inadequacy of classica	al mecha	nics, Pla	nck's the	eory of	black bo	dy radia	tion (qu	alitative)	, de-Bro	glie conc	ept of	mat	tter w	aves,
Heisenberg's uncertain	ity princi	ple, Pha	se veloci	ty and g	roup ve	locity, T	1me-depe	endent a	nd time-i	ndepende	ent Sch	rodi	inger	wave
equations, Physical inte	erpretatio	n of wav	e function	n, Particl	e in a on	e- Dimer	nsional be	ox.	Τ.4-	11	TTor	~	45 h	
									1 ota	1 Lecture	e nour	S í	45 110	urs

Textbook:

- Donald A. Neamen, Semiconductor Physics and Devices, 4th Edition, Mc Graw Hill Education, 2012.
 S.M. Sze, Semiconductor Physics and Devices, 3rd Edition, Wiley, 2021
 S.O. Pillai, Solid State Physics, 10th Edition, New Age International Publishers, 2022

Reference Books:

- 1. V.K. Mehta, Principle of Electronics, 12th Edition, S. Chand, 2020
- 2. Ben G. Streetman, Solid State Electronic Devices, 7th Edition, Pearson, 2015.

Mode of	Evaluatio	n									
M	SE			C	Α		ESE	Total			
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5					
30	30	4	4	4	3	4					
6	0			Best of	f 4 (15)		75	150			
CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.											

Theory Course Code:	K24CH	101L	The	eory Cou	irse Nam	ie: Envi	ronment	al Chem	listry		L	Т	Р	С
Course Offered in: CS	E/CS/IT	/CSIT/C	SE(AI)/	CSE(AI	ML)/EC	E/EEE/I	ELCE/M	E			2	0	0	2
Pre-requisite: NA				``````````````````````````````````````	,									
Course Objectives:														
The objective of this co	urse is to	impart t	he techni	ical aspec	ct of Che	mistry aı	nd Enviro	onment S	ciences t	o enginee	ring gi	adu	ates so	o that
they are able to assess	and con	tribute to	the solu	ution of t	echnical	and eng	ineering	problem	s that are	e based o	n broa	d pr	incipl	es of
Chemistry and Environment Sciences.														
Course Outcome: After completion of the course, the student will be able to														
 Apply the knowledge of advanced materials for interdisciplinary applications. Employ the concept of electrochemistry for portable energy devices to provide viable solutions for industrial problems. 														
 Employ the concept of electrochemistry for portable energy devices to provide viable solutions for industrial problems. Apply the insight of environment and resources for sustainable development 														
 Apply the insight of environment and resources for sustainable development. Determine the environment related issues, their impacts and provide the sustainable solutions. 														
4. Determine the environment related issues, their impacts and provide the sustainable solutions.														
CO-PO Mapping (Sca	le 1: Lov	v, 2: Med	num, 5:	Hign)				T			1			
CO-PO Manning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO1	1 1	PO12	
oo rompping	101	10-	100	10.	100	100	10,	100	10,	1010	101			
C01	2	2	1	1	-	1	1	-	-	-	-		1	
CO2	2	2	1	2	-	1	1	-	-	-	-		1	
CO3	2	2	1	1	-	2	2	-	-	-	-		2	
CO4	2	2	1	1	-	2	2	-	-	-	-		2	
Unit 1		Advan	ced Mat	erials foi	r Smart I	Devices						(07 ho	urs
Chemical bonding, Ad	vanced	Materials	structur	re, prope	rties and	l their a	pplicatio	ns: Chro	omo activ	ve materi	als (Li	quic	l crys	tals),
Nanomaterials, Polyme	ric Mate	rials-PA	NI and H	PEDOT i	in sensor	s, PMM	A in sm	art devi	ces, Sust	ainable p	olymei	s (P	LA, I	PGA,
PHBV), Leaching of M	icro-plas	tics.												
Unit 2		Eco-fri	endly Po	ortable F	Energy C	onvertil	ble Devic	ces				1	08 ho	urs
Introduction to Electroc	chemistry	, Galvan	ic Cell, (Green Ba	tteries an	nd their a	applicatio	ons. Phot	tovoltaic	cell: Pro	luctior	1 of	solar g	grade
silicon and its propertie	s, doping	; of silico	on, Dye s	ensitized	solar cel	lls. Gree	en Fuel c	ell: Meth	anol-Ox	ygen fuel	cell, H	lydro	ogen-l	based
fuel cell to decarbonize	the glob	al energy	, storage	and its a	pplication	ns.		<u>a</u>	1 1 1 1			<u> </u>	0.0.1	
Unit 3		Enviro	nmental	Systems	s: The C	hemistry	y of Air,	Soil, and	1 Water			:	U8 ho	urs
Environmental segme	lutonto o	position	and segn	ala and v	Aunosphe	ere. Air $\int C max$	ponutior	1: Introdu Foot and	ction, m	ajor sourc	ES OI a	ir po		n, air
pollutants, Effect of pol	vor. Cro	n numan	s, materi	of deple	tion and	its offect	t Smog	Sulphur	giobal v	hotochen	EI INII ical si	10 al	form	ation
mechanism and its control Water nollution: Properties of water water Pollution Sources water treatment and purification														
technologies Soil nollu	tion: Or	igin and	nature o	of soil so	ources of	soil pol	lution. s	oil nollu	tion and	nlant gro	wth. so	nil n	emedi	ation
techniques.		-5-11 und				con poi		on pond	aon unu	prant BIO				
techniques. Unit 4 Environmental Toxicology & Waste management 07 hours														

Course Booklet (B.Tech 1st year)

Toxicants: Types and sources of environmental toxicants, physiological response to toxicants (Mutagenesis, Carcinogenesis,
Teratogenesis), Case Studies of Toxic Events and Responses. Waste management: Types of waste (e.g., municipal solid waste,
hazardous waste, industrial waste, e-waste, biomedical waste), Waste Management Strategies (e.g., recycling, treatment, disposal),
Remediation Technologies (bioremediation), Environmental Policies and Regulations. Sustainable Development: Concepts and
definition,17 SDGs with a focus on relevant goals, SDG Goals by 2030 (Principles, challenges, global initiative and policies).Total Lecture Hours30 hours

Textbook:

- 1. Rajaram J., Kuriacose J. C., "Chemistry in Engineering and Technology", Vol.1, Tata McGraw-Hill, India, 2018.
- 2. Fahlman B. D., "Materials Chemistry", Germany, Springer Netherlands, 2018.
- 3. Deswal S., "Environmental Studies" Dhanpat Rai & Co., 2012.

Reference Books:

- 1. Hwang N.M., "Non-Classical Crystallization of Thin Films and Nanostructures in CVD and PVD Processes" Springer, Netherland, 2016.
- 2. Billmayer F.W., "Textbook of Polymer Science", 3rd Ed. Wiley, 2007.
- 3. Rajgopalan R. "Environmental Studies" Ed. III, Oxford University Press, 2016.

Mode of Evaluation

Μ	SE			С	Α		ESE	Total			
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5					
20	20	2	2	3	3	3					
4	10			Best of	f 4 (15)		50	100			
CA5: Par	CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.										

Course Offered in: CSE/CS/IT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME 3 0 Pre-requisite: Computer block diagram, Generation of programming languages, Translators, Flowchart Course Objectives: 1 1. Given a computational problem, identify and abstract the programming task involved. 2 Approach the programming tasks using techniques learned and writepseudo-code. 3 0 3. Choosethe right data representation formats based on the requirements of the problem. 4 4 Use comparisons and limitations of the various programming constructs and choose the right one for the task in hand. 5 By learning the basic programming constructs, students can easily switch over to any other language in future. Course Outcome: After completion of the course, the student will be able to 1 Apply programming constructs of C language to solve real-world problems. 2 Use the concepts of looping, branching, and decision-making statements for a given problem. 3. Develop Solutions to problems using modular programming constructs such as functions and recursion. 4 Demonstrate the ability to write C programs using pointers, strings structures and unions. 5 Design a solution to problems using the concepts of pointers and files handling.	
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 4. Demonstrate the ability to write C programs using pointers, strings structures and unions. 5. Design a solution to problems using the concepts of pointers and files handling. CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High) 	
5. Design a solution to problems using the concepts of pointers and files handling. CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)	
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)	
CO-PO PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01	PSO2
CO1 3 3 2 1 2 -	2
CO2 3 3 - 2 2 - - 1 - - 2 -	2
CO3 3 3 - 2 2 1 2 -	2
CO4 3 3 2 2 2 - - 1 - - 2 -	2
CO5 3 3 2 2 2 - 1 - - 2 -	2
Unit 1 Introduction)9 hours
Introduction: Algorithm, Structure of C program, Writing the first C program, Compilation and execution process. Tokens:	Keywords,
Identifier, Variables, Constants, Strings, Character set.	
Operators: Arithmetic, Relational, Equality, logical, Unary, Conditional, Bitwise, Comma, Operator precedence and as	ociativity,
type conversion, and type casting.	
Best Practices in Code writing: Naming Conventions and Importance of Comments to enhance the readability of the prog	ram.
	19 hours

Decision Statements: Conditional Branching statements: if, if-else, if-else-if, switch case. Iterative statements: while, do-while, for loop and Nested loops, Break and continue statements.													
Unit 3	Functions & Recursion			09 hours									
Functions & Recursion: Need t	for function, function declaration /Func	tion prototype, Fun	ction Definition, Function	calling. Passing									
parameter to the Function: Call	by value and call by reference Scope: 1	Block scope, function	on scope. Storage Classes	Auto, register,									
Extern, static, Recursion.		_		_									
Unit 4	Arrays, Strings & Structures			09 hours									
Arrays, Strings & Structures:	Fundamental of Array: One dimension	ion Array, Declara	tion, Initialization. Opera	tions on Array:									
Insertion, deletion, Traversing. P	Passing 1D array to functions, 2-D array	and its operations											
Pointers: Pointer: Introduction,	Pointer declaration, and Pointer Arithm	etic, Pointer and Ar	rays, Pointer to Pointer, Ar	rays of Pointers.									
Applications of pointer: Dynamic memory allocation.													
Unit 5	String and File Handling			09 hours									
String handling: Reading, writi	ing strings, String functions: strlen(), s	strcpy(),strcat(),str	rev (), strcmp(), and their	implementation									
as user-defined. Structure & I	Union: Introduction of Structures: Structu	ructure declaration,	Initialization, Accessing	the member of									
structure. Nested structure and A	array of structure. Passing individual m	embers, Passing the	entire structure. Introduct	ion to Union.									
File Handling: Introduction to file Handling.													
			Total Lecture Hou	rs 45 hours									
Textbook:				·									
1. Herbert Schildt. "TheCompl	eteReferenceC",4thEdition, TMH,2017												
2. Brian W. Kernighanand Der	nnis M. Ritchie, "The C programming l	anguage",2 nd Editio	n, Pearson Education India	a,2015									
3. Let Us C: Authentic guide t	o C programming language - Nineteen	th edition (Decemb	er 2022); BPB Publication	ns, Ansari Road,									
Dariya Ganj													
4. E. Bala Guruswamy, Progra	mming in ANSI C", Eighth edition, TN	1H,2019											
5. Ashok N. Kamthane and An	nit A Kamthane "Programming in C", 3	rd Edition, Pearson	Education,2015										
Reference Books:													
I. B. A. Forouzan, R. F. Gilber	rg, B.G. Geetha, and G. Singaravel, "Co	omputer Science: A	structured Programming										
Approach Using C, 3rd Edi	llion, Cengage, New Deini,2012	II 200 <i>C</i>											
2. H. Cooperand H. Mullish,	"C How to Program" 8th Edition (Esh	ngHouse,2000	.										
Mode of Evaluation	C How to Hogram, sui Euluon (Peol	uary 2015), realson											
MSE	СА	ESE	Total										
MSE1 MSE2 CA1 CA	2 CA3 CA4 (ATT) CA5												
30 30 4 4	4 3 4												
60	Best of 4 (15)	75	150										
CA5: Participation in any Hac	kathon, National/International Activ	ity or Research Pa	per Publication.										

Th	eory Course Code: K24MA102L	Course Code: K24MA102L Theory Course Name: Discrete Structures & Theory of L										
		Logic										
Co	urse Offered in: CSE/CS/IT/CSIT/CSE	(AI)/CSE(AIML)	3	0	0	3						
Pro	e-requisite: NA											
Co	urse Objectives:											
1.	The objective of this course is to familiar	ize the graduate students with the fundamentals of discrete structure	and t	heory	of lo	ogics.						
2.	It aims to apply the theory of inferences	and graphs in solving the advanced technological problems.										
Co	urse Outcome: After completion of the co	purse, the student will be able to										
1.	Acquire knowledge of sets, relations, Pos	set and lattices to solve ordered structures and their relationship pro	blems	3								
2.	Apply fundamental concepts of functions	s and Boolean algebra in logical reasoning and computational abiliti	ies.									
3.	Employ the rules of propositions, theory	of inferences and predicate logic in logical reasoning problems.										
4.	Understand the concepts of algebraic stru	ctures and their applications to apply in critical thinking										
5.	Apply the concept of graph theory in sol	ving shortest path engineering problems.										
CC	-PO Mapping (Scale 1: Low, 2: Mediur	n, 3: High)										

CO-PO Manning	PO1	PO2	PO3	PO4	PO5	P06	PO7	PO8	PO9	PO10	PO11	PO12	
CO-I O Mapping	101	102	105	104	105	100	107	100	107	1010	1011	1012	
CO1	2	1	1	1	-	-	-	1	-	-	-	1	
CO2	2	1	1	-	-	-	-	1	-	-	-	1	
CO3	2	1	1	1	-	-	-	1	-	-	-	1	
CO4	2	2	1	-	-	-	-	1	-	-	-	1	
CO5	2	2	2	-	-	-	-	1	-	-	-	2	
Unit 1		Sets, R	elations,	Poset &	Lattices	;						09 hour	s
Set Theory& Relation Composite Relations, E POSET, Definition & H Sets and Posets: Discu Posets and Hasse diagra	s: Introd quality o Properties ss the all	luction, C of relation of lattic ocation c	Combinat as, Recurs es – Bou or segrega	ion of se sive defin inded, Co ation prol	ts. Relation of the complement	ions: Def relation, nted, Dis ing Set th	inition, (Order of tributed, teory Dis	Dperation relations Modular cuss set	ns on relations on relations on relations of the second se	ations, Pr F & Latt mplete la n a proje	coperties ices: Has attice. Ap ct manag	of relation se Diagra plication gement usi	ns, ım, of ing
Unit 2		Function	ons & Bo	olean A	lgebra							09 hour	s
Functions: Definition, Classification of functions, Operations on functions. Growth of Functions. Boolean Algebra: Introduction, Axioms and Theorems of Boolean algebra, Algebraic manipulation of Boolean expressions. Simplification of Boolean Functions, Karnaugh maps. Application of Boolean Algebra: Discuss one or two case studies of application of Boolean algebra in digital circuit design. Unit 3 Theory of Logics													
Unit 3		Theory	of Logi	rs.								09 hour	ý
Theory of Logics: Proposition, Truth tables, Tautology, Satisfiability, Contradiction, Algebra of proposition, Theory of Inference. Predicate Logic: First order predicate, well- formed formula of predicate, quantifiers, Inference theory of predicate logic. Applications of Predicate Logics: Discuss the case studies like Family- Tree, Water-Jug, Monkey-Banana problems, etc.													
OF Freucate Logics: Discuss the case studies like Family-Tree, water-Jug, Monkey-Banana problems, etc.Unit 4Algebraic Structures09 hours													
Algebraic Structures 09 nours 09 nours 09 nours													
Permutation and Symmetric groups, Group Homomorphisms, Definition and elementary properties of Rings and Fields.													
Applications of Group	Theory	: Coordi	nation of	Robot A	rms in a	Factory,	Allocatir	ig Resou	rces for a	l Commu	nity Garo	len.	
Unit 5		Graph	Theory									09 hour	s
Graphs: Definition an	d termin	ology, R	epresenta	ation of	graphs, 1	Multigrap	ohs, Bipa	artite gra	phs, Pla	nar grapl	ns, Isomo	orphism a	ind
Homeomorphism of gra	phs, Eul	er and Ha	amiltonia	n paths, (Graph co	loring. A	pplicatio	ons of Gi	raphs: D	Discuss of	ne or two	case stud	ies
like Finding shortest pa	th: travel	ling sales	s man pro	blem, Cl	ninese po	stman pr	oblem						
									Tota	Lecture	Hours	45 hour	S
Textbook: 1. Trembley, J.P & R. M 2 nd edition Reprint 2017 2. Swapan Kumar Sarka	Manohar, 7 ar, A Tex	"Discret	e Mathen Discrete	natical St Mathem	ructure v atics, S C	vith Appl Chand Pul	ication to olishing.	o Compu	ter Scien	ce", Tata	McGraw	7 Hill. 199	97
Reference Books:													
1. C. L. Liu, Elements of	of Discret	te Mather	natics: A	Comput	er Orient	ed Appro	oach, Mc	Graw Hil	ll. 4 th edi	tion (Pap	erback 20	017)	
2. Narsingh Deo, Graph	Theory	with App	olications	to Engin	eering ar	nd Comp	ater Scier	nce, PhI	Learning				
3. E.R. Scheinerman, M	lathemati	cs: A Dis	screte Int	roduction	1, Brooks	/Cole, 3 ^r	^a edition						
4. Thomas Koshy, Disc	rete Mati	nematics	with App	olication,	Elsevier	Pub. 200	4						
5. Kenneth H. Rosen, D	Screte N	lathemat	ics and It	s Applica	ations, M	cGraw-F	[1]])l1	- 2017)					
7 B Kolman R C Bus	by and S	S C Ross	Discrete	McGraw - Mathen	HIII, 5 ¹² (ructures	Prentice	(2017) Hall 3 rd	edition				
Mode of Evaluation	oby, and c	J.C. R035	, Discieu			iuctures,	Tientiee	man, 5	cultion				
MSE			CA				ESE		Total				
MSE1 MSE2 CA	A1 CA	2 CA	3 CA	4 (ATT)	CAS	5							
30 30 4	4	4		3	4								
60		Bes	st of 4 (1	5)			75		150				
CA5: Participation in	any Hac	kathon,	National	/Interna	tional A	ctivity or	Researc	ch Paper	· Publica	tion.			

Th	eory Cours	se Code:]	K24EC	101L	I	heory	Course	Name:	Compu	ter Org	anizatio	<mark>1 & Log</mark> i	ic	L	Т	Р	C
Co	urso Offor	od in: CS	E/CS/I	L'CSIT		vesign D/CSE/		FCE/E						3	0	0	3
C0 Pr	urse Offere		E/C5/1	1/0511/	CSE(A	I)/CSE	(AINL)	/ECE/I	LUE					3	U	U	3
	urso Obioo	tivos.															
1	Explore th	a basics c	of digita	1 logic i	ncludin	a numb	ar systa	ns and l	ogic gat	95							
1. 2.	Perform th	ne analysi	s and de	esign of	various	digital e	electroni	c circui	ts.	C 3.							
<u> </u>	Explore th	e knowle	dge of C	Compute	r organi	zation a	and men	nory cor	icepts.								
4.	Work in a	team to d	lemonst	rate an a	pplicati	on of di	gital cire	cuits by	engagin	g in sel	f-learning	g.					
Co	urse Outco	me: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to								
1.	Apply the	basics of	binary a	arithmet	ic and	codes ir	n digital	system	design.								
2.	Design co	mbinatior	nal logic	circuits	using E	Boolean	function	ns and g	ate-leve	l minim	ization						
3. 4	Design see	quential lo	ogic circ	cuits, inc	luding l	atches,	flip-flop	os, regis	ters, and	counte	rs.	I/O avata					
4. 5	Understan	d memory	er organ	ization,	inciudii rache ai	ng bus a nd virtu	al memo	ure, pro	cessor o	rganiza	non, and	I/O syste	ems.				
CC		oing (Scal	e 1: Lo	\mathbf{w} . 2: M	edium.	3: High	ai menic	Jiy.									
		ing (beu		.,													
M	o-PO apping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	502
С	01	3	3	2	2	1	1	-	-	-	-	-	-		-		-
С	02	3	3	2	2	1	1	-	-	-	-	-	-		2		-
С	03	3	3	2	2	1	1	-	-	-	-	-	-		2		-
С	04	3	3	2	2	2	2	-	-	-	-	-	-		-		-
CO5 3 3 2 2 1 1 - - - - 2 -														-			
Un	it 1			Digita	al Desig	n and H	Binary N	Number	S							09 ho	ours
Bir	nary Arithm	etic, Nega	ative Nu	mbers a	nd their	Arithme	etic, Flo	ating po	int repre	esentatio	on, Binary	V Codes,	Cyclic Co	odes.	Mul	tiplic	ation:
Sig	ned operan	nd multipl	lication,	Booth'	s algori	thm an	d array	multipl	ier. Div	ision aı	nd logic	operation	ns. Floati	ing p	point	arith	metic
ope	eration, IEE	E Standar	d for Fl	loating P	<u>Point Nu</u>	mbers		•.									
Un	1t 2		D 1	Com	Dination	al Logi	<u>c Circu</u>	its			1 000 :	1: 6:	<u> </u>	1	1 .	09 ho	ours
M1 Th	nterm and Γ	Maxterm,	Boolean to four	n Algeb	ra, Reali	ization	of Boole	ean Fun	ctions, S McClus	SOP and ky Mot	POS sin	nplificati	on, Gate	-leve	el mii	nmiz	ation:
Ad	der-Subtrac	tor Look	ahead	carries a	s, uon t idders C	ode Co	nverters	Parity	General	tors and	l Checker	rs Decin	nal Adder	r Bi	narv	Multi	nlier
Ma	ignitude Co	mparator,	Decode	ers, Enco	oders, M	lultiplex	kers, Ari	thmetic	& logic	unit de	sign.	., 200		, 21	j		.p,
Un	it 3	_ _		Seque	ential L	ogic Ci	rcuits		<u> </u>		0					10 ho	ours
Sec	quential Cir	cuits, Stor	rage Ele	ements:	Latches,	Flip Fl	ops, An	alysis o	f Clocke	d Sequ	ential circ	cuits, stat	e reducti	on a	nd as	signn	nents,
des	sign procedu	ure. Regis	ters and	Counte	rs: Shift	Registe	ers, Ripp	ole Cour	nter, Syn	chrono	us Counte	er, Other	Counters	5.			
Un	it 4			Basic	s Of Co	mputer	· Organ	ization	And In	put/Ou	tput					09 ho	ours
Fu	nctional uni	ts of digit	al syste	m and th	neir inte	rconnec	tions, b	uses, bu	s archite	ecture, t	ypes of b	uses and	bus arbit	ratio	n. Re	egiste	r, bus
and	l memory t	ransfer. F	rocesso	or organi	ization,	general	register	rs organ	ization,	stack c	organizati	on and a	ddressin	g mo	odes.	Perip	heral
dev	/1ces, I/O 1	nterface,	I/O po	rts, Inte	errupts:	interrup	ot hardv	vare, ty	pes of a	interrup	ts and e	xception	s. Modes	s of	Data	Tra	nsfer:
Pro	igrammed I	O, interru	ipt initia	ated I/O	and Dir	ect Mer	nory Ac	cess., I/	O chann	lets and	processo	rs.					
Un	it 5			Mem	ory						<u> </u>			~		08 ho	urs
Ва	sic concept	and hiera	rchy, se	micondu	ictor RA	M men	nories, 2	2D & 2	1/2D me	mory of	rganizatio	on. ROM	memorie	es. C	ache	mem	ories:
COI	icept and de	esign issue	es & pei	riorman	ce, addre	ess map	ping and	1 replace	ement, v	irtual r	nemory:	Total	mplemen		n ma	15 ha	
Та	rthooks											Total	Lecture	поц	rs	45 110	ours
1	Anand Ku	mar Fun	damente	als of Di	aital Cir	ouits"	рні ∕th	2016									
1. 2.	M Morris	Mano. Di	gital Lo	is of Di	Comput	ter Desi	gn". Pea	12010 . arson. 6^{t}	^h . 2020.								
3.	3. Carl Hamacher, Zvonko Vranesic, Safwat Zaky, Naraig Manjikian, "Computer Organization and Embedded Systems", Tata																
	McGraw I	Hill, 6 th , 20	012.				U	5		Ĩ	C						
Re	ference Bo	oks:															
1.	M Morris	Mano, "E	igital D	esign: V	With an	Introduc	ction to	the Veri	log HDl	L and S	ystem Ve	rilog", Pe	earson, 6 th	^h , 20	18.		
2.	Charles H	Roth and	Larry L	. Kinney	, "Analo	og and I	Digital E	lectroni	cs", Cen	gage Le	earning, 2	019.					
3.	Volnei A.	Pedroni,	"Circuit	Design	with VI	HDL", N	MIT Pre	ss, 3 rd , 2	2020.								
4.	Brown S.	and Zvon	ko Vran	nesic, "F	undame	ntal of I	Logic wi	ith Veri	log Desi	gn", Ta	ta McGra	w Hill, 1	st , 2003.				

Mode of Evaluation MSE CA														
MSE CA ESE	Mode of Evaluation													
	Total													
MSE1 MSE2 CA1 CA2 CA3 CA4 (ATT) CA5														
30 30 4 4 4 3 4														
60 Best of 4 (15) 75	150													

CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.

Theory Corre	a Calar	VOADN	1011			Connec	Norma	IoT are	l Ersha	ddod Com	toma		т	T	р	C
Course Offer	se Code: . ad in: CS	KZ4EN	IUIL D/COIT		DICSE	Course	Name:	101 and	I Embe	aaea Sys	tems		L 2	1	P 0	
Course Offer	$\frac{ea}{NA}$	E/CS/1	1/0511	/CSE(A	1)/CSE	(AIML)	/ECE/I	LEE/EL	CE/MI				2	U	U	2
Course Object	tives.															
1 The course	e aims to	provide	exposu	re to the	annlica	tions of	IoT in a	mart cit	ties and	industria	annlicat	tions				
2 It aims to	train the s	students	to the h	asic cor	cents of	f the Em	bedded	C	lies and	maastina	appnea					
2. It aims to	train the	students	to the b	asic cor	cepts of	f the Cou	ntroller	С.								
J. It anns to	uani ine s	med to c	to the o	students	hands	on evne	rience v	with the	Softwar	e and Ha	rdware o	oncents				
4. This course	me· Afte	r compl	etion of	the cou	rse the	student y	will be	able to	Softwar			oncepts.				
1 Understan	d the basi	ic conce	nts of se	ensors a	nd trans	ducers	will be									
2 Understan	d basics of	of ember	ded sv	stem and	1 differe	nt IoT h	oards									
2. Onderstan	ic operati	ons and	nrograf	nming t	echniqu	es of Io	T device	26								
J. Apply bas	art techno	logy kn	owledge	throug	h case s	tudies										
CO-PO Man	bing (Scal	le 1: Lo	w. 2: M	edium.	3: High	<u>iuuies.</u> 1)										
CO-PO Monning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	DS	502
Mapping															13	02
CO1	2	-	-	2 2 2 2 - 2												
CO2	2	-	2	-	2	2	2	-	2	-	-	2		-		2
CO3	3	-	3	2	3	2	2	-	2	-	-	2		-		3
CO4	3	2	3	3	3	2	2	-	2	-	-	2		-		3
Unit 1			Sensi	ng Dev	ices & T	Fransdu	icers				-	-		0)8 ho	urs
Sensors & Tra	insducer:	Definiti	on, Typ	es & sel	ection c	riterion	of sens	ors, Cla	ssificati	on of Ser	isors & T	Fransduce	er bas	sed or	n prin	ciple
of operation, F	Fundamen	tals & A	Applicat	ions of l	Potentio	meter, F	Fundame	entals &	Applic	ations of	strain ga	uge.				
Unit 2			Emb	edded S	ystems	Fundar	nentals							()6 ho	urs
Introduction t	o Embed	ded C:	Interfac	cing Ba	sics, Di	gital I/O	D, Anal	log I/O,	Differe	ences bet	ween sta	andard C	and	Eml	bedde	ed C,
Introduction to) Arduino	(ATme	ga328P), Ardui	no boar	d compo	onents a	nd arch	itecture,	Introduc	tion to R	aspberry	P1 5,	, Unde	erstar	iding
GPIO pins and	i their mo	des, inte		DHIII	with A	raumo.									18 ho	iire
Introduction to	o IoT in 1	Modern	Industr	v Appli	cations	Basic (Ineratio	ns of Ic	T Basi	cs of FS	P 8766 r	rogramn	ning	Intro	ducti	urs on to
Blynk IoT In	terfacing	with Di	fferent f	vnes of	Sensor	s Touch) Senso	r Alcoh	ol Sens	or $(MO)^2$	1 8200 p 3) LPG	Sensor ()	mg, MΟ θ	inuo 5) Re	lav 1	light
Dependent Re	sistor (LE	DR). IR (Infrared	1) Senso	ors and H	PIR (Pas	sive Inf	rared) S	ensors.	or (m q .	<i>),</i> 1			<i>)</i> , ite	1uj, 1	218110
Unit 4	Unit 4 Smart Sensor Technologies 08 hours															
Intelligent Sen	sors: Gen	eral Stru	ucture o	f smart s	sensors	& its con	mponen	ts, Case	study o	f Air Qua	lity Mon	itoring S	ysten	n, Cas	se stu	dy of
Soil Health M	onitoring	System,	Case st	udy of V	Water Q	uality N	Ionitori	ng Syste	em.		•	C	-			•
											Total	Lecture	Hou	rs 3	30 ho	urs
Textbook:																
1. Raj Kam	al, "Intern	net of Th	ings: Aı	chitectu	ire and I	Design P	rinciple	s", McG	iraw Hil	l Educati	on (India) Private	Limi	ted C	HEN	NAI.

2. Waldemar Nawrocki, "Measurement Systems and Sensors", Artech House Boston, London.

3. K. Krishnaswamy and S. Vijayachitra, "Industrial Instrumentation", New Age International Publishers.

4. D. Patranabis, "Sensors and Transducers", PHI Learning Pvt. Ltd. Delhi.

Reference Books:

- 1. Murty D.V.S, "TRANSDUCERS AND INSTRUMENTATION", 2ND EDN, PHI.
- 2. Rajkumar Buyya and Amir Vahid Dastjerdi, "Internet of Things: Key Applications and Protocols" Elsevier.
- 3. "Internet of Things: A Hands on approach" by Arsheep Bahga and Vijay Madisetti., Orient Blackswan Private Limited New Delhi 2.
- 4. Pethuru Raj and Anupama C. Raman. "The Internet of Things: Enabling technologies, platforms, and use cases". Auerbach Publications.
- 5. "The Internet of Things: Do-It-Yourself at Home Projects for Arduino, Raspberry Pi and Beagle Bone Black" by Donald Norris, McGraw-Hill Education TAB.

Mode of	Evaluatio	n						
Μ	SE				ESE	Total		
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5		
20	20	2	2	3	3	3		
4	0			Best of	f 4 (10)		50	100

CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.

Theory Cours	se Code:	K24MF	2101L	Г	heory	Course	Name:	Design	& Real	ization			L	Т	Р	С	
Course Offer	ed in: CS	E/CS/I	Г/CSIT/	/ECE/E	EE/EL	CE/ME		0					2	0	0	2	
Pre-requisite:	: NA																
Course Object	tives:																
1. To familia	arize stude	ents witl	n the mo	dern tec	hnologi	ies used	in indu	stries.									
2. To realize	the funda	amentals	s of Con	puter A	ided De	esign &	digital r	nanufac	turing.								
Course Outco	ome: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to									
1. Create 2D	and 3D r	nodels u	ising Co	mputer	Aided I	Design s	oftware		C								
2. Apply 3D	modellin	g techni	ques and	1 S I L II	le prepa	aration I	or addit	ive man	uracturi	ng.							
4 Develop e	ngineerin	g comp	onents ii	sing CN		⁻ machi	ne										
СО-РО Март	oing (Scal	le 1: Lo	w. 2: M	edium.	3: High	1)	ne.										
CO-PO PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01																	
Manning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	502	
mapping															10	02	
CO1	2	-	2	-	2	-	-	-	2	2	1	3		-		-	
CO2	2	-	2	2 - 2 2 2 1 3													
CO3	1	-	1	1 - 2 2 2 1 3													
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$																-	
Unit 1			Com	puter-ai	ded De	sign								1	l2 ho	urs	
First and third	angle pro	ojection	. Orthog	raphic I	Projectio	on: proje	ection o	f point,	Projecti	on of sol	ids, Prin	ciples of	isom	etric	proje	ction	
isometric scale	e –Isomet	ric proje	ections c	of simple	e solid v	with Aut	toCAD	3D inter	face. M	orpholog	y of Desi	ign, mapj	ping	of des	sign p	bhase	
with CAD fun	ctions, pr	oduct cy	cle com	puter-ai	ded des	ign.											
Unit 2	6 05		CAD	for 3D	Printin	<u>g</u>						1		()6 ho	urs	
CAD Modellin	ng for 3D	printing	: Introdu	f_{1}	3D prii	nting, 31) Scann	ing, and	digitiza	ition, AM	Softwar	e: data fo	rmat	s, Cre	eating	STL	
rasterization r	ses and in part Orign	tation a	nd supp	ort gene	ration	sneing:	-unitori	n nat ia	yer she	ing, adap	sive sitch	ing, Proc	ess-p	path g	genera	mon:	
Unit 3		tation, a	3D P	rinting	1411011.									0)6 ho	urs	
Liquid-based	3D Printi	ng: Pho	to Polvi	nerizati	on - Pri	nciple a	and wor	king of	stereoli	thography	v appara	tus (SLA) bas	sed 3	D pri	nting	
process; Appli	ications; l	Post Pro	cessing.	Solid g	ground of	curing (SGC). S	Solid sta	te 3D P	rinting: I	Basic Pri	nciple an	d wo	orking	g of F	used	
deposition mo	delling (I	FDM) p	rocess a	nd lami	nated of	bject m	anufactu	uring (L	OM) pr	ocess; Po	st Proce	ssing, Ap	plica	ations	s. Pov	vder-	
based 3D print	ting: Princ	ciple and	d workir	ng of Sel	lective I	Laser Si	ntering	(SLS) pi	ocess; A	Application	ons; Post	Processi	ng.				
Unit 4			Com	puter A	ided M	anufact	uring							0)6 ho	urs	
Introduction to	o CNC M	achinin	g, Adva	ntages a	nd limi	tations of	of CNC	machin	ing, Ty	pes of Cl	NC mach	ines, Co	mpoi	nents	of a	CNC	
machine (e.g.	controlle	er, spino	dle, axe	s, ATC), CNC	machin	ne conf	iguratio	ns (e.g.	, 3-axis,	5-axis).	CNC Pr	ogra	mmir	ng Ba	asics:	
Introduction to	G-code	and M-c	ode pro	grammi	ng & its	basic a	pplication	ons.									

									Total Lecture H	ours	30 hours			
Tex	tbook	K:												
1.	Engir	neering G	raphics &	& Design	, P. S. Gi	11.								
2.	Com	puter-Aide	ed Grapł	nics and l	Design, E	Daniel L. Ryan								
3.	Com	puter-Aide	ed Desig	n and Ma	anufactur	ing by M. Groo	ver							
Ref	erenc	e Books:												
1.	Engineering Graphics With AUTOCAD, Kulkarni D.M													
2.	. An Introduction to 3D Printing by Victoria Zukas and Jonas A. Zukas													
3.	. Computer Aided Manufacturing, P.N. Rao, N.K. Tewari, T.K. Kundra													
Mo	de of	Evaluatio	on											
	M	SE			С	A		ESE	Total					
Μ	SE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5							
	20	20	2	2	3	3	3							
	4	0			Best of	² 4 (10)		50	100					
CA	5: Pai	rticipatio	n in any	Hackat	hon, Nat	ional/Internatio	onal Activ	ity or Research	Paper Publication.					
CA	4 5: Pai	0 rticipatio	n in any	Hackat	Best of	50 ity or Research	100 Paper Publication.							

Theory Course Code: K24AI101L Theory Course Name: Introduction to AI Course Offered in: CSE(AI)/CSE(AIML)													С
Course Offered in: CSE(AI)/C	SE(AIML)									2	0	0	2
Pre-requisite: NA													
Course Objectives:													
The objective of this course is t	o provide stu	idents wit	h a soli	d unders	standing	of AI	principles	and app	olications	, gaiı	1 insi	ghts i	into
robotics, computer vision and	natural lan	guage pro	ocessing	, explo	re ethic	cal cons	sideration	s, and a	acquire h	nands	s-on	skills	in
implementing AI solutions for re	al-world sce	narios.	. 1 .	.11.1	11 /								
Course Outcome: After comple	etion of the co	ourse, the	student	will be a	able to		1 11	()	() 1 .			•••	•
1. To understand the fundam	ental concer	ots, theori	es, and	techniq	ues in	artificia	I intellig	ence (Al	I), and a	ttain	prof	icienc	cy in
To understand different met	search algori	unns, neu	fistics, a	nu game	e playing	g strateg	gies.	hnianaa	to continu	and		. dor	
2. To understand different men	nous of know	leuge lepi	esentati	on and i	earning	to apply	these tec	iniques	to capture	anu	uumz	le uoi	nam-
3 Develop insights into the ch	allenges and	techniques	associa	ted with	annlyir	ng AI of	Natural I	anguage	Processi	ng (N	II P)	Com	nuter
Vision and Robotics	anenges and	cennques	5 associa		appiyii	Ig AI OI		anguage	11000331	ing (ir	(LI),	Com	puter
4 Acquire knowledge of the et	hical conside	rations rel	ated to A	AI enco	mnassin	o fairne	ss transn	arency a	nd accou	ntahi	lity a	nd an	alvze
the societal impacts of AI technologies to develop a comprehensive understanding of responsible AI practices and futuristic													ristic
domains.	domains.												
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)													
СО-РО								_			_		
Mapping PO1 PO2	PO3 PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	SO2
	3 3	3			2	2		3	3		2		2
	3 3	3			2	2		3	3		2		2
	3 3	3			2	2		3	3		2		2
CO3 3 3	3 3	3			2	2		3	3		2		2
CO4 3 3	3 3	3			2	2		3	3		2		2
Unit 1	Introducti	on to AI									()8 ho	urs
Discussion on Course outcome	s and Introd	luction to	AI, Mo	otivation	and ro	ole of A	rtificial 1	Intelliger	nce, AI f	rom	Turir	ng Te	est to
Humanoids, Various approaches	s to AI, AI co	oncept, ter	minolog	gy and a	pplication	on area,	Agents a	nd Enviro	onments,	Туре	es of A	AI: Se	earch
Based System, Rule Based system	Based System, Rule Based system, Learning Based System, Adversarial search and Games: Optimal Decisions in games, min-max												
algorithm, alpha-beta pruning, C	Constraint sat	isfaction p	oroblem:	Constra	aint Prop	pagation	i, Backtra	cking se	arch, loca	il sea	rch.		
Unit 2	Understan	ding Data	a									Jo ho	urs
History Of Data, Data Storage And Importance of Data and its Acquisition, The Stages of data processing, Data visualization												on	
Unit 3	Domains of	of AI									()8 ho	urs

Overview	Overview of ML: Supervised Learning, Unsupervised Learning, Overview of NLP : Speech recognition, Natural language												
understan	understanding, Natural language generation, Machine Translation, Overview of Computer vision: image formation, image												
classifica	tion, imag	e detecti	ion, Over	view of A	ANN			-				•	
Unit 4			U	ncertaint	ty In AI And its	s Emergin	g Technologies			()6 ho	urs	
Uncertair	nty in AI:	condition	nal indep	endence,	Baye's rule, nai	ive baye's	model, Simple decis	sion: utility function, o	lecisio	n ne	twork	ζ,	
Reinforce	ement lear	ning: Ac	tive lear	ning, Pas	sive learning, M	Iodel Base	d Learning. Emergi	ng Technologies: Ger	nerativ	e Ad	versa	rial	
Networks	s, Chatbot,	Genera	tive AI: (Overview	-ChatGPT, Ethi	ics of AI, f	uture of AI.						
								Total Lecture	Hour	s 3	80 ho	urs	
Textbool	Textbook:												
1. NOR	. NORVIG, P. R. (2021). Artificial intelligence: A modern approach, 4th edition, Pearson												
Reference	Reference Books:												
1. Raje	1. Rajendra Aketkar, "Introduction to Artificial Intelligence" (E-book)												
Mode of Evaluation													
Μ	SE			С	Α		ESE	Total					
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5							
20	20	2	2	3	3	3							
4	0			Best of	f 4 (10)		50	100					
CA5: Pa	rticipatio	n in any	Hackat	hon, Nat	ional/Internati	onal Activ	vity or Research Pa	aper Publication.					
Theory (Theory Course Code: K24EC102L Theory Course Name: Intelligent Health Care System L T P C												
) CC 1 !	ECE			J		0	<u> </u>	2	Δ	0		

Cou	Jourse Onered In: ECE 2 0 0 2															
Pre	Pre-requisite: NA															
Cou	rse Objec	tives:														
1.	Explore F	undament	als of H	ealth Ca	are and t	he Role	of Intel	ligent S	ystems	in Healt	h Care Sy	/stem.				
2.	Realize He	ealth Care	e Techno	ologies v	with Em	erging 7	Frends a	nd Inno	vations							
Cou	rse Outco	me: After	r comple	etion of	the cour	se, the s	student v	will be a	able to							
1.	Apply the	Fundame	ntals of	Health	Care Sy	stems.										
2.	Explore th	e Role of	Intellig	ent Syst	ems in H	Health C	Care.									
CO	-PO Mapp	oing (Scal	le 1: Lo	w, 2: M	edium,	3: High)									
CC Ma)-PO apping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	P	'SO2
CC	01	3	3	2	2	1	1	-	1	-	-	-	1			3
CC	CO2 3 3 2 2 1 1 - - - 1 3 Unit 1 Introduction to Intelligent Health Care Systems Introduction to Intelligent Health Care Systems 10 hours															
Uni	Unit 1 Introduction to Intelligent Health Care Systems 10 hours															
Cell	Cell and its structure – Resting and Action Potential – Nervous system and its fundamentals - Basic components of a biomedical															
system- Cardiovascular systems- Respiratory systems -Kidney and blood flow - Biomechanics of bone -Biomechanics of soft tissues -																
Basi	Basic mechanics of spinal column and limbs -Physiological signals and transducers - Transducers – selection criteria – Piezo electric,															
ultra	asonic tran	sducers -	Temper	ature me	easurem	ents - Fi	iber opti	c tempe	erature s	ensors.						
Uni	t 2			Biom	edical I)evices	and Fut	ure Tr	ends						05 h	ours
Bio	medical De	evices and	Future	Trends:	Demons	stration	and wor	king me	echanisn	n of Bio	medical d	levice: Pa	atient Mo	nitor wh	ile co	vering
esse	ntial physi	ology par	ameters	such as	ECG, B	P, Hear	t Rate et	c. Futur	e Trend	s and In	novations	: Emergi	ing techno	ologies i	n inte	lligent
heal	thcare syst	ems, Rese	earch di	rections	and fut	ure poss	ibilities.							1		
												Total .	Lecture	Hours	15 h	ours
Tex	tbook:							_								
1.	Leslie Cro	mwell, B	iomedic	al Instru	imentati	on and I	Measure	ement, F	Prentice	Hall of	India, Ne	w Delhi,	2007.			
2.	M. Arumu	igam, 'Bio	o-Medic	al Instru	imentati	on', An	uradha .	Agencie	es, 2003.		D 11 '		2002			
<u>3.</u>	Khandpur	R.S, Han	dbook o	I Biome	edical In	strumer	itation, ,	I ata M	IcGraw-	Hill, Ne	ew Delhi,	2 Edition	n, 2003.			
	Ichn G. W	UKS: Vahatar M	adiaal I	octrumou	ntation A	nnligati	on and I	Dagian	John W	lowand	sons Nor	vVork 1	000			
1. 2	Duane Kni	udson Fu	ndamen	tals of R	iomech	application	on and I pringer '	2nd Edi	tion 200	10 and 17	50115, 1989	w 101K, 1	770.			
2.	Sub Sano	Gurupur	. Varadr	ai P., Ta	nik. Mu	rat M., F	Health C	are Svst	tems. Te	chnolog	y and Teo	chniques.	Springer	. 1st Edi	tion. 2	2011.

Course Booklet (B.Tech 1st year)

- 4. Ed. Joseph D. Bronzino, The Biomedical Engineering Hand Book, Third Edition, Boca Raton, CRC Press LLC, 2006.
- 5. Joseph J.carr and John M. Brown, Introduction to Biomedical Equipment Technology, John Wiley and sons, New York, 4th Edition, 2012.

Iode of	Evaluatio	n						
Μ	SE			С	Α		ESE	Total
MSE1	MSE2	CA1	CA2	CA3	CA4 (ATT)	CA5		
20	20	2	2	3	3	3		
4	0			Best of	f 4 (10)		-	100

CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.

Course Offered in: ECC/EEE/ELCE/ME 2 0 0 2 Pre-requisite: NA Course Objectives: 2 0 0 2 Implement different circuits and verify circuit concepts for DC and AC circuits. 2 0 0 2 Pre-requisite: NA Course Objectives:	Theory Cours	se Code	K24EN	102L	Г	heory (Course	Name [.]	Explor	ations i	n Electric	ral		L	Т	Р	С
Course Offered in: ECE/EEE/ELCE/ME 2 0 0 2 Pre-requisite: NA Course Objectives:	Theory Court	se coue.		IVEL	I	Incory	ring	i (unic:	Lapion		Liccur	cui		L	-	•	
Pre-requisite: NA Course Objectives: 1. Implement different circuits and verify circuit concepts for DC and AC circuits. 2. Prove the various theorems used to reduce the complexity of electrical network. 3. The operation and characteristics of AC machines and DC machines. Course Outcome: After completion of the course, the student will be able to 1. Understand the concepts of electric circuit solutions with DC supply using mesh-nodal analysis and Network Theorems. 2. Apply the equivalent circuit and performance of single-phase AC transformer 3. Analyze the equivalent circuit and performance of single-phase AC transformer 4. Illustrate the working principle of induction motors, synchronous machines and DC machines. CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High) CO1 2 2 2 - - - 2 - CO3 3 2 2 - - - - 2 - - CO4 3 2 2 - - - - 3 - - CO3 3 3 2 2 - - - <td>Course Offer</td> <td>ed in: EC</td> <td>CE/EEE</td> <td>/ELCE/</td> <td>'ME</td> <td>8</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2</td> <td>0</td> <td>0</td> <td>2</td>	Course Offer	ed in: EC	CE/EEE	/ELCE/	'ME	8	8							2	0	0	2
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4. Illustrate the working principle of induction motors, synchronous machines and DC machines. CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High) CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PS01 PS02 CO1 2 2 2 2 - - - - 2 - - CO2 3 2 2 2 - - - - - 2 - - CO3 3 3 2 2 - - - - - 3 - - CO4 3 3 2 2 - - - - - 3 - - - - - - - - 0 - - - - - - - - - - 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	3. Analyze the	he equiva	lent circ	uit and	perform	ance of	single-p	hase A	C transfo	ormer	~						
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)CO-PO Mapping MappingPO1PO2PO3PO4PO5PO6PO7PO8PO9PO10PO11PO12PS01PS02CO122222CO232222CO333222CO433223CO433223CO433223CO433223Unit 1DC CircuitsDC CircuitsIntroduction of active and passive elements, voltage and current sources, concept of linearity and linear network, unilateral and bilateral elements, Kirchhoff's laws, Loop and nodal methods of analysis, SuperpositionHoorem and Theverin's theorem.Unit 2AC CircuitsOf Sinusoidal warying voltage and current. Analysis of single-phase AC Circuit consisting of R, L, C, RL, RC, RLC combinations (Series and calculation related to simple magnetic circuits, Working principle of Transformer, EMF equation of transformer, Ideal and practical transformer, losses in transformers, Efficiency of Transformer. Introduct	4. Illustrate	the working	ng princ	uple of 1	nduction	n motors	s, synch	ronous 1	nachine	s and D	C machin	les.					
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CO2 3 2 2 2 - - - - - 2 - - CO3 3 3 2 2 - - - - - 3 - </td <td>CO1</td> <td colspan="14">1 2 2 2 2 2 -</td> <td>1</td> <td>-</td>	CO1	1 2 2 2 2 2 -														1	-
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Introduction to DC Machines, Types of DC Machines, Working principle of three phase Induction Motor and concept of slip, Toque- slip characteristics, Different starting methods of 1-phase induction motor. Working principle of Synchronous motor. Total Lecture Hours 30 hours Textbook:	Unit 4		,	Intro	duction	to Elec	trical N	Iachine	S						()7 ho	urs
slip characteristics, Different starting methods of 1-phase induction motor. Working principle of Synchronous motor. Total Lecture Hours 30 hours Textbook:	Introduction to	DC Mac	chines, 7	Types of	DC Ma	chines,	Workin	g princi	ple of th	ree pha	se Induct	ion Moto	or and cor	ncept	of sl	ip, To	oque-
Textbook: Total Lecture Hours 30 hours	slip characteristics, Different starting methods of 1-phase induction motor. Working principle of Synchronous motor.																
Textbook:												Total	Lecture	Hou	rs 3	30 ho	urs
	Textbook:																
1. D. P. Kothari and I. J. Nagrath, "Basic Electrical Engineering", Tata McGraw Hill, 2010.	1. D. P. Kotl	hari and I.	J. Nagi	rath, "Ba	asic Elec	trical E	ngineeri	ng", Ta	ta McGi	raw Hill	, 2010.		0)				

3. P.V. Prasad, S. Sivanagaraju, "Electrical Engineering: Concepts and Applications" Cengage, 2018.

Reference Books:													
1. E. Hughes, "Electrical and Electronics Technology", Pearson, 2010.													
2. L. S. Bobrow, "Fundamentals of Electrical Engineering", Oxford University Press, 2011.													
3. V. D. Toro, "Electrical Engineering Fundamentals", Pearson India, 2018.													
Mode of Evaluation													
MSE CA ESE Total													
MSE1 MSE2 CA1 CA2 CA3 CA4 (ATT) CA5													
20 20 2 2 3 3 3													
40 Best of 4 (10) 50 100													
CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.													

Theory Course Code: K24IT102L Theory Course Name: Design Thinking L T P C C C C C C C C													Р	С		
Course Offer	ed in: CS	E/CS/I	T/CSIT/	/CSE(A	I)/CSE((AIML)	/ECE/I	EEE/EL	CE/ME	2			1	0	0	1
Pre-requisite	:NA															
Course Obje	ctives:															
1. To expos	e the stud	lent with	h state o	of the a	t persp	ectives,	ideas,	concepts	s, and s	olutions r	elated to	the desig	gn and	exec	utior	ı of
projects u	ising desig	n thinki	ing princ	ciples.												
2. To prepa	e the mind	lset and	discipli	ne of sys	stemic in	nspiratio	on drive	n by a de	esire to	identify n	new sourc	es of idea	as, and	new	mod	lels
especially	outside th	neir regu	ılar worl	king atm	osphere	e.										
3. To propo	se a concre	ete, feas	ible, via	ble and	relevant	innova	tion pro	ject/chal	llenge.							
Course Outc	ome: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to								
1. Understa	nd the basi	ic requir	rements	of a goo	d desigi	n.										
2. Empathiz	e and idea	te the so	olutions	to probl	ems in l	nis envi	ronment	t								
3. Prototype	and test the	he deve	loped so	lutions.												
4. Apply the	e principle	s of desi	ign thinl	king on o	develop	ing inno	vative s	solutions	s to the i	eal world	l problen	18.				
CO-PO Map	ping (Scal	le 1: Lo	w, 2: M	ledium,	3: High	ı)										
Manning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO	1	PS	02
mapping															10	<u> </u>
CO1	1	3	3	2 2 2 2 - 2 2 - 2 3 -												
CO2	1	3	3	2 2 2 2 - 2 2 - 2 3 -												
CO3	1	3	3	2	2	2	-	-	2	2	-	2	3			-
CO4	1	3	3	2	2	2	2	-	2	2	-	2	3			-
Unit 1			Fund	amenta	ls Of D	esign T	hinking	5						4	hou	rs
Concept of I	Design Thi	nking, 1	Need of	Design	Thinki	ng, Goa	al of De	esign th	inking (Desirabi	lity, feas	ibility an	d viab	ility)), De	esign
thinking Proc	ess model,	Design	thinkin	g tools.		-		•	•		•	•		•		•
Activities: Ide	entify an O	pportur	nity, Sco	pe of the	e Projec	t, Explo	re the p	ossibilit	ies and	prepare a	design b	rief.				
Unit 2			Emp	athize A	nd Def	ine								04	4 hou	urs
Design thinki	ng phases,	how to	empath	ize, Role	e of emp	oathy in	design t	hinking	, the pu	pose of e	mpathy i	naps, Th	ings to	be d	lone	prior
to empathy m	apping, A	ctivities	during a	and after	the ses	sion, Ui	nderstan	ding em	pathy to	ols: Cust	tomer Joi	urney Ma	p, Pers	onas	s. De	fine-
Methods of D	efine Phas	e: Story	telling.					-				-	-			
Activities: Ap	ply the me	ethods o	of empati	hizing a	nd Defii	ne Phase	es Finali	ize the p	roblem	statemen	t.					
Unit 3			Ideat	ion										04	4 hou	urs
Challenges in	Challenges in idea generation, Visualize, Empathize, and Ideate method, Importance of visualizing and empathizing before ideating,															
Applying the	Applying the method, Create Thinking, Generating Design Ideas, Lateral Thinking, Analogies, Brainstorming, Mind mapping,															
Ideation Tool	s: How Mi	ght We?	(HMW), Storyl	ooard, B	rainstor	ming. V	Vhat is d	esign in	novation	? A mind	set for ini	novatio	n, an	nd asl	king,
"What if?" as	king "Wha	at wows	?" and "	What w	orks?"		-									-
Activities: Ap	ply the me	ethods o	f Ideate	Phase:	Generat	e Innova	ative sol	lution id	eas.							
Unit 4			Proto	otyping	And Te	sting								03	3 hou	urs

What is a prototype? - Prototyping as a mindset, prototype examples, prototyping for products; Why we prototype? Fidelity for prototypes, Process of prototyping- Minimum Viable prototype. Testing prototypes with users, Collect feedback; iterate and improve the ideas.

Activities:

- 1. Prototype: Apply the Methods of the Prototype Phase Create prototypes for selected ideas.
- 2. Testing: Collect feedback; iterate and improve the ideas Present your solution using the Storytelling method.

Total Lecture Hours15 hours

Textbook:

- 1. Design Thinking, A Beginner's Perspective, E Balaguruswamy, Bindu Vijayakumar, Mc Graw Hill, 2024
- 2. The Design Thinking Playbook, Michael Lewrick (Author), Patrick Link (Author), Larry Leifer (Author) Publisher Wiley, Edition 2018.
- 3. Design Thinking For Dummies, Prof. Dr. Christian Müller- Roterberg, Wiley, 2021
- 4. The Design of Everyday Things, Don Norman(Author), Navol Books Trading, Edition 2022.

Reference Books:

- 1. Designing Experiences, James Robert Rossman and Mathew D. Duerden, Columbia Business School Pub, Edition 2019.
- 2. Roger Martin, "The Design of Business: Why Design Thinking is the Next CompetitiveAdvantage", Harvard Business Press, Edition 2009.

3. Idris Mootee, Design Thinking for Strategic Innovation, 2013, John Wiley & Sons Inc.

Mode of Evaluation

MSE			С	A	ESE	Total	
MSE	CA1	CA2	CA3	CA4 (ATT)	CA5		
	2	2	3	3	3		
40			Best of	f 4 (10)		-	50

CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.

1	heory Course Code:	K24MA	103L	The	ory Cou	rse Nam	e: Lineai	r Algebra	a for En	gineers		L	T P	C
C	Course Offered in: CS	SE/CS/IT	ſ/CSIT/	CSE(AI)	/CSE(Al	ML)/EC	CE/EEE/	ELCE				3	1 0	4
P	re-requisite: NA													
C	Course Objectives:													
1.	The objective of this	s course i	s to deve	lop a stro	ng found	ation in l	inear alge	ebra and t	o impart	the know	ledge of t	ools froi	n interm	ediate
	to advanced level of	f mathen	natics.											
2.	Students will be equ	uipped w	ith the ne	ecessary	skills to a	apply line	ear algebi	ra to solv	e comple	ex engine	ering pro	blems.		
3.	They will able to co	ontinue th	neir studi	es in adv	anced to	pics with	in the fie	ld.						
C	Course Outcome: Afte	er comple	etion of t	he course	e, the stu	dent will	be able t	0						
1.	Apply elementary tr	ransform	ation to s	solve sys	tem of Li	inear equ	ations.							
2.	Employ the matrix t	factoriza	tion and	decompo	sition.									
3.	Understand the con-	cept of v	ector spa	ce and su	ubspaces.									
4.	Explore the concept	t of linea	r transfo	rmations	to apply	in engine	eering ap	plication	s.					
5.	5.Explore the conce	ept of inn	er produ	cts of veo	ctors to d	ecide ort	hogonali	ty and or	thonorma	ality				
C	CO-PO Mapping (Sca	le 1: Lo	w, 2: Me	dium, 3	: High)				_					
	CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
														_
	CO1	3	3	3	-	-	-	-	1	-	-	-	2	
	CO2	2	2	3	-	-	-	-	1	-	-	-	1	
	CO3	2	2	2	-	-	-	-	1	-	-	-	1	
	CO4	2	2	2	-	-	-	-	1	-	-	-	1	
	CO5	2	2	2	-	-	-	-	1	-	-	-	1	
U	Init 1		Matri	x Algebr	a							1	09 hc	ours
Iı	ntroduction to Real an	d Comp	lex Matr	ices, Elei	mentary '	Transfor	mation, F	Rank of a	Matrix	by Echel	on Form,	Solution	n of syst	em of
L	inear Equations by di	rect meth	hod (Gau	iss Elimi	nation M	ethod), S	Solution of	of system	n of Line	ar Equati	ons by It	erative r	nethod (Gauss
S	iedal Method). Linear	depende	ence and	independ	lence of y	vectors.		<i>.</i>		1	5		```	

Unit 2	A	oplied M	atrix Algebra				09 ho	urs
Matrix factorization.	LU Decomp	osition, E	igen Values &	Eigen V	ectors, diagonali	zation of matrix	of order two, Eigen V	Value
Decomposition and si	ngular value o	lecomposi	tion.	0				
Unit 3	1	ector Spa	aces				09 ho	urs
Introduction to Vector	Spaces, Basi	c Properti	es of Vector Sp	aces, Sub	spaces, Basis and	d dimension, Intro	duction of finite and In	finite
Dimensional Spaces.	_	-	_		-			
Unit 4	Ι	inear Tra	ansformation				09 ho	urs
Introduction to linear	transformation	n, Matrix 1	representation o	f Linear Ti	ansformation, Ec	quivalent matrix a	nd Similarity transforma	ation,
Rank and Nullity, R	ank-Nullity	Theorem	(without proof)	, Kernel	and Range. App	olication of Linea	r Transformation in in	mage
Magnification.								
Unit 5	Ι	nner Proo	luct Space				09 ho	urs
Introduction to inner	product and	norm of	vectors, Ortho	ogonality,	Orthonormality,	Gram-Schmidt N	Method, Orthonormal b	oasis,
projections using inne	r products; or	thogonal	ransformations	and rotation	ons.			
						Total I	Lecture Hours 45 ho	urs
Textbook:	V D 49	1	1 " D	F1	$(A \rightarrow D \rightarrow 1/1)$	D	L 1' . 2015	
1. Hoffman, K. and	Kunze, R., "I	Linear Alg	gebra", Pearson	Education	(Asia) Pvt. Ltd/	Prentice Hall of	India, 2015	
2. Nair, M. I. & Sin 2. Strong Cilbert I	gn A., Linear	Algebra,	Springer, 2019.	ana Loom	ning 1th adition	2005		
J. Strang, Gilbert, I	ar S P K on	d Join D K	Difference in the second se	lgage Lean	ming, 4th edition,	2003. Spal Publishers 20	010	
Reference Books	ai, S.K.K. all	u Jaili K.N	., INUITICITCAI IVI	lethous, IN	w Age Internatio	Jilai Fublishers, 20	/19	
1 Schaum's Outline	e of Linear Al	gebra Ma	Graw Hill Edu	cation 201	7			
2. Strang. G., "Line	ar Algebra an	d Its Appl	ications". Thon	nson Learr	, ing Asia Pvt. Ltd	1.4th edition .2005	5.	
3. Lay, Dand C., "L	inear Algebra	and Its A	pplications" Pe	arson Edu	cation Limited, 6	th edition 2020.	-	
4. Richard, L. Burd	en, J. Douglas	Faires, a	nd Annette Burg	den, Nume	rical Analysis, C	engage Learning,	10th edition, 2015.	
5. Sastry S. S. "Intr	oductory Met	hods of N	umerical Analys	sis", PHI, 1	3rd edition 2002.			
Mode of Evaluation								
MSE		С	A		ESE	Total		
MSE1 MSE2 C	CA1 CA2	CA3	CA4 (ATT)	CA5				
40 40	5 5	5	5	5				
80		Best of	4 (20)		100	200		
CA5: Participation	ı in any Ha	ickatho	n, National/I	nternati	onal Activity	or Research F	Paper Publication.	

Theory Course Code: K24CS101L	Theory Course	<mark>Name:</mark> 1	<mark>Data St</mark>	<mark>ructure</mark>				L	Т	Р	С	
Course Offered in: CSE/CS/IT/CSIT/CSE	(AI)/CSE(AIMI	.)/ECE/E	EE/EL	CE/ME				3	0	0	3	
Pre-requisite: The course requires backgroun	d in mathematics a	nd suffici	ent prog	ramming	g skills.							
Course Objectives:												
1. To provide a deep understanding of	fundamental dat	a structu	ires and	their a	pplicatio	ons.						
2. To provide expertise in the efficient	implementation	of physi	ical and	logica	l data str	uctures.						
3. To provide insight into the working	of searching and	sorting	algorit	nms.								
. To develop the analytical ability for solving real-world problems using the data structure.												
Course Outcome: After completion of the course, the student will be able to												
1. Use the concept of the array in searching	and sorting algor	rithms.										
2. Illustrate the concept of Dynamic Memo	ry Allocation for	operation	s on linl	ked list.								
3. Analyze different recursion techniques u	sing stack.	-										
4. Analyze the fundamental concept of que	ues.											
5. Apply the knowledge of tree and binary	search tree structu	ires for pi	roblem s	solving.								
CO-PO Mapping (Scale 1: Low, 2: Mediu	m, 3: High)											
CO-PO								_ ~	~ .			
Mapping PO1 PO2 PO3 PO	4 PO5 PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	SO2	
CO1 3 1 1 -	1 1	-	-	-	-	-	2		2		-	
CO2 3 2 2 1	1 1	-	-	-	-	-	2		2		-	

CO3	3	2	2	1	1	1	_	_	_	_	_	2	2	_
CO4	3	2	2	1	1	1	_	_	-	_	-	2	2	_
CO5	3	2	1	_	1	1	_	-	-	-	-	2	2	-
Unit 1			Intro	duction									1	0 hours
Basic Termino complexity, as Column Major representations Insertion Sort, Application A Tree Image P	ology, Ty symptotic Order, D s, arithme Bubble so rea: Matri	pes and notatio erivatio etic ope ort, Sele x, Dyna Signal	applica n. Array n of Ind rations ection so amic Processi	tion of y: Singl ex Form on matr rt, Quic ogramming Dat	Data S e and M nulae for ices. Se k Sort, I ing, Rec	tructure Aultidim 1-D,2- earching Merge S lix Sort,	s, Algon nensiona D,3-D a : Linean ort, Men Bucket arch Eng	rithm, E al Array nd n-D a r search ge Sort. Sort Bu	fficienc s, Repro Array A , Binary	y of an a esentation pplication y Search, Cache, St	algorithn n of Array n of array , Indexed tack & Q	n, Time ays: Rov /s, Sparso I Sequen ueue, Gr	space trac v Major (e Matrices ttial searc aph Repre	le off and Order, and s, and their h Sorting: esentation,
Unit 2	occasing,	Signai	Linke	d Lists	uouses,	Web Bei	aren Eng	511103, 14	et worki	ing Routin	15		(9 hours
Singly Linked	Lists, Doi	ıbly Lin	ked List	, Circula	arly Lin	ked List.	Operati	ions on a	Linked	List. Inse	ertion, De	eletion, T	raversal,	Reversing,
Polynomial Re Application A Functionality,	epresentat rea: Symł Hash Tab	ion and ool table les and	Addition implen Collisio	n. Gener nentation n Resolu	ralized I n, Mem ution	Liked lis ory Mar	agemer	nt, Tries,	, Tree, (Graph, M	usic and	Video P	laylists, U	Jndo/Redo
Unit 3			Stack										()8 hours
Abstract Data Prefix and Po recursion. Prob between iterati Application A	Type, Pri stfix Exp blem solv on and re rea: Func	mitive S ressions ring usin cursion tion Ca	Stack op , Evaluang iterat	erations ation of ion and Optima	: Push a postfix recursional Paren	& Pop, A express on with theses I	Array ar sion, Ta exampl Problem	nd Linke il recurs es such in Mati	ed List I sion, He as Fibo rix mult	mplemen ead Recu nacci nu iplication	itation of rsion, No mbers, an ns, Backt	Stack, A ested rec nd Hano racking,	application ursion, R i towers. ' Depth-Fin	n of stack: emoval of Trade-offs rst Search,
Parsing and Co	Sinpher D	esign, P	Our Charles		DIOCK, N	hemory	Manage	ement.					(8 hours
Operations on		rooto A	dd Dale	to Full	and Em	nty Cir	aular au		rov and	linkod ir	nnlomon	tation of		oublo
Ended queue	Queue. C and Priori	ty Oueu	iuu, Dele	ele, Full	and Em	pty, Ch	culai qu	eues, Al	Tay and	IIIIKeu II	npiemen		queues, D	ouble
Application A	rea: Job	Schedi	iling, Bi	readth-F	irst Sea	rch. Sea	arch Tre	ees and	Binarv	Search T	ree. Dat	abase Oi	perations.	Customer
Service, Web	Server Re	quest H	andling,	Bufferi	ng and l	Data Str	eaming,	Traffic	Manage	ement.				
Unit 5			Trees]	l0 hours
Binary Tree and order, Pre-order Deletion, Thre Application A	nd Its arra er and pos aded Bina . rea- Dict	ay and l t-order, ry Trees ionary I	linked li level oro s, Traver mpleme	st repre- ler, Con rsals in 7 ntation.	sentatio structin Fhreade Compil	n, Strict g Binary d Binary er Desig	Binary Tree from Trees, Trees, Treas	Tree, C om giver Heaps, 1 h Algori	Complete n Tree T Heap So ithms, Iu	e Binary raversal, ort n order Tr	Tree, Tr BST Ope raversal (ee Trave eration: S Optimiza	rsal algori earching, tion	thms: In- Insertion,
FF					p		,, <u></u>		·····», -·		Total 1	Lecture	Hours 4	15 hours
Textbook:														
 Horowitz, Lipschutz, Deshpand Aaron M. 	E., Sartaj , S. (2014 e, P. S., & Tenenbau	Sahni,). Data s c Kakde ım, Lan	& Ande structure , O. G. (gsam, Y	rson-Fre s. Mcgr 2009). (., & Au	eed, S. (aw Hill C and da genstein	2008). F Educati ta struct , M. (20	Fundame on (Indi tures. Di 103). Da	entals of a) Priva reamtecl ta Struct	data str te Limit h Press. tures Us	uctures in ted. sing C.	n C. Univ	versity Pr	ess.	
Reference Bo	oks:													
 Aho, A. V Kruse. (n. Kernighar Van, P. (1 Deitel, P., 	(., Hopcro d.). Data (, B. W., & 994). Exp & Deitel.	ft, J. E., Structur & Ritchi ert C pr H. (20)	& Ullm es and P e, D. M rogramm 16). C H	an, J. D rogram . (2015) ning: dee ow to P	. (2009) Design . The C ep C sec rogram.	. Data S in C. Pe program rets. Sur Global	Structure arson E ming la nsoft Pro Edition.	es and al ducation inguage. ess. Pearsor	gorithm India. Pearson Highe	s. Dorlin _j n. r Ed.	g Kinder	sly.		
Mode of Eval	uation	,			<u> </u>				U					
MSE MSE1 MS	E2 CA	.1 CA	A2 C	CA CA3	CA4 (A'	TT)	CA5	I	ESE		Total			
	<u>v 4</u>	2	+	4	3		4		75		150			
60			B	est of 4	(15)				75		150			
1				NT /*		mation	al Antix	rity or D	ocorol	Donor I	Dublicati	on		

Course Booklet (B.Tech 1st year)

Theory Cours	se Code:]	K24EN	103L	1	Cheory (Course	Name:	Emergi	ng Tech	nologies	for		L	Т	Р	С
,				E	Engineer	:s			8							-
Course Offer	ed in: EE	E/ME		• • •									2	0	0	2
Pre-requisite:	: NA											·				
Course Objec	tives:															
1. To learn	the basic	concep	ots of cl	oud co	mputing	g and it	s under	rlying t	echnolo	ogies wit	h its im	plement	atior	ı.		
2. To learn	the basic	concep	ots of B	lockch	ain and	its und	erlying	techno	ologies	with its i	impleme	entation.				
Course Outco	ome: Afte	r compl	etion of	the cou	rse, the s	student	will be a	able to								
1. Understan	d the con	cepts of	Industr	y 1.0 to	Industry	5.0 & 5	5G tech	nology.								
2. Apply the	MAILA d the con	B for Ei	igineerii	ng Appl	ications											
4. Understan	d the cond	cepts of cepts of	block c	hain.	ig											
CO-PO Mapp	oing (Scal	le 1: Lo	w, 2: M	edium,	3: High)										
CO-PO																
Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	02
CO1	2	2	2	2								2				
	2	2	2	2	-	-	-	-	-	-	-	2		-		
CO2	3	2	2	2	-	-	-	-	-	-	-	2		-		
CO3	3	3	2	2	-	-	-	-	-	-	-	3		-		-
CO4	3	3	2	2	-	-	-	-	-	-	-	3		-		-
Unit 1			Evolu	ition of	Industr	ial Rev	olution	S					-	0	8 ho	urs
Evolution of it	ndustrial r Industry 5	evolutio	ons: From	n Indus technolo	try 1.0 to	o Indust	ry 5.0.	Definition	on and c	omponen	its of Ind	ustry 5.0	. Intr	oduct	on to	• 10 T
Unit 2	industry 5	.0. R 0R	MAT	LAB fo	or Engin	eering	Applica	ations						0	8 ho	urs
Importance of	MATLA	B in E	ngineeri	ng. MA	TLAB	Program	nming t	oasics, a	rrays, a	nd functi	ons. Ma	trix oper	ation	s, plo	tting	, and
visualization t	ools. MA'	TLAB S	Simulink	basics	for syste	em mod	lelling a	nd simu	lation.	Interfacin	ig MATI	LAB with	n haro	dware	(Arc	uino
and DAQ).			C												0.1	
Unit 3	1		Cloud	I Comp	uting	1	£ .1		in a Eng			- 44:1:4		0	8 ho	ars
architecture ar	d key cor	nponent	i cioua ts. Overv	comput view of	ing. Evo AWS ar	chitectu	re and s	comput services.	Overvi	ew of GC	Ompuung Parchite	ecture an	ly coi d ser	mpuu vices.	ng. C	Toua
Unit 4		- <u>r</u>	Block	chain										0	6 ho	urs
Introduction to	Blockch	ain. Fun	damenta	als, Prin	ciples ar	nd Tech	nologies	s, Crypto	ocurrenc	cies, Sma	rt Contra	cts, Bloc	kchai	in Ap	olicat	ions.
					1		0	, ,,,		,	Total	Lecture	Hou	rs 3	0 ho	urs
Textbook:																
1. Masterin	g Cloud (Compu	ting: Fo	oundati	ons and	Applic	cations	Progra	mming	Book by	/ Christi	an Vecc	hiol	a, Ra	kum	ar
Buyya, a	nd S. Tha	amarai	Selvi													
2. Cloud Co	omputing	- Con	cepts, T	Technol	ogy and	l Archi	tecture	Pearso	n Thon	nas Erl						
Reference Bo	oks:		1 0								1	1.0	C.		1 5	
1. Cloud Co Doshi To	mputing I	vlaster t	the Cond	cepts, A Iobrichi	rchitecti	are and	Applic	ations w	ith Rea	I- world	example	s and Ca	se St	udies	by F	luchi
2. Block Cha	ain: Bluep	rint for	a New H	Econom	v. O'Rei	llv. Me	lanie Sv	van								
3. Blockchai	n Basics:	A Non-	Technic	al Intro	duction i	n 25 St	eps by:	Daniel I	Dreschei	r.						
Mode of Eval	uation															
MSE				CA			~		ESE		Total					
MSE1 MS 20 2	SEZ CA		$A^2 \mid C$	$\begin{bmatrix} A3 \\ 3 \end{bmatrix}$	CA4 (A'. 2	I°I')	CA5 3									
		4	<u>-</u> R	est of 4	(10)		5		50		100					
-10	1		<u> </u>	-57 01 7	(**)			1			100]				
CA5: Particip	oation in a	any Ha	ckathon	, Natio	nal/Inte	<u>rnation</u>	al Activ	vity or l	Researc	h Paper	Publicat	ion				

Theory Course Code: K24EN104L	Theory Course Name: Digital Logic Design	L	Т	Р	С
Course Offered in: EEE		2	0	0	2
Pre-requisite: Introduction to Computers.					

1. To learn basic techniques for the design of digital circuits and fundamental concepts used in the design of digital systems.											
 To implement simple logical operations using Minimization Techniques 											
3. To design combinational logic circuits.											
4. To design sequential logic circuits.											
Course Outcome: After completion of the course, the student will be able to											
1. Understand various types of number systems and their conversions.											
2. Simplify the Boolean expressions and apply the Boolean theorems through logical gates.											
3. Design and implement variety of logical devices using combinational circuits concepts.											
4. Analyze sequential circuits like Registers and Counters using flip-flops.											
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)											
CO-PO po1 po2 po2 po4 po5 po6 po7 po8 po0 po10 po11 po12 ps01											
Mapping P01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P012 PS01 PS	02										
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$											
$\begin{array}{c c c c c c c c c c c c c c c c c c c $											
$\begin{array}{c c c c c c c c c c c c c c c c c c c $											
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CO4 5 5 2 2 -											
Unit I Number System and Boolean Algebra 08 hot	<u>rs</u>										
Number Systems, Base Conversion Methods, Complements of Numbers, Codes- Binary Codes, Binary Coded Decimal Code an	d its										
Properties, Unit Distance Codes, Error Detecting and Correcting Codes. Digital Logic Gates (AND,NAND,OR,NOR,EX-OR	EX-										
NOR), Properties of XOR Gales, Universal Gales, Basic Theorems and Properties, Switching Functions, Canonical and Standard F	orm.										
Unit 2 Minimization Ferninques 08 not	rs 1										
Introduction, The minimization with theorems, The Karnaugh Map Method, Three, Four and Five variable K- Maps, Prime Essential Implications Don't Care Man Entries. Using the Maps for Simplifying, Ouine-McCluskey Method, Multilevel NAND/											
realizations	OK										
Unit 3 Combinational Circuits 07 ho	rs										
Design Procedure – Half Adder, Full Adder, Half Subtractor, Full Subtractor, Parallel Binary Adder, Parallel binary subtractor, Bi	narv										
Multiplier, Multiplexers/De-Multiplexers, decoder, Encoder, Code Converters, Magnitude Comparator. Classification of seque	ntial										
circuits, The binary cell, The S-R-Latch Flip-Flop The D-Latch Flip-Flop, The "Clocked T" Flip-Flop, The "Clocked J-K" Flip-I	lop,										
Design of a Clocked Flip-Flop, Timing and Triggering Consideration.											
Unit 4Sequential Circuits07 hou	rs										
Introduction, Basic Architectural Distinctions between Combinational and Sequential circuits, Latches, Flip-Flops, SR, JK, D, T	and										
Master slave, characteristic Tables and equations, Conversion from one type of Flip-Flop to another, Counters - Design of Single N	lode										
Counter, Ripple Counter, Ring Counter, Shift Register, Ring counter using Shift Register.											
Total Lecture Hours 30 hou	rs										
1 ExtBook:											
 Digital Logic and Computer Design by IV. Mons Mano, 4th Edition. Digital Dringinlag and Applications by Least. Deal Malaine, 5th Edition. 											
2. Digital Entropies and Applications by Leach, Paul Malvino, 5th Edition.											
Nelective Dours.											
2. Digital Electronics by G.K. Kharate, Oxford University Press											
3. Switching Theory and Logic Design by A. Anand Kumar, PHI, 2nd Edition											
Mode of Evaluation											
MSE CA ESE Total											
MSE1 MSE2 CA1 CA2 CA3 CA4 (ATT) CA5											
20 20 2 2 3 3 3 1											
40 Best of 4 (10) 50 100											
CAS: Destination in any Hadrothan National/International Activity on Descent Day or Dublication											
CA5: Participation in any Hackathon, National/International Activity or Research Paper Publication.											

Theory Course Code: K24ME102L	Theory Course Name: Engineering Mechanics	L	Т	Р	С
Course Offered in: ME		2	0	0	2

Pre-requisite:	: NA													
Course Objec	tives:													
1. To learn the	he applica	tion of j	principle	es of me	chanics									
2. To learn the	he concep	t of cen	troid and	d mome	nt of an	area.								
3. Familiariz	ation of 1	the conc	ept of n	notion of	f particle	es and r	igid bod	ies.						
Course Outco	me: Afte	r compl	etion of	the cour	rse, the	student	will be a	ble to						
1. Analyze s	hear force	es and be	ending r	noments	for diff	erent be	eam con	figuratio	ons and	loading c	ondition	s.		
2. Analyze tr	russ struct	ures usi	ng meth	ods of j	oints an	d sectio	ns.							
3. Calculate	centroids,	centers	of grav	ity and i	noment	of inert	ia for co	omposite	e sectior	18.				
4. Apply the	basic prii	iciples of	of kinem	atics an	d kineti	cs of rig	id bodie	es.						
СО-РО Марј	ping (Scal	le 1: Lo	w, 2: M	edium,	3: High)	1	1	1		1	T	T	
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO3	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO4	3	2	2	2	-	-	-	-	-	-	-	2	-	-
Unit 1			Intro	duction	to Bear	ms							0	8 hours
Basic concepts	s, Shear F	force an	d Bendi	ng Mon	nent Dia	ıgram fo	or Canti	lever Be	eam, Sii	nply Sup	ported B	eam and	Overhang	ing Beam
with Concentr	ated Load	, Distril	outed Lo	oad and	Couple,	Relatio	n Betwe	en Shea	ar Force	and Ben	ding Mo	ment, Cas	se study or	n practical
applications of	f different	beams	and its l	oadings										
Unit 2			Analy	ysis of S	tructur	es						~ .	0	7 hours
Types of truss	and assu	mptions	, Analy	sis of pl	ane trus	ses by r	nethod	of joints	and me	ethod of s	section, C	Case stud	y of truss	applied to
different type	of structu	res. Fric	tion - 1	ypes of	friction	, Limiti	ng fricti	on, Law	s of Fri	ction, Sta	atic and I	Jynamic	Friction; I	mpending
Ilmit 2	iles, Practi	ical app	Contr	s of frict	Control		machine	es.					0	7 hours
Centroid from	first prin	ciple c	ntroid (of comp	osite se	tions: (Tentre o	f Gravit	v from	first prin	ciple Ce	ntra of G	ravity of	7 IIOUIS
sections Mom	ent of Ine	ertia – A	rea mor	nent of i	nertia I	Moment	of inert	ia of nla	ne secti	ions from	first pri	nuc or c	heorems of	f moment
of inertia. Mo	ment of i	nertia o	f comp	osite sec	tions: N	Aass me	oment o	f inertia	of circ	ular plat	e. Cvlind	ler. Cone	. Sphere.	Radius of
Gyration. Case	e study on	practic	al applic	cations of	of CG ar	d MI.				F	-, -,	,	, ~ r ,	
Unit 4			Kiner	natics o	f rigid	oody							0	8 hours
Basic terms, T	ypes of m	otion, p	lane mo	tion of 1	rigid boo	ły, velo	city and	acceler	ation un	der trans	lational,	rotational	l motion ar	nd general
principles in d	ynamics;	Instanta	neous ce	enter of	rotation	in plane	e motion	, relativ	e veloci	ty. Practi	cal exam	ples and	real-life ap	plications
of concept. Ki	inetics of	rigid bo	ody – D	' Aleml	pert's pi	inciple	and its	applicat	ions in	plane m	otion and	l connect	ed bodies;	Impulse-
Momentum pr	inciple, W	ork-ene	ergy prin	iciple an	d its app	olication	i in plan	e motior	n of com	nected bo	dies; Kin	etics of ri	igid body i	n rotation,
Practical exam	iples and i	real-me	applica	tions of	concept	•					Total	Lecture	Hours 3	0 hours
Textbook:											Iotai	Lecture		onours
1. Engineeri	ng Mecha	nics by	S S Bha	vikatti.	7th Mul	ti colou	r Editio	۱.						
2. Engineeri	ng Mecha	nics, R.	K. Bans	al, Laxn	ni Publie	cations.								
3. Engineeri	ng Mecha	nics, R.	S. Khur	mi, S.Cl	and Pul	olishing								
Reference Bo	oks:													
1. Meriam J.	L. and Kr	aige L.O	G., Engi	neering	Mechan	ics-Stat	ics-Volu	ime 1, D	ynamic	s-Volum	e 2, Thire	d Edition	, John Wile	ey & Sons
(1993).					. –									
2. Mechanic	s of Mater	rials by	James N	1. Gere	and Bar	ry J. Go	odno							
5. Structural	Analysis s of Mater	UY KUSS	Sell C. H	nd P P	or E D	1100011 L	hnston	Ir Joh		Wolf and	David E	Mazuro	k	
4. Witcename	uation	Tais by	reiuma	ilu I . De	CI, L. K	ussen J	JIIIStoll	J1., J0III	11.DC	won, and		·. Wiazure	/K	
MSE				CA]	ESE		Total			
MSE1 MS	SE2 CA	1 C	A2 C	CA3	CA4 (A'	TT)	CA5	1						
20 2	0 2		2	3	3		3							
40			B	est of 4	(10)				50		100			
CA5: Particip	oation in a	any Ha	ckathon	, Natio	nal/Inte	rnation	al Activ	vity or I	Researc	h Paper	Publicat	ion.		

Lab's/Practical's Courses Detail Syllabus

Theory Course Code:	K24PH	101P	Th La	eory Cou b	irse Nan	ne: Semi	conducto	or Physic	cs and D	evices	L	ГР	С
Course Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)	CSE(AI	ML)/EC	E/EEE/I	ELCE/M	IE			0	0 2	1
Pre-requisite: NA													
Course Objectives:													
To impart the technica	1 aspect	of semic	onductor	• Physics	and dev	ices to e	ngineerir	ng gradua	ates so th	hat they a	re able	to asse	ss and
contribute to the solution	on of tec	hnical ar	dovices	eering pro	oblems the	hat are ba	ased on	broad pri	nciples c	of Physics	s includ	ng soli	d state
Course Outcome: Afte	s, optoen	etion of t	he course	the stud	lent will	be able to	2						
1. Illustrate the basic	concept of	of crystal	line mate	erials and	their an	propriate	use.						
2. Apply the fundame	entals of l	basic sem	iconduc	tor Physic	cs on trai	sistor an	d MOSF	ET.					
3. Apply the concepts	s of semic	conducto	r Physics	in aspec	t of solar	cell and	Zener di	ode.					
4. Implementing of se	emicondu	ctor Phy	sics to st	udy vario	us chara	cteristics	of optoe	lectronic	devices.				
5. Apply the concept	of Quant	um Phys	ics to stu	dy variou	is phenoi	nenon.							
CO-PO Mapping (Sca		w, 2: Me	dium, 5:	Hign)									
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	2
CO1	2	1	-	-	-	2	2	-	-	2	-	3	
CO2	3	2	-	-	-	2	2	-	-	2	-	3	
CO3	3	2	-	-	-	2	2	-	-	2	-	3	
CO4	3	2	-	-	-	2	2	-	-	2	-	3	
CO5	2	1	-	-	-	-	-	-	-	1	-	2	
List Of Practical's (In	dicative	& Not L	imited T	[0)		•							
1. To study the Hall Eff	fect and c	letermine	e Hall co	efficient,	carrier d	ensity an	d mobilit	ty of a gi	ven semi	conductor	r using l	Hall Ef	ect set
up.						-					_		
2. Using solar cell Train	ner (a) sti	udy volta	ige and c	urrent of	a solar c	ell (b) Vo	oltage and	d current	in series	and paral	llel com	binatio	ns (c)
Draw power curve to fi	nd maxir	num pow	er point	(MPP) ar	nd to obta	ain efficie	ency of a	solar ce	ll.				
3. To determine the energy 4. To study the character	ergy band	gap of a	I given se	emicondu	ctor mate	erial by I	our probe	e method	•				
5 To study the V-I character	racteristi	$\frac{1}{1}$ s of MO	SFET	51015.									
6. To plot the graph of	V-I chara	cteristics	s of a Zer	ner diode									
7. To determine the way	velength	of Laser	light usi	ng diffrac	tion phe	nomena.							
8. To find the fiber atter	nuation a	nd nume	rical ape	rture of a	given op	otical fibr	e.						
9. To study the presence	e of disci	ete energ	gy levels	in an ato	m by Fra	nck Hert	z experir	nent.					
10. To determine Planc	k's const	ant and v	vork fun	ction usin	g Photo-	electric e	effect.				T 4 1 T	r	
Mode of Evolution											Total F	ours:	15 hrs.
		ESE	То	tal									
CA1 CA2 CA	<u>1</u>		10										
5 10 1	0												
25		25	5	0									

Theory Course Code: K24EC101P	L	Т	Р	С	
	Design Lab				
Course Offered in: CSE/CS/IT/CSIT/CSE	0	0	2	1	
Pre-requisite: NA					
Course Objectives:					
1. Explore the basics of digital logic, includ	ling number systems and logic gates.				

2.	. Perform the analysis and design of various digital electronic circuits.														
3.	Explore th	e knowled	dge of C	Compute	r organi	zation a	nd men	nory con	cepts.						
4.	Work in a	team to d	emonst	rate an a	pplication	on of di	gital cire	cuits by	engagin	g in self	f-learning	g.			
Co	ourse Outco	me: After	r compl	etion of	the cour	se, the	student	will be a	ble to						
1.	Apply the	basics of	binary a	arithmet	ic and	codes in	digital	system	design.						
2.	Design con	mbination	al logic	circuits	using E	Boolean	function	ns and g	ate-leve	l minim	ization				
3.	Design sec	quential lo	ogic circ	cuits, inc	luding l	atches,	flip-flop	s, regist	ers, and	counter	rs.				
4.	Understan	d compute	er organ	ization,	includir	ng bus a	rchitect	ure, prod	cessor of	rganizat	ion, and	I/O syste	ms.		
5.	Understan	d memory	/ organi	zation, o	cache, ai	nd virtua	al memo	ory.							
CC)-PO Mapp	oing (Scal	e 1: Lo	w, 2: M	edium,	3: High)	1	1	1	1	1	1	1	
C M	O-PO lapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
С	01	3	3	2	2	1	1	-	-	-	-	-	-	-	-
С	02	3	3	2	2	1	1	-	-	-	-	-	-	2	-
С	03	3	3	2	2	1	1	-	-	-	-	-	-	2	-
С	04	3	3	2	2	2	2	-	-	-	-	-	-	-	-
С	05	3	3	2	2	1	1	-	-	-	-	-	-	2	-
Lis	st Of Practi	cal's (Inc	licative	& Not	Limited	l To)									
1.	Investigate	e logic bel	haviour	of AND), OR, N	OT, NA	ND, EX	K-OR, E	X NOR	Gates.	Realizati	on of Bo	olean Ex	pressions u	ising
	Gates and	minimiza	tion usi	ng Karn	augh Ma	ap.									
2.	Design and	d verificat	tion of t	he truth	tables o	f Half, l	Full add	er.							
3.	Design and	d verificat	tion of t	ruth tab	le of dec	oder an	d multip	olexer ci	rcuits.						
4.	Design and	d implem	ent 2- b	it magni	tude cor	nparato	r.								
5.	Verificatio	on of truth	tables	of SR, J	-K, and	D Flip-l	Flops.								
6.	Design and	d verify a	ll types	of Shift	Register	rs.									
7.	Design and	d verify th	ne 2-Bit	Synchr	onous ar	nd Asyn	chronou	is Count	er.						
8.	8. Design memory units (single bit RAM cell) and understand how it operates during read and write operation.														
	Total Hours: 15 hrs.														
M	ode of Eval	uation													
	C	A		ESE	[Fotal									
•	CA1 CA2	2 CA	3												

Th	eory Course Code: K24IT101P	Theory Course Name: Programming for Problem Solving	L	Т	Р	С				
		Lab								
Co	urse Offered in: CSE/CS/IT/CSIT/CSE	(AI)/CSE(AIML)/ECE/EEE/ELCE/ME	0	0	4	2				
Pr	e-requisite: NA									
Co	urse Objectives:									
1.	Given a computational problem, identify	and abstract the programming task involved.								
2.	Approach the programming tasks using t	echniques learned and writepseudo-code.								
3.	Choose the right data representation formats based on the requirements of the problem.									
4.	Use comparisons and limitations of the v	arious programming constructs and choose the right one for the tas	k in h	and.						
5.	By learning the basic programming const	ructs, students can easily switch over to any other language in future	re.							
Co	urse Outcome: After completion of the co	purse, the student will be able to								
1.	Apply programming constructs of C lang	uage to solve real-world problems.								
2.	Use the concepts of looping, branching, and decision-making statements for a given problem.									
3.	Develop Solutions to problems using mo	dular programming constructs such as functions and recursion.								
4.	Demonstrate the ability to write C progra	ms using pointers, strings structures and unions.								
5.	Design a solution to problems using the o	concepts of pointers and files handling.								

5. Design a solution to problems using the concepts of pointers and files handling.

CO-PO) Mapp	oing (Scal	le 1: Lo	w, 2: M	edium,	3: High)								
CO-PO Mappi	0 ing	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1		3	3	-	-	2	-	-	1	-	-	-	2	-	2
CO2		3	3	-	2	2	-	-	1	-	-	-	2	-	2
CO3		3	3	-	2	2	-	-	1	-	-	-	2	-	2
CO4		3	3	2	2	2	_	_	1	_	_	_	2	_	2
CO5		3	3	2	2	2			1				2		2
List Of	Pract	j ical's (In	Jicative	& Not	 Limited		-	-	1	-	-	-	2	_	2
	TTACL	ical s (III			Linnee	110)									
a. b. c. d. e. f.	Write Acce print Write Write and f furtho Write	a C prog pt any two their diffe a program a C prog a C prog inds its ri est right p a C prog	ram to i o numberence. V m to acc ram to s ram allo ightmos osition i ogram to	nput two ers, if the Write this cept the swap valic ows the t digit. in an int to add two	o integen le first n ls progra principa lues of tr user to in By utiliz egral pa vo num	r number number i am using l, rate, a wo varia nput a fl zing sui rt of the bers tog	rs and p s greate g the ter nd num bles wi oating-j table al given n gether w	erform er than t nary ope ber of y th the he point nu gorithm umber. vithout	addition he secon erator. ears and elp of a t mber. T s and lo utilizing	h, subtra nd then I find ou third va The prog ogic, the s the co	ction, div print the it the sim riable and ram then program nvention	vision and sum of t ple intered d without extracts n accurat al + ope	d multipli hese two est and co using a an integr ely ident	cation. numbers, ompound i third varia al part of t ifies the c ne program	otherwise nterest. ble. he number ligit at the n employs
g.	bitwi bit of Write advan perfo divisi	se XOR (the two n a C prog ntage of the rmed base ble by 40	niques ^) and b numbers ram to c he cond ed on th 0.	and log itwise A determir itional (e follow	ND (&) ND (&) wheth ternary) ing crite	erations), along ner a giv operato eria: a yo	to achie with bit en year r?:, whi ear is a 1	shifting is a leap ich allow leap yea	addition g, the pro p year of ws for co wr if it is	r not usi ogram c not usi oncise c divisibl	ng the co condition e by 4, b	everagin erforms t onditiona al expres ut not div	g bitwise he additi l operato sions. Th visible by	operation on operation r. The prog the leap year 100 unles	is, such as on on each gram takes ar check is as it is also
h.	Write of rep	e a C prog beated add	ram to 1 lition to	nultiply perforn	two giv n multip	ren num lication.	bers wit It pron	hout using the second s	ing the * user to i	* operate input tw	or. The proof of t	rogram ta rs and ut	akes adva ilizes a lo	intage of the state of the stat	he concept tively add
i.	Write prom amon	e a C prog pts the us g them.	gram to er to in	determ put three	ine the	largest a	among t itilizes t	three gitthe cond	ven nun litional	nbers us operator	sing the or to comp	condition pare and	al operat determin	or (?:).The the large	e program est number
2. a.	Write	a menu-o	lriven n	rogram	using the	e Switcł	n case to	o calcula	te the fo	ollowing					
	•	Additi	ion of tv	vo numł	oers			eureure		,					
	•	Differ	ence be	tween tw	vo numł	bers									
	•	Produ	ct of two	o numbe	ers										
	•	Divisi	on of tw	vo numb	ers										
	•	HCF o	of two n	umbers											
h	• Write		of two r	numbers	0005 011	mharan	d abaal	whatha	r it is nr	ima or i	hot				
о. с.	Write	a prograi	n to mp	nt prime	number	rs betwe	en 1 to	100.	i it is pi	inte or i	101.				
d.	Write	a prograi	n to find	d revers	e of a nu	mber ar	nd check	whethe	er it is p	alindror	ne or not				
e.	Write	a program	n to fin	d the su	n of the	series g	iven bel	low:							
	•	$\mathbf{X} - \mathbf{X}^{3}$	$(3! + x^{3})$	′5! -x′/7	! +	- up to n	terms.								
f.	• Write numb opera AND	1 + (1) e a C prog per and us tor with a operation	+2) + (1 ram to c es bitwi a bit ma a betwee	(+2+3) + check wi ise opera sk that h en the nu	- (1+2+3) hether all ators and has all bi umber an	3+4) + ll the bit d logica its set to nd the bi	s of a g operat 0 exce t mask	to n ter iven num ions to pt for th for each	ms. mber are perform le bit in l bit posi	e unset of the che the posi ition, th	or low. The pitton the pitton being the program	ne progra program ng checke n determ	im promp utilizes the ed. By pe ines if the	ots the user he bitwise rforming t e bit is uns	to input a AND (&) he bitwise et or low.
g.	Write the li then	a C prog st. The pr utilizes lo	ram to r ogram p ops, con	read a list prompts iditional	st of inte the user stateme	egers usi to inpu ents, and	ng a loc t the nu a prime	op and c mber of factorize	alculate integer zation al	the nun s they w lgorithm	ber of di vant to en	stinct printer, follo nine the	me facto wed by t distinct p	rs for each he actual rime facto	integer in integers. I rs for eacl

integer.

- h. Write a C program to address the scenario where a company decides to give bonuses to its employees on the occasion of the new year. The program allows the user to enter the salary and gender of each employee and calculate the bonus based on the specified criteria. It also displays the final salary that each employee will receive, taking into account the applicable bonuses To calculate the bonus, the program uses conditional statements based on the employee's gender and salary. If the employee is male, a 5% bonus is applied to the salary. If the employee is female, a 10% bonus is applied. Additionally, if the salary is less than 10000, an extra 2% bonus is given to the employee. The program applies these bonuses using appropriate calculations and stores the final salary in a variable.
- i. Write a C program to print the following pattern:

				_				
			1	2	3			
		1	2	3	4	5		
	1	2	3	4	5	6	7	
1	2	3	4	5	6	7	8	9
	1	2	з	4	5	6	7	
		1	2	3	4	5		
			1	2	3			
				1				

- j. The task at hand is to write a C program that displays a specific pattern. The pattern consists of a series of numbers arranged in a triangular shape. Each row of the pattern follows the ascending and descending order of numbers:
 - $1 \\ 1 2 1 \\ 1 2 3 2 1 \\ 1 2 3 4 3 2 1 \\ 1 2 3 4 5 4 3 2 1$
- 3.
- a. The task at hand is to design a simple calculator program that will assist a doctor in examining the performance of a 13-yearold boy with exceptional mental math skills. The program will allow the doctor to input two numbers and choose an operation (addition, subtraction, multiplication, or division) to be performed on those numbers. The program will prompt the doctor to enter the two numbers and provide a menu of available operations. Based on the doctor's selection, the program will perform the chosen operation on the input numbers and display the result.
- b. The task at hand is to design a program in C that converts a decimal number to its binary representation using a function. The program will prompt the user to enter a decimal number, and then it will call the conversion function to convert the decimal number to binary. The conversion function will take the decimal number as input and perform the necessary calculations to generate its binary equivalent. It will employ mathematical operations, such as division and modulus, to extract the binary digits. The function will store the binary digits in an array or a string, representing the binary number. The program should handle various scenarios, such as positive decimal numbers, negative decimal numbers, and zero, while accurately converting them to binary. It should also handle any potential errors or limitations, such as exceeding the range of data types used for storing the decimal and binary numbers.
- c. The task at hand is to design a program in C that counts the occurrence of each digit in a given number using recursion. The program will prompt the user to enter a number, and then it will call a recursive function to count the occurrence of each digit in that number.
- d. Write a C program that multiplies two matrices using recursion. The program prompts the user to enter the dimensions and elements of two matrices. It then recursively computes the product of the two matrices and displays the resulting matrix. To perform matrix multiplication using recursion, the program defines a recursive function. This function takes the two matrices, their dimensions, and the current row and column indices as parameters. At each recursive call, the function multiplies the corresponding row of the first matrix with the corresponding column of the second matrix and calculates the sum of the products.

e. The task is to write a C program that calculates the sum of a series using a function. The series is defined as follows: x - (x^3 / 3!) + (x^5 / 5!) - (x^7 / 7!) + (x^9 / 9!) + ... (up to n terms)
Here, 'x' is a given input value, and 'n' represents the number of terms in the series. To solve this task, the program will define a function that takes 'x' and 'n' as parameters and returns the sum of the series. The function will use a loop to iterate through the terms of the series and calculate the value of each term based on the given formula. The sum of all the terms will be accumulated and returned as the final result. The program will also prompt the user to enter the values of 'x' and 'n', and then it will call the function to

compute the sum of the series. Finally, the program will display the result to the user.

f. The program is designed to calculate and print a table of binomial coefficients using the provided formula. Binomial coefficients, denoted as B(m, x), are calculated using the formula B(m, x) = m! / (x! * (m - x)!), where m is the total number of elements, and x is the number of elements chosen at a time. The program prompts the user to enter the values of 'm' and 'x'. It then calculates the binomial coefficient for each combination of 'm' and 'x' that satisfies the condition m > x. The factorial

function is used to calculate the factorials involved in the formula. The program generates a table displaying the binomial coefficients for the given range of 'm' and 'x'. The table is printed in a formatted manner, making it easy to read and understand. Each row of the table corresponds to a specific 'm' value, and the columns represent the corresponding 'x' values. The table provides a comprehensive view of the binomial coefficients, showing the number of ways to choose 'x' elements from a set of 'm' elements. This information can be useful in various mathematical and statistical calculations, such as combinatorics, probability, and algebraic equations.

4.

- a. The C program is designed to find the median of two sorted arrays. It takes two input arrays, both of which are assumed to be sorted in ascending order. The program determines the median value by combining the elements from both arrays and finding the middle value(s) in the merged array. To achieve this, the program follows a divide-and-conquer approach. It calculates the midpoints of the two arrays and compares the corresponding elements at those positions. Based on the comparison, it discards the elements that are guaranteed to be less than the median. The process continues recursively until the median is found. If the total number of elements in the combined array is odd, the median is the middle element. If the total number of elements is even, the median is the average of the two middle elements.
- b. The program aims to find the largest number in an array using recursion. It takes an array of integers as input and recursively searches for the largest number within the array. The program uses a recursive function to compare elements of the array. It starts by assuming the first element of the array is the largest. Then, it recursively compares this assumed largest number with the remaining elements of the array. If a larger number is found, it becomes the new assumed largest number. This process continues until all elements of the array have been compared.
- c. The program aims to find the nearest lesser and greater elements in an array based on a given target number. The user is prompted to enter the size of the array and the array elements. Additionally, the user provides a target number for comparison. The program then determines the nearest lesser and greater elements in the array in relation to the target number. The algorithm begins by initializing the nearest lesser and greater variables as the minimum and maximum possible values, respectively. It iterates through each element of the array, comparing it with the target number. If the element is smaller than the target number and greater than the current nearest lesser value, it becomes the new nearest lesser. Similarly, if the element is larger than the target number and smaller than the current nearest greater value, it becomes the new nearest greater.
- d. The task is to write a C program that removes duplicate elements from an array. Given an array containing integers, the program should identify and eliminate any duplicate elements, leaving only the unique elements in the array. The program should modify the original array in-place and update its size accordingly. The program will iterate through the array and compare each element with the remaining elements in the array. If a duplicate element is found, it will be removed by shifting the subsequent elements to the left, effectively overwriting the duplicate element. The size of the array will be reduced by one for each duplicate element encountered.
- e. The task is to write a C program that sorts a list of names in alphabetical order. Given an array of strings representing names, the program should rearrange the names such that they are sorted in ascending order based on the alphabetical order. The program will use a sorting algorithm to compare pairs of names and swap them if they are out of order. It will continue this process until the entire list is sorted. The sorting algorithm can be implemented using various techniques such as bubble sort, insertion sort, selection sort, or more efficient algorithms like quicksort or merge sort.
- f. The task is to write a C program that reads a string from the user and uses a function to reverse the order of words in the string. The program will prompt the user to enter a string and then call a function to reverse the order of the words in the string. The program will analyze the input string and identify the words based on spaces or any other specified delimiters. It will then reverse the order of these words while maintaining the order of the characters within each word. For example, if the input string is "Hello World, how are you?", the program will reverse the words to form the output string "you? are how World, Hello". The program will implement the logic to reverse the words by using string manipulation techniques such as splitting the string into words, storing them in an array, and then rearranging the words in reverse order. It will handle cases where there are multiple spaces between words and ensure that the resulting string maintains the original spacing. After reversing the order of the words, the program will display the modified string to the user. The reversed string will reflect the reversed order of the words while preserving the characters within each word
- 5.
- a. Write a C program which efficiently store and manage records of N students. The program allows the user to input the details of each student, including their name, along with other relevant information. Once all the records are entered, the program implements a sorting algorithm to arrange the student records in ascending order based on their names.
- b. The C program is designed to store records of N students and sort them according to their marks. The program utilizes data structures and sorting algorithms to efficiently organize the student records based on their performance. It prompts the user to enter the number of students (N) and then dynamically allocates memory to store the required number of records. For each student, the program prompts the user to enter their name and marks. After storing all the records, it proceeds to sort them in ascending order based on the marks achieved by each student.

Course Booklet (B.Tech 1st year)

- c. The C program uses a pointer to a structure to initialize the members within the structure. It also utilizes functions to print the student information. The program allows the user to input data for multiple students and stores the information in the structure using pointer notation. It then calls the appropriate functions to display the student details on the screen. By utilizing pointers to structures, the program optimizes memory usage and enables efficient manipulation of the student data.
- 6.
- a. This C program utilizes pointers to check whether a given string is a palindrome or not. It prompts the user to enter a string and then uses pointer manipulation to compare characters from both ends of the string. By iterating through the string using pointers, the program checks if the characters at corresponding positions are the same or not. If all the characters match, the program concludes that the string is a palindrome. Conversely, if any pair of characters does not match, the program determines that the string is not a palindrome.
- b. Write a C program allows the user to store n elements in an array and then utilizes a pointer to print the elements. The program prompts the user to enter the number of elements (n) they wish to store in the array. It dynamically allocates memory for the array based on the user's input. Next, the program asks the user to input the n elements one by one. After storing the elements in the array, it uses a pointer to iterate through the array and print each element. By leveraging pointer arithmetic, the program efficiently accesses the array elements and displays them to the user. This program provides a dynamic and pointer-based approach to store and print array elements in C.
- c. Write a C program to utilize dynamic memory allocation to find the largest element in an array. It prompts the user to enter the number of elements they wish to store in the array. Using this input, the program dynamically allocates memory for the array.
- d. Write a C program allows the user to replace a specific line with another text in a file. The program prompts the user to enter the name of the file and the line number they want to replace. It then asks the user to input the new text that will replace the specified line. This program defines a function encrypt File that takes the path to an input file, the path to the output file, and an encryption key as parameters. It reads the input file line by line and encrypts each character using the provided key. The encrypted characters are then written to the output file.
- e. Write a C program to perform basic operations on linked list: Creation, insertion, deletion, and traverse in linked list.

Mode of	f Evaluat	tion		
	CA		ESE	Total
CA1	CA2	CA3		
10	20	20		
	50		50	100

Th	eory Course Code: K24EN101P	Theory Course Name: IoT and Embedded Systems Lab	L	Т	Р	С
Co	urse Offered in: CSE/CS/IT/CSIT/CSE	(AI)/CSE(AIML)/ECE/EEE/ELCE/ME	0	0	2	1
Pr	e-requisite: NA					
Co	urse Objectives:					
1.	The course aims to provide exposure to t	he applications of IoT in smart cities and industrial applications.				
2.	It aims to train the students to the basic c	oncepts of the Embedded C.				
3.	It aims to train the students to the basic c	oncepts of the Controller.				
4.	This course is designed to give the student	nts hands-on experience with the Software and Hardware concepts.				
Co	urse Outcome: After completion of the co	purse, the student will be able to				
1.	Understand the basic concepts of sensors	and transducers.				
2.	Understand basics of embedded system a	nd different IoT boards.				
3.	Apply basic operations and programming	g techniques of IoT devices.				
4.	Apply smart technology knowledge through	igh case studies.				

CO-PO Ma	O-PO Mapping (Scale 1: Low, 2: Medium, 3: High)													
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	-	-	-	2	2	2	-	-	-	-	2	-	2
CO2	2	-	2	-	2	2	2	-	2	-	-	2	-	2
CO3	3	-	3	2	3	2	2	-	2	-	-	2	-	3
CO4	3	2	3	3	3	2	2	-	2	-	-	2	-	3
List Of Pra	ctical's (In	dicative	& Not	Limited	l To)									
1. Underst	anding the	Architec	ture and	l Pin Co	nfigurat	ion of E	SP8266	and Ar	duino B	oards.				
2. Hands-O	n Introduc	tion to c	ommon	ly used 1	real wor	ld IoT S	ensors.							
3. Analyze	Analyze Digital signal data acquisition using Arduino and ESP8266.													
4. Explore	. Explore Digital signal generation using Arduino and ESP8266.													
5. Analyze	Analog sig	gnal data	acquisi	tion usii	ng Ardu	ino.								
6. Explore	Analog sig	nal gene	eration u	sing Ar	duino.									
7. Real-Ti	ne Data Lo	gging U	sing ES	P8266 a	nd Ardu	ino.								
8. Designin	ng a Lightir	ng Contr	ol Syste	m using	LDR.									
9. Designin	ng a Multi-S	Sensor A	Alert Sys	stem Usi	ing Tou	ch, IR, F	PIR and	Arduino).					
10. Object I	Detection U	sing Ult	rasonic	Sensors	with Ar	duino a	nd ESP.							
	Total Hours: 15 hrs.													
Mode of Ev	aluation													
	CA		ESE	r	Fotal									
CA1 C	A2 CA	.3												
5 1	0 10)												
	25		25		50									

Theory Cours	Theory Course Code: K24ME101P Theory Course Name: Design & Realization Lab												L	Т	Р	С						
Course Offer	ed in: CS	E/CS/IT	ſ/CSIT/	ECE/F	EEE/EL	CE/ME							0	0	2	1						
Pre-requisite:	NA																					
Course Objec	tives:																					
1. To familia	rize stude	ents with	the mo	dern te	chnologi	es used	in indus	stries.														
2. To realize	the funda	mentals	of Con	nputer A	Aided De	esign &	digital r	nanufac	turing.													
Course Outco	me: Afte	r comple	etion of	the cou	rse, the	student	will be a	able to														
1. Create 2D	and 3D n	nodels u	sing Co	mputer	Aided I	Design s	oftware															
2. Apply 3D	modelling	g techni	ques and	l STL f	ïle prepa	aration f	or addit	ive man	ufacturi	ng.												
3. Create a model using 3D printer.																						
Develop engineering components using CNC/VMC machine.																						
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)																						
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	02						
CO1	2	-	2	-	2	-	-	-	2	2	1	3		-		-						
CO2	2	-	2	-	2	-	-	-	2	2	1	3		-		-						
CO3	1	-	1	-	2	-	-	-	2	2	1	3		-		-						
CO4	2	-	2	-	2	-	-	-	2	2	1	3		-		-						
List Of Practi	ical's (Inc	licative	& Not	Limite	d To)																	
1. Introduction to 2D drawing, shapes like rectangles, circles, polygons, and then modify them using tools like trim, extend, and fillet. Apply appropriate dimensions.																						
2. Applying	2. Applying constraints in 2D and 2D sketching.																					
3. 3D model	3. 3D modelling of components using extrusion, revolve, loft, sweep, and multiple features.																					
4 Create an	assembly	of mult	inle nart	e with	accurate	mate co	nstraint	e to sim	ulate the	ir interac	rtion	Create an assambly of multiple parts with accurate mate constraints to simulate their interaction										

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5.	Slicir	ng of ST	L file and s	study of the e	effect of process p	arameters like layer thickness, orientation and infill on build
	time	using sot	ftware.			
6.	Creat	e a 3D p	rinted com	ponent.		
7.	Creat	e a smal	l compone	nt using CAI	O file using CNC	machine.
8.	Creat	e a gene	ral use con	nponent usin	g CAD file using	VMC machine.
				•		Total Hours: 15 hrs.
Me	ode of	Evaluat	ion			
		CA		ESE	Total	
0	CA1	CA2	CA3			
	5	10	10			
		25		25	50	

Theory Cours	se Code:	K24IT1	.03P	נ	Theory (Course	Name:	Web Do	esigning	g Lab			L	Т	Р	С
Course Offer	ed in: CS	E/CS/I	Г/CSIT/	/CSE(A	I)/CSE	(AIML))						0	0	2	1
Pre-requisite:	: NA					<u> </u>										
Course Objec	tives:															
1. Provide st	udents wi	th a goo	od under	standing	g of the	basic co	ncepts o	of web d	lesign, u	sing HTN	AL, CSS	, and Java	aScri	pt.		
2. Enable stu	idents to a	nalyse v	web pag	es using	g various	s format	ting tecl	hniques	of CSS	and HTM	IL.					
3. Enable stu	idents to p	process	webpage	e data oi	n client i	machine	es in inte	gration	with ht	nl using .	lavaScrip	ot.				
4. Apply the	technique	es of CS	S, HTM	IL and J	avaScri	pt for de	signing	compet	itive we	bsites.						
Course Outco	me: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to								
1. Understand the concept of layout and structure of Hypertext markup language (HTML)																
2. Apply the integration of Cascading style sheets (CSS) in HTML pages.																
3. Apply the	3. Apply the JavaScript concept to process and validate the data of a web page on client Machine.															
4. Design the	4. Design the website with the application of HTML, CSS and JavaScript.															
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)																
CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	02
CO1	2	2	2	2	2	1	1	1	1	1	2	3		2		2
CO2	3	2	2	2	2	1	1	1	1	1	2	3		2		2
CO3	3	2	2	2	2	1	1	1	1	1	2	3		2		3
CO4	3	3	3	3	3	1	1	1	1	1	2	3		2		3
List Of Practical's (Indicative & Not Limited To)																
1. Design the following static web pages required for an online bookstore website.																
HOMEPAGE:																
• The static home page must contain three frames .																
 Top fram 	ne: Logo a	and the o	college 1	name an	d links t	to Home	epage, L	.ogin pa	ge, Reg	istration p	bage, Cat	talogue p	age			

and Cart page (the description of these pages will be given below).

For example: When you click the link "CSE" the catalogue for CSE Books should be displayed in the Right frame. Right frame: The *pages to the links in the left frame must be loaded here*. Initially this page contains description of the web site.

Logo		Web Site	Name	
Home	Login	Registration	Catalogue	Cart
CSE				
ECE		Description of	the Website	
EEE		Description of	uie website	
CIVIL				

	v				
2. LOGINPAGE:	Logo		Website N	lame	
This page looks like below:	Home	Login	Registration	Catalog	ue Cart
	CSE		_		
	ECE		Login P	age	
	FFF		Usernar	ne:	
	REE		Passwor	ds:	
	CIVIL		ſ		
			:	iubmit R	eset
3. CATOLOGUE PAGE: The catalo	gue nage	should con	tain the deta	ils of all	the books
details should contain the following:	Logo		Website		
a. Snapshot of Cover Page.	Home	Login	Registration	Catalogue	Cart
b. Author Name.	CSE		ok: ANL Bible ithor: Winston blication: Wiley	\$40.5	Add to cart
c. Publisher.	ECE	Bible			Add to cart
d. Price.	EEE	Aritical Arealization Boo	ook: AI uthor: S.	\$63	Add to cart
e. Add to cart button.	CIVIL	Ru Pu	issei iblication: Princeton hall		
		MAJava2 Box Dictor Hand	ook: Java 2 uthor: Watson	\$35.5	Add to cart
		Ри	blication: BPB publicatio	ns	
		Bo	ook: HTML in 24 hours uthor: Sam Peter	\$50	Add to cart
		HIML 4 Pu	blication: Sam blication		
4. CARTPAGE: The cart page contained	ins the de	etails about	the books w	nich are a	dded to th
· -	0.4- 3-				
Logo Web	Site Name	Catalogue	Cart		
CSE Book name Price Quantit	y .	Amount	Call		
ECE Java 2 \$35.5 2 EEE XML bible \$40.5 1		\$70 \$40.5			
CIVIL Total amount - \$130.5					
5. REGISTRATION PAGE: Create	a "regist	ration form	" with the fo	llowing f	ïelds
a. Name (Text field)					
b. Password (password field)					
c. E-mail id(text field)					
d. Phone Number (text field)					
e. Sex (radio button)					
f. Date of birth (3 select boxes)					
g. Languages known (checkbox	es–Engl	ish, Telugu,	, Hindi, Tam	il)	
h. Address (text area)					
6. JS VALIDATION: Write JavaScr	<i>ipt</i> to va	lidate the fo	ollowing fiel	ds of the	above reg
Name (Name should contains alphabe	ts and th	e length sho	ould not be le	ess than 6	character
Password (Password should not be les	s than 6	characters 1	ength).		
7. JS VALIDATION:			<u> </u>		
E-mail id (should not contain any inv	alid and	must follow	the standar	1 pattern	name@do
Phone Number (Phone number should	l contain	10 digits or	nlv).	- patterin	
8. CSS: Design a web page using CSS	S (Casca	ding Style S	Sheets) which	n include	s the follo
e. e.e. besign a wee page using Col	Cused	Sing Style L	meets, which		10110
Use different font, styles: In the style	definitio	n you define	e how each s	elector sh	ould worl
pages, you refer to these selectors to a	ctivate the	he styles. Se	et a backgrou	nd image	e for both
0.000		-	-	2	
9. CSS:					
Control the repetition of the image wi	th the ba	ckground-re	epeat propert	y. Define	styles for
i. A:link					
ii. A:visited					
iii. A:active					
iv. A:hover					

10. Consider a small topic of your choice on which you can develop static Webpages and try to implement all topics of html, CSS and Js within the topic. Choose any one topic.

- i. Your Own Portfolio
- ii. To-Do List
- iii. Survey Form
- iv. A Tribute Page
- v. A Questionnaire

Mode of Evaluation CA ESE Git1 Git2	
CA ESE Total	
CA1 CA2 CA3	
10 20 20	
50 - 50	

Theory Cours	se Code:]	K24AI1	01P	7	Fheory	Course	Name:	Introdu	ction to	AI Lab			L	Т	Р	С
Course Offer	ed in: CS	E(AI)/C	CSE(AI	ML)									0	0	2	1
Pre-requisite:	NA	~ /	````	,												
Course Objec	tives:															
The objective	of this co	ourse is	to prov	ide stu	dents wi	th a soli	id under	rstanding	g of AI	principle	es and ap	plication	is, ga	in in	sights	s into
robotics, comp	outer visio	n and na	atural la	nguage	processi	ng, expl	ore ethic	cal cons	ideratio	ns, and ac	quire ha	nds-on sl	cills i	n imp	leme	nting
AI solutions fo	or real-wo	rld scen	arios.													
Course Outco	me: Afte	r compl	etion of	the cou	rse, the	student	will be a	uble to		1	(•)	n 1				
1. To under	stand the	fundan	nental c	oncepts	s, theorie	es, and	techniq	ues in	artificia	l intellig	ence (Al	I), and a	ittain	prof	iciend	cy in
implemen	ting and u	itilizing	search a	algorith	ms, neur	istics, a	nd game	e playing	g strateg	ies.	hnianaa	to contin	a and		dor	nain
2. To unders	tand diffe	in AL or	nous of	knowle	age repr	esentati	on and I	earning	to apply	these tec	nniques	to capture	e and	utiliz	e dor	nain-
3 Develop i	novieuge	III AI Sy	stems.	and to	hniquas	associa	ted with	annlyin	g AI of	Natural I	anguaga	Processi	na (N	JI D)	Com	nutar
J. Develop II Vision an	d Robotic	s uie en	anenge		linques	associa		apprym	g AI 01		anguage	11000331	ing (i	NL1),	Com	puter
4 Acquire k	nowledge	of the e	thical co	nsidera	tions rel	ated to A	AL enco	mnassin	g fairne	ss fransn	arency a	nd accou	ntabi	lity a	nd an	alvze
the societ	al impact	s of AI	technol	logies t	o develo	op a cor	nprehen	sive un	derstand	ling of re	esponsibl	e AI pra	ictice	s and	futu	ristic
domains.	1			0		1	1			0	1	1				
CO-PO Mapp	oing (Scal	e 1: Lo	w, 2: M	edium,	3: High	ı)					-					
СО-РО	DO1	DOD	DOA	DO 4	D 07	DOC	DOF	DOG	DOG	DO10	DO11	DOIA	DC	01		
Mapping	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	POI0	POII	PO12	PS	01	PS	O2
CO1	3	3	3	3	3			2	2		3	3		2		2
CO2	3	3	3	3	3			2	2		3	3		2		2
CO3	3	3	3	3	3			2	2		3	3		2		2
CO4	3	3	3	3	3			2	2		3	3		2		2
List Of Pract	ical's (Inc	licative	& Not	Limite	d To)											
1. n-Queens	problem ı	using Lo	ocal Sea	rch.												
2. n-Queens	problem ı	using Co	onstrain	t Satisfa	action.											
3. Customer	Segmenta	ation dat	ta visual	ization												
4. Data Aug	nentation	Image	annotati	on												
5. Data Pre-	processing	5														
6. Image Cla	ssification	n and D	ataset C	reation												
7. Implemen	tation of l	Decisior	n Tree													
8. Implemen	tation of l	K-mean	s.													
9. Implemen	tation of I	Neive B	ays													
10. Chatbot																
]	[otal	Hou	rs: 15	hrs.

Mode of	f Evaluat	ion		
	CA		ESE	Total
CA1	CA2	CA3		
5	10	10		
	25		25	50
	25		25	50

Theory Cour	se Code:	K24EC	102P	I	heory (Course	Name:	Intellig	ent Hea	lth Care	Systems	s Lab	L	Т	Р	С
Course Offer	ed in: EC	E.		.									0	0	2	1
Pre-requisite	: NA															
Course Obje	ctives:															
1. Explore I	Fundament	als of H	Iealth Ca	are and t	he Role	of Intel	lligent S	ystems	in Healt	th Care S	ystem.					
2. Realize H	lealth Care	e Techn	ologies	with Em	erging [Frends a	ind Inno	vations.								
Course Outc	ome: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to								
1. Apply the	Fundame	entals of	Health	Care Sy	stems	_										
2. Explore t	he Role of	Intellig	gent Syst	ems in I	Health C	Care.										
CO-PO Map	ping (Scal	le 1: Lo	w, 2: M	edium,	3: High	l)	T	1	T	T	1	1	1		1	
СО-РО	DO1	DO2	DO2	DO4	DO5	DOC	D 07	DOP	DOO	DO10	DO11	DO12	DC	01		
Mapping	POI	PO2	P05	PU4	P05	PUO	PO/	PUð	P09	POIU	POII	PO12	PS	UI	PS	02
CO1	3	3	2	2	1	1	-	1	-	-	-	1				3
CO2	3	3	2	2	1	1	-	1	-	-	-	1				3
List Of Pract	tical's (Inc	dicative	& Not	Limited	l To)					•						
1. Design at	nd Implem	ent Aut	omated	Vital Sig	ons Mor	nitoring	System									
2. Design at	nd Implem	ent Sm	art Alert	System	for Hea	lth Para	meters.	-								
3. Design at	nd Implem	ent Inte	ractive S	Smart To	ongue.											
4. Design a	nd Implem	ent i-ba	ll synch	ronized	with eve	e rotatio	n.									
5 Design a	nd Implem	ent Ma	chine Le	arning f	or Predi	ctive H	ealthcar	e Analy	tics							
6 Design a	nd Implem	ent We	arable H	eart Rat	e and SI	PO2 Mc	nitor	e i illui j								
7 Design a	nd Implem	ent Por	table EC	'G Moni	toring S	vstem	inton.									
8 Design a	nd Implem	ent Sm	art Fall I	Detection	n Syster	n										
9 Design a	nd Implem	ent Noi	1_invasiv	ve Gluco	se Mon	itor										
10 Design a	nd Implem	ent Sm	art Pill F)isnense	r	101.										
10. Design a	nd Implem	ent Boo	lv Temn	erature	1. Monitor	ing Pate	•h									
12. Design a	nd Implem	ent We	arable E	MG Mu	scle Act	tivity M	onitor.									
13. Design a	nd Implem	ent Cor	ntinuous	Blood F	ressure	Monito	r.									
14. Design a	nd Implem	ent Wi	eless He	alth Mo	nitoring	y System	1.									
	· · ·				6	,,						Т	otal	Hou	s: 15	5 hrs.
Mode of Eva	luation															
(CA		ESE	r	Fotal											
CA1 CA	2 CA	3														
10 20	20)														
	50				50											

Theory Course Code: K24EN102P	Theory Course Name: Explorations in Electrical Engineering Lab	L	Т	Р	С
Course Offered in: EEE/ELCE/ME		0	0	2	1
Pre-requisite: NA					

Course Objectives:

- 1. Implement different circuits and verify circuit concepts for DC and AC circuits.
- 2. Prove the various theorems used to reduce the complexity of electrical network.
- 3. The operation and characteristics of AC machines and DC machines.
- **Course Outcome:** After completion of the course, the student will be able to
- 1. Understand the concepts of electric circuit solutions with DC supply using mesh-nodal analysis and Network Theorems.
- 2. Apply the concepts of electrical circuits with AC supply in single and three phase system
- 3. Analyze the equivalent circuit and performance of single-phase AC transformer
- 4. Illustrate the working principle of induction motors, synchronous machines and DC machines.

CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)

C M	O-PO apping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
C	01	2	2	2	2	-	-	-	-	-	-	-	2	-	-
C	02	3	2	2	2	-	-	-	-	-	-	-	2	-	-
C	03	3	3	2	2	-	-	-	-	-	-	-	3	-	-
C	04	gPO1PO2PO3PO4PO5PO6PO7PO8PO9PO10PO11PO12PS022222-32222-33222-33223-233223-33223-Practical's (Indicative & Not Limited To)fifcation of Kirchhoff's Laws: Conduct an in-depth analysis of Kirchhoff's Current and Voltage Laws through prification of Superposition Theorem in Linear Circuits: Investigate the Superposition Theorem by analysing linits with multiple sources. Assess the theorem's effectiveness in simplifying circuit analysis and its implicationoring Thevenin's Theorem in Circuit Analysis: Study and apply Thevenin's Theorem to convert complex circuitapacitance) of a single-Phase AC Series RLC Circuit: Analyze and determine the key parameters (resistanceapacitance) of a single-Phase AC Series RLC Circuit: Explore the impact of these parameters on circuit behavicdance, phase angle, and resonance.surement and Analysis of Power Consumption in Fluorescent Lamps: Set up and measure the power consescent lamp (tube light), including an analysis of efficiency and pow								-	-				
Lis	t Of Practi	ical's (Inc	dicative	& Not	Limited	l To)							•		
1.	Verificati	on of Kir	chhoff's	Laws: (Conduct	an in-d	epth ana	lysis of	Kirchho	ff's Cur	rent and `	Voltage I	Laws thro	ough practi	cal circuit
_	experimen	<u>its, valida</u>	ting thei	r applic	ations in	comple	x electri	cal netw	vorks an	d unders	tanding t	heir role	in circuit	analysis a	<u>id design.</u>
2.	circuits wi	on of Sup ith multip	erposition ole source	on Theo ces. Ass	rem in l	Linear (theorem	s effect	Investig iveness	gate the in simp	Superpolition Superpolition Superpolities (Superpolities)	circuit an	heorem alysis ar	by analys nd its imp	olications f	electrical for circuit
	design and	l problem	i-solving	g.											
3.	Exploring	Thevenir	i's Theo	rem in (Circuit A	nalysis:	Study a	and appl	y Theve	nin's Th	eorem to	convert	complex	circuits in	tions and
	benefits.	circuits.	Exami	ne ns pi	actical	use m (circuit d	lesign a	na trout	bleshoot	ing, emp	nasizing	real-wol	nd applica	tions and
4.	Parameter	Analysis	of Sing	le-Phas	e AC Se	eries RL	C Circu	it: Anal	yze and	determi	ine the ke	ey param	eters (res	sistance, in	ductance,
	and capac	itance) of	a single	e-phase	AC serie	es RLC	circuit.	Explore	the imp	act of th	iese parai	neters or	n circuit b	behaviour,	including
	impedance	e, phase a	ngle, an	d resona	ance.										
5.	Measurem	ient and	Analysi	s of Poy	ver Con	sumptio	on in Fl	uoresce	nt Lamp	os: Set	up and n	neasure	the powe	r consum	otion of a
	fluorescen	it lamp (t	tube light	nt), incl	uding ai	n analys	sis of ef	ficiency	and po	ower fac	ctors. Un	derstand	the imp	lications for	or energy
6	Power Me		nt and F	Power F	actor Im	provem	s. ent in S	Single_P	hase A(^C ircui	ts: Meas	ure the i	ower an	d nower f	actor of a
0.	single-pha	ise AC sei	ries indu	ictive ci	rcuit. In	vestigat	e metho	ds to im	prove po	ower fac	tor using	capacito	rs and ev	aluate the	impact on
	circuit per	formance	and eff	iciency.		0			1 1		0	I			1
7.	Efficiency	Testing	of a Sin	gle-Pha	se Trans	former:	Perform	n a load	test on	a single	-phase tr	ansforme	er to dete	rmine its e	fficiency.
	Analyze p	erforman	ce unde	r varyin	ig load o	conditio	ns and t	understa	ind the j	practical	conside	rations f	or transfe	ormer oper	ation and
8.	Speed Cor	ntrol Tech	nniques	for DC S	Shunt M	otors: E	xplore s	speed co	ontrol me	ethods fo	or DC shu	unt moto	rs throug	h armature	and field
	control tec	chniques.	Assess t	he effec	tiveness	and app	olication	s of the	se metho	ods in in	dustrial a	nd comn	nercial m	otor-driver	ı systems.
9.	Starting an	nd Revers	sal of Tl	nree-Pha	ise Indu	ction M	otors wi	th speed	d monito	oring: St	tudy the o	operation	and spe	ed reversal	of three-
	phase indu	iction mo	tors. Me	easure a	nd recor	d motor	speed in	n both fo	orward a	ind reve	rse direct	tions, and	ł analyze	the implic	ations for
10	Calibratio	n Techni	oues for	on. r Single	-Phase	Inductio	n-Type	Energy	Meters	· Perfo	rm calibr	ration of	single-n	hase indu	tion-type
10.	energy me	ters to en	sure acc	urate me	easurem	ent of el	ectrical	energy.	Explore	calibrat	ion meth	ods and t	heir signi	ficance for	metering
	accuracy a	and compl	liance.												
11.	Cut-Out S	lections E	Demonst	ration o	f Electr	ical Ma	chines:	Examin	e and di	iscuss ci	ut-out see	ctions of	various	electrical	nachines,
	Including Understan	d their co	cnines,	three-pl	ation a	uction	machin n princi	es, sing ples thro	gie-phas	e induc	xnloratio	cnines,	and sync	enronous 1	nachines.
12.	Overview	of Electri	ic Vehic	le Com	onents:	Demon	strate ar	nd analy	ze the v	arious se	ections of	f electric	vehicles.	Explore th	ne design.
	functional	ity, and ir	ntegratio	n of key	compo	nents, ir	cluding	electric	motors,	battery	systems,	and cont	trol electr	onics, to u	nderstand
	their role i	in modern	n transpo	ortation.											
1												Total 1	Lecture 1	Hours 1	5 hours

Iode of	f Evaluat	ion		
	CA		ESE	Total
CA1	CA2	CA3		
5	10	10		
	25		25	50

The	eory Cours	se Code:	K24CS	101P	T	heory (Course	Name:	<mark>Data St</mark>	ructure	Lab			L	Т	Р	С
Co	urse Offero	ed in: CS	E/CS/I	Г/CSIT/	/CSE(A	I)/CSE((AIML)	/ECE/F	EEE/EL	CE/ME	2			0	0	2	1
Pre	-requisite:	The cour	se requir	es backg	ground ir	n mathen	natics an	d suffici	ent prog	ramming	g skills.						
Co	urse Objec	urse Code: K24CS101P Theory Course Name: Data Structure Lab L T P C fered in: CSE/CSTT/CSET(AIL)/CSE(AIL)/ECE/EE/ELCE/ME 0 0 2 1 ite: The course requires background in mathematics and sufficient programming skills.															
1.	To provid	rse Code: K24CS101P Theory Course Name: Data Structure Lab L T P C red in: CSE/CSIT/CSE(AI/L/CSE(AIML//ECE/EE/ELCE/ME 0 0 2 1 e: The course requires background in mathematics and sufficient programming skills.															
2.	To provid	Code: K24CS101P Theory Course Name: Data Structure Lab L T P C red in: CSE/CSTT/CSE(AIML/KECF/EE/ELCE/ME 0 0 2 1 ret in: CSE/CSTT/CSE(AIML/KECF/EE/ELCE/ME 0 0 2 1 retives: ide acquires background in mathematics and sufficient programming skills.															
3.	To provid	de insigh	t into th	ne work	ing of a	searchi	ng and	sorting	algorit	hms.							
4.	To develo	op the an	alytica	l ability	for sol	ving re	al-worl	d probl	lems us	ing the	data stru	icture.					
Co	urse Outco	me: Afte	r compl	etion of	the cour	rse, the	student	will be a	able to								
1.	Use the co	oncept of t	the array	y in sear	ching ar	nd sortin	g algori	thms.									
2.	Illustrate t	he concep	pt of Dy	namic M	femory	Allocati	on for o	peration	is on lin	ked list.							
3.	Analyze d	ifferent re	ecursion	techniq	ues usin	g stack.											
4.	Analyze the	ry Course Code: K24CS101P Theory Course Name: Data Structure Lab L T P C se Offered in: CSE/CS/TT/CST/CSE/AIII/CSE/AIII/CSE/AII/CSE/AII/CSE/A															
	-PO Mapp	oing (Scal	le 1: Lo	w, 2: M	ealum,	3: High)							<u> </u>		1	
CO	D-PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	-	
Theory Course Offered in: CPre-requisite: The course Objectives:1.To provide a dec2.To provide expe3.To provide insig4.To develop the aCourse Outcome: Aft1.Use the concept of2.Illustrate the concel3.Analyze different4.Analyze the fundaCO-PO Mapping (ScCO-PO Mapping (ScCO13CO23CO33CO43CO53List Of Practical's (In1.Write a program2.Given an integer a element is distinct3.Given a sorted arr the index where it4.Nirobi has given a matrix. Now Rio n 	-			_								_		-	PS	02	
CO	D1																
CO	02	3	2	2	1	1	1	-	-	-	-	-	2		2		-
CO	03	3	2	2	1	1	1	-	2 2								
CO	04	3	2	2	1	1	1	-	-	-	-	-	2		2		-
CO	05	3	2	1	-	1	1	-	-	-	-	-	2		2		-
Lis	t Of Practi	ical's (Inc	dicative	& Not	Limited	l To)											
1.	Write a j	program	to find	the su	m of e	elements	s of po	sitive a	ind neg	ative e	lements	of a one	- dimens	ional	array		
2.	Given an i element is	nteger arı distinct.	ray num	s, write	a progra	am to p	rint true	if any v	alue app	bears at	least twic	e in the a	array, and	l retu	rn fal	se if e	every
3.	Given a so	orted array	y of dist	inct inte	gers an	d a targe	et value,	write a	program	n to pri	nt the ind	lex if the	target is	foun	d. If 1	not, re	eturn
	the index y	where it v	vould be	e if it we	re inser	ted in or	der.			-			•				
4.	Nirobi has	s given a	matrix C	C of size	N x M	to Rio.	Also, R	io is giv	en the p	osition	of subma	trix as X	1, Y1, a	nd X	2, Y2	insid	e the
	matrix. No	ow Rio ne	eds to f	ind the s	sum of a	ll eleme	ents insid	de that s	ubmatri	x. Can y	you help l	Rio in co	mpleting	the t	ask as	ssigne	ed by
5	NIFODI /	ven the n	ointer to	the hea	d node c	falinka	ad list ar	d an int	agar to s	add to th	a list Cra	ate a ner	v node w	ith th	o giv	on int	agar
5.	Insert this	node at t	he tail o	of the lir	wheet list	and ret	urn the	head no	de of th	e linked	l list form	ned after	inserting	this	new	node.	. The
	given head	d pointer	may be	null, me	aning th	at the in	itial list	is empt	ty.				2	,			
6.	Given hea	d, the hea	d of a li	nked list	t, write a	a progra	m to pri	nt to de	termine	if the li	nked list l	nas a cyc	le in it or	not.			
7.	You have	three stac	ks of cy	linders	where e	ach cyli	nder has	s the san	ne diam	eter, but	t they may	y vary in	height.	You	can ch	ange	the
	height of a	a stack by	removi	ng and d	liscardir	ng its top	pmost c	ylinder a	any num	ber of t	imes.						
8.	Find the m	aximum	possible	height	of the sta	icks sucl	h that all	of the s	tacks are	e exactly	y the same	e height.	This mea	ans ye	ou mu	st rer	nove
0	zero or mo	ore cylind	ers from	the top	of zero	or more	of the t	hree sta	cks unti	l they ar	e all the s	same hei	ght, then	retur	n the	heigh	ıt.
У. 10	Implemen	i a last-li	1-111'St-O		() stack	using	only tw	o queu	es.		1.						
10.	write a pr	ogram to	search a	key stri	ng in th	e given	$\frac{1}{1}$	strings	using bi	nary sea	irch.						
11.	Write a pr	ogram to	sort the	given el	ements	using in	sertion	sort tech	inique.	1 01	<u> </u>						
12.	Given the	root of a	binary ti	ree, writ	e a prog	ram to p	orint the	preorde	er traver	sal of its	nodes' v	alues.	• •	P ~-			
13.	Given a ro	ot node r	eterence (possib	e of a BS	ST and a (ad) of the	i key, w BST	rite a pr	ogram t	o delete	the not	te with th	e given l	cey in the	e BST	I' and	retur	n the

Course Booklet (B.Tech 1st year)

14. Give	n the roo	t of a binar	y tree, write	a program to chec	k whether it is a mirror of itself (i.e., symmetric around its centr	e).					
15. Give	n a roote	d binary tro	ee, write a p	rogram to print the	e sum of all left leaves. A leaf is a node with no children. A left	leaf is a leaf					
tilat	is the left	child of al	Iother node.								
					Total Lecture Hours	15 hours					
Mode of	Mode of Evaluation										
	CA		ESE	Total							
CA1	CA2	CA3									
5	10	10									
	25		25	50							

Theory Cours	se Code: I	K24ML	101P	Т	heory (Course	Name: 1	Python	for Eng	<mark>gineers L</mark>	ab		L	Т	P	С
Course Offer	ed in: CS	E/CS/I	ſ/CSIT/	CSE(A	I)/CSE(AIML)	/ECE/E	EE/EL	CE/ME	2			0	0	4	2
Pre-requisite:																
Course Objec	tives:															
The objective	of this cou	urse is to	provide	e studen	ts to bui	ld basic	prograi	ns using	g fundar	nental pro	ogrammi	ng constr	ucts li	ike va	ariab	les,
conditional log	gic, loopin	ig, and f	unctions	and wo	rk with	datasets	to creat	e graphs	s and Da	ita Frame	s. consid	erations,	and ac	cquir	e han	ds-
on skills in im	plementin	g AI sol	utions f	or real-v	world sc	enarios.										
Course Outco	me: Afte	r comple	etion of	the cour	se, the s	student	will be a	ble to								
1. Design eff	ficient alg	orithms	to solve	compu	tational	problen	ns									
2. Understan	d the fund	damenta	l concep	ots of da	ta types	, expres	sions an	d loops	in Pythe	on						
3. Understan	d and app	ly the c	oncept o	of function	on argui	ments ai	nd Pytho	on List c	operation	ns.						
4. Understan	d and app	ly the c	oncept o	of Pytho	on Conta	ainers lil	ke String	g, Tuple	,Set an	d Diction	ary					
СО-РО Мар	oing (Scal	le 1: Lo	w, 2: M	edium,	3: High)										
Manning	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSC)1	PS	02
mapping															10	<u> </u>
CO1	3	3	3	3	3	2	2	2	2	3	3	3	2	2		2
CO2	3	3	3	3	3	2	2	2	2	3	3	3	2	2		2
CO3	3	3	3	3	3	2	2	2	3	3	3	3	2	2		2
CO4	3	3	3	3	3	2	2	1	3	3	3	3	2	2		2
CO5	3	3	3	3	3	2	2	1	3	3	3	3	2	2		2
List Of Practi	ical's (Inc	licative	& Not]	Limited	To)											

1. Introduction to Python: Python variables, Python basic Operators, Type Conversion, Expressions, understanding python blocks, Python Data Types, Declaring and using Numeric data types: int, float etc,

Activities:

(a) Temperature conversion, Palindrome Test, Reverse Number.

(b) Print all Strong numbers less than or equal to N.

(c) Sum and Difference of Two Numbers, Roots of Quadratic Equation."

(d)Write a python code that will read in a dictionary containing key/value pairs of names: [marks] for a list of students. Print the average of the marks array for the student's name provided, showing 2 places after the decimal.

2. Python Program Flow Control Conditional blocks: If, else and else if, simple for loops in python, For loop using ranges, Use of while loops in python, Loop manipulation using pass, continue, break and else, Programming using Python conditional and loop blocks Activities:

(a) Count the number of even and odd numbers from a series of numbers.

(b) Print a list in reverse order (from last to the first item) using while and for-in loops.

(c) When interest compounds q times per year at an annual rate of r % for n years, the principle p compounds to an amount a as per the following formula a = p (1 + r / q) nq "

(d) Convert all lowercase letters to uppercase letters and vice versa.

(e) Program to access the index of a list, Program to append a list to the second list.

(f) Make a nested loop and a python closure to make functions to get multiple multiplication functions using closures. That is using closures, one could make functions to create multiply_with_5() or multiply_with_4() functions using closures."

3. Python Complex Data Types: Using string data type and string operations, Defining list and list slicing, Use of Tuple data type, String, List and Dictionary, Manipulations Building blocks of python programs, String manipulation methods, List manipulation, Python Functions, Organizing python codes using functions, Sort the sentence in alphabetical order/ remove punctuations from the given string

Activities:

(a) Program to get a string made of the first 2 and last 2 characters of a given string. If the string length is less than 2, return the empty string instead.

(b) You are given the first name and last name of a person on two different lines. Your task is to read them and print the following: Hello first name last name! You just delved into python."

(c) Program to create a dictionary of keys x, y, and z where each key has as value a list from 11-20, 21-30, and 31-40 respectively. Access the fifth value of each key from the dictionary

(d) Implement a Python code snippet that takes an integer n as input, followed by n space-separated integers, creates a tuple T with those integers, and then calculates and outputs the hash value of the tuple using the built-in hash() function.

(e) program to create a dictionary of keys x, y, and z where each key has as value a list from 11-20, 21-30, and 31-40 respectively. Access the fifth value of each key from the dictionary"

4. Python File Operations: Reading files, Writing files in python, Understanding read functions, read(), read line(), read lines(), Understanding write functions, write() and write lines(), Manipulating file pointer using seek Programming, using file operations. Activities:

(a)Read content from one file and write it into another file.

(b)Pulling a random word or string from a line in a text file in Python

(c)Create a file where all letters of English alphabet are listed by specified number of letters on each line."

(d)Write a dictionary to a file in Python

(e)Create a file where all letters of English alphabet are listed by specified number of letters on each line.

(f) program to convert a date of yyyy-mm-dd format to dd-mm-yyyy format."

5. Python Packages: Simple programs using the built-in functions of packages matplotlib, simple programs using the built-in functions of packages NumPy, pandas etc.

Activities:

(a) Write a program in python to find maximum values over index in Data frame.

(b) Read all product sales data and show it using a multiline plot. (Data will be provided by faculty for analysis).

(c) WAP to create a 5X2 integer array from a range between 100 to 200 such that the difference between each element is 10."
(d)Case Study based LAB: Case study Based on Matplotlib, Pandas, NumPy, that work on retail sales data, Credit card transaction data etc. Students will find patterns and they will draw inferences based on statistical results that were found using the packages. (Faculty will provide case study)"

			ion	Evaluat	Mode of
	Total	ESE		CA	
			CA3	CA2	CA1
			20	20	10
	100	50		50	
	100	50		50	

Theory Course Code: K24EN103P	Theory Course Name: Emerging Technologies for Engineers	L	Т	Р	С				
	Lab								
Course Offered in: EEE/ME		0	0	2	1				
Pre-requisite: NA									
Course Objectives:									
1. To learn the basic concepts of cloud cor	To learn the basic concepts of cloud computing and its underlying technologies with its implementation.								
2. To learn the basic concepts of Blockcha	in and its underlying technologies with its implementation.								
Course Outcome: After completion of the o	course, the student will be able to								
1. Understand the concepts of Industry 1.0	to Industry 5.0 & 5G technology.								
2. Apply the MATLAB for Engineering A	pplications								
3. Understand the concepts of cloud comp	uting								
4. Understand the concepts of block chain.									
CO-PO Mapping (Scale 1: Low, 2: Mediu	m, 3: High)								

CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	2	-	-	-	-	-	-	-	2	-	-
CO2	3	2	2	2	-	-	-	-	-	-	-	2	-	-
CO3	3	3	2	2	-	-	-	-	-	-	-	3	-	-
CO4	3	3	2	2	-	-	-	-	-	-	-	3	-	-
List Of Pract	ist Of Practical's (Indicative & Not Limited To)													
1. To acqui	1. To acquire data from sensors using MATLAB.													
2. To visual	2. To visualize data from sensors using MATLAB.													
3. To imple	3. To implement data transmission using the MQTT protocol.													
4. To log se	ensor data	and per	form an	alysis u	sing MA	TLAB								
5. To create	e a real-tir	ne dash	board fo	or visual	izing Io'	Γ data u	ising MA	ATLAB	•					
6. To under	stand Dat	ta Analy	sis with	AWS S	3 and M	IATLA	B.							
7. To perfo	rm real-ti	me data	analysis	s using l	MATLA	B and A	AWS ser	rvices						
8. To under	stand the	basic co	oncepts	of Block	chain te	chnolog	gy and c	reate a s	simple E	Blockchai	n using N	MATLAE	3.	
9. To under	stand MA	TLAB	and AW	/S Lamb	da Integ	gration.								
10. To proce	ss a datas	et using	Google	Cloud	Functior	ns and N	ATLA	B.						
	Total Lecture Hours 15 hours													
Mode of Eval	Mode of Evaluation													
C	CA		ESE		Total									
CA1 CA2	2 CA	.3												
5 10	1()												
2	25		25		50									

Th	neory Cours	se Code: I	K24EN	105P	J	Cheory (Course [Name:	Electric	al Engi	neering	Worksho	op	L	Т	Р	С
Co	ourse Offer	ed in: EL	CE											0	0	2	1
Pr	e-requisite:	: NA															
Co	ourse Objec	tives:															
1.	Develop p	bractical sl	kills in r	esidenti	al electi	rical wir	ing, incl	luding s	eries and	d paralle	el circuits	, staircas	e wiring,	and	safet	y devi	ices
2	Acquire h	ands on a	vperien	ce in sol	js. doring t	achniqu	os PCB	assamb	hy and	the one	ration of t	ransform	are alon	a wit	th an		
۷.	undorston	ding of al	actrical		onte on	l symbo	es, rCD	assenn	ny, and	the open		1411510111	iers, alon	g wn	in an		
2	Coin Imor	unig of ele	aubatati		ents and	and dom	IS.		toma in	aludina	the estimation	ation on	1 lovout e	fala	atriaa	1	
э.	for a typic	al BHK h	SUDSLALI	on comp	onents		lestic wi	ring sys	stems, m	cruaing	the estin	ation and	i layout c	or ele	curica	I CITC	lits
C	ourse Outcome: After completion of the course, the student will be able to																
	Surse Outcome: After completion of the course, the student will be able to Apply residential wiring techniques, ensuring proper installation and testing of electrical components and safety devices.																
1.	Apply residential wiring techniques, ensuring proper installation and testing of electrical components and safety devices.																
2.	Perform p	Perform proficient soldering on PCBs, connecting components with accuracy and reliability.															
3.	Analyze a	and under	stand th	ne const	ruction,	operati	on, and	applica	ations of	f transfo	ormers, r	ectifiers,	and the	key	comp	onen	ts of
	electrical	supply sys	stems.														
CO	D-PO Map	oing (Scal	le 1: Lo	w, 2: M	edium,	3: High	l)										
C M	O-PO Iapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PS	02
С	01	2	2	2	2	-	-	-	-	-	-	-	2		-		-
С	202	3	2	2	2	-	-	-	-	-	-	-	2		-		-
C	203	3	3	2	2	-	-	-	-	-	-	-	3		-		-
Li	st Of Practi	ical's (Inc	dicative	& Not	Limited	d To)											
1.	To practic	the use	and app	lication	of work	shop to	ols. Also	o, learn	the Elec	trical ar	d Electro	nics Syn	nbols.				
2.	To perform	m the oper	ration of	f two lar	nps in s	eries and	d paralle	el									

3.	To perform the staircase wiring and its testing
4.	To practice the soldering techniques and connecting wires, components connection to a PCB.
5.	To perform BHK house wiring including distribution board using isolator, MCB, ELCB.
6.	To study the construction and operation of a transformer.
7	To visit the college substation and familiarize the surply system. Town former, UT Developed and Dista

7. To visit the college substation and familiarize the supply system, Transformer, HT Panel and Distribution, etc.

8. Ohm's Law Verification: Use circuit simulation software like LT spice or Multisim to design a circuit verifying Ohm's law.

9. Sinusoidal Waveforms: Plot sinusoidal waveforms in MATLAB. Vary the amplitude, frequency, and phase to observe the changes.

 10. To study Diodes and Rectifiers. Building and analysing half-wave and full-wave rectifier circuits using MATLAB.

 Total Lecture Hours

 15 hours

Mode of Evaluation

	CA		ESE	Total
CA1	CA2	CA3		
5	10	10		
	25		25	50

Theory Cours	e Code:	K24FL1	101P	Theo	ory Cour	se Name	<mark>: Basic I</mark>	Proficien	<mark>cy in Ja</mark> j	panese		L	Г Р	С
Course Offere	d in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)	CSE(AI	ML)/EC	E/EEE/I	ELCE/M	E			0) 4	2
Pre-requisite:	NA													
Course Object	tives:	•			. 1	<u> </u>	••••	L	1	1.1	1 . 1 1		• •	1.11.
1. To Develop	Dasic list	ening, sp	peaking, i	eading a	na writin	ig profici	ency in t	ne target	language	e, enablin	g global c	commun	ication s	KIIIS.
2. To Foster an	understa	the glob	1 intercui	ural con	imunicat	ion, paru	cularly b	etween I	ndian and	1 target-la	anguage-s	speaking	culture	<i>.</i> .
5. Introduce su		the glob		cance of	the targe	t languag	ge and ap	preciate	its culture		s in interi	ational	contexts	•
Course Outco	me: Afte	er comple	etion of the	ne course	e, the stud	lent will	be able to	0	1. 1	<u> </u>	•			
1. Understand	how lang	uage and	d culture	interact 1	n global	context a	ind impac	t intercu	Itural con	nmunica	tion			
2. Introduce the	emselves	in the re	espective	languag	e and unc	lerstand t	the syllab	oles and r	number	.1 .11				
 Apply their learning in basic conversations and understand the social efiquette of professional world Utilize the skills of listening, speaking and non-verbal communication in the target language 														
. Utilize the skills of listening, speaking and non-verbal communication in the target language CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)														
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)														
CO-PO Map	CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12													
CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12														
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CO2 - - - - - 1 3 - 1 CO3 - - - - - - 1 3 - 1													1	
CO3 - - - - - 1 3 - 1 CO4 - - - - - - 1 3 - 1													1	
CO5		-	-	-	-	-	-	-	-	1	3	-	1	
Unit 1			Basic (Compon	ent of Ja	panese							09 ho	urs
• Express ar	nd unders	stand bas	sic greetir	ngs										
• Say his/he	r name a	nd ask o	thers											
• Ask, answ	er and u	nderstand	d question	ns on nat	ionality									
• Identify, s	ay and u	nderstan	d number	s from 1	-20									
Orally pre	sent ones	self brief	ly. (using	simple a	adjective	s)								
 Recognize 	and spe	ll correct	tly alphat	et in Ja j	panese									
• Understan	Understand and use basic classroom instructions.													
Unit 2 Shopping and Dining in Japan 09 hours											urs			
• Topics: Asking for prices, ordering food, and making simple requests														
• Listening:	Listening: Store and restaurant dialogues													
• Speaking:	Role-pla	aying cus	stomer in	eraction	s in shop	s and res	taurants							
Cultural F	ocus: Jap	banese di	ning etiq	uette and	l manner	s ~								
Unit 3			Techno	ology an	d Digital	l Commu	unicatior	n in Japa	nese				09 ho	urs

• Topics: Messaging apps, writing short emails

- Listening: Voice message comprehension, instructions in Japanese
- Speaking: Simulating phone conversations and digital communication
- Cultural Focus: Technology use in Japan and its impact on communication

L	-	Cultural Focus. Teenhology	use in Japan and its impact on communication								
	Uni	it 4	Respecting Japanese and Indian Cultures in Global Context	09 hours							
	٠	• Topics: Japanese traditions, festivals, family structures, Japanese language in international business and cultural exchange									
	٠	 Listening: Japanese discussions on family and holidays 									
	•	Cultural Comparison: Japan	ese vs. Indian family values, hierarchical structures								
ſ		Total Lecture Hours 30 hours									

Mode of Evaluation MSE ESE Total CA CA3 MSE1 MSE2 CA1 CA2 40 40 7 6 7 20 100 80 -

Th	eory Course Code:	K24FL1	02P	Theo	rv Cour	se Name	: Basic I	Proficien	<mark>cv in Ge</mark>	rman		L	Т	Р	С
Co	ourse Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)/	CSE(AI	ML)/EC	E/EEE/	ELCE/M	IE IE			0	0	4	2
Pre	e-requisite: NA					i									
Co	urse Objectives:														
1.	To Develop basic lis	stening, s	peaking,	reading a	and writii	ng profic	iency in	the target	languag	e, enablii	ng global (commu	nica	tion s	kills.
2.	To Foster an unders	tanding o	of intercu	ltural co	mmunica	tion, par	ticularly	between	Indian a	nd target	-language	-speaki	ng c	culture	'S.
3.	Introduce students to	o the glo	bal signit	ficance of	f the targ	et langua	ige and a	ppreciate	e its cultu	ire & ethi	ics in inte	rnation	al co	ontext	5.
Co	urse Outcome: Afte	er comple	etion of th	ne course	, the stud	lent will	be able t	0							
1.	Understand how lan	iguage ar	nd culture	e interact	in global	context	and imp	act interc	ultural c	ommunic	ation				
2.	Introduce themselve	es in the 1	respectiv	e languag	ge and un	derstand	the sylla	ables and	number						
3.	Apply their learning	g in basic	conversa	ations and	d underst	and the s	ocial eti	quette of	professio	onal worl	d				
4.	Utilize the skills of	listening,	, speakin	$\frac{g}{r}$ and not	n-verbal	commun	ication in	n the targ	et langua	ıge					
	CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High) CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO7 PO8 PO9 PO10 PO11 PO12														
C	CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12														
	o i o mupping	101	102	100	104	100	100	10,	100	107	1010	1011		012	
C	01	-	-	-	-	-	-	-	-	1	3	-		1	
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CO2 - - - - - 1 3 - 1 CO3 - - - - - - 1 3 - 1												1			
C	CO3 - - - - - 1 3 - 1 CO4 - - - - - - 1 3 - 1														
C	05	-	-	-	-	-	-	-	_	1	3	-		1	
Un	it 1		Basic (Compone	ent of Ge	rman							-	09 hoi	irs
•	Express and unders	stand bas	sic greeti	ngs										<i>•••</i> •••	
•	Sav his/her name a	nd ask of	thers	0											
•	Ask, answer and u	nderstand	d question	ns on nat	ionality										
•	Identify, say and u	nderstand	d number	s from 1	-20										
•	Orally present ones	self brief	ly. (using	g simple a	adjective	s)									
•	Recognize and spe	ll correct	tly alphat	bet in Gei	rman.	,									
•	Understand and us	e basic cl	lassroom	instructi	ons.										
Un	t 2 Navigating Everyday Situations 09 hours														
٠	Topics: Asking for directions, shopping														
•	Listening: Convers	Listening: Conversations in stores, public transport													
•	Speaking: Role-pla	aying trav	vel and sl	hopping s	scenarios										
•	Cultural Focus: Un	derstand	ling Gern	nan custo	mer serv	ice and p	olitenes	5							
Un	hit 3		Digital	and No	n-verbal	Commu	inicatior	ı in Gerr	nan				(09 hou	ırs
٠	Topics: Writing for	rmal/info	ormal em	ails, texts	3										

09 hours

- Listening: Voice messages, email instructions •
- Speaking: Practicing phone calls and messages .
- Cultural Focus: Differences in professional communication styles in Germany •
- **Respecting German and Indian Cultures in Global Context** Unit 4
- Topics: Work culture, family values, and celebrations, German language in international business and tourism ٠
- Listening: German perspectives on holidays and family life •
- Cultural Comparison: Indian vs. German approaches to work-life balance •

						Total Lect	ure Hours 30 hours
Mode of Ev	valuation						
М	SE		CA		ESE	Total	
MSE1	MSE2	CA1	CA2	CA3			
40	40	6	7	7			
8	0		20		-	100	
							-

Th	eory Course Code: K24FL103PTheory Course Name: Basic Proficiency in FrenchLTPCurse Offered in: CSE/CS/IT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME0042													
Co	urse Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)/	CSE(AI	ML)/EC	E/EEE/	ELCE/M	Ē			0	0 4	2
Pre	e-requisite: NA													
Co	urse Objectives:													
1.	To Develop basic lis	stening, s	peaking,	reading a	and writi	ng profic	iency in	the target	languag	e, enablir	ng global (commu	nication	skills.
2.	To Foster an unders	tanding of	of intercu	ltural con	mmunica	tion, par	ticularly	between	Indian ai	nd target	-language	-speaki	ng cultu	res.
3.	Introduce students to	o the glo	bal signif	ficance of	f the targ	et langua	age and a	ppreciate	its cultu	re & ethi	cs in inte	rnationa	l contex	cts.
Co	urse Outcome: Afte	er comple	etion of th	ne course	, the stuc	lent will	be able t	0						
1.	Understand how lan	guage ar	nd culture	e interact	in global	l context	and impa	act interc	ultural co	ommunic	ation			
2.	Introduce themselve	es in the i	respectiv	e languag	ge and un	derstand	the sylla	bles and	number					
3.	Apply their learning	g in basic	conversa	ations and	d underst	and the s	social etic	quette of	professio	onal worl	d			
4.	Utilize the skills of	listening.	, speakin	g and nor	n-verbal	commun	ication ir	the targe	et langua	ige				
	D-PO Mapping (Sca	le 1: Lov	w, 2: Me	dium, 3:	High)	T	1		Т	1	1	T	-	
	CO-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12													
	0-1 O Mapping	O Wiapping FO1 FO2 FO3 FO4 FO3 FO0 FO7 FO3 FO3 FO1 FO12												
C	01	1 3 - 1												
C	02													
C	03													
C	04	-	-	-	-	-	-	-	-	1	3	-	1	
C	05	-	-	-	-	-	-	-	-	1	3	-	1	
Un	it 1		Basic (Compone	ent of Fr	ench La	nguage		1	L.			09 h	ours
٠	Express and unders	stand bas	ic greetii	ngs										
•	Say his/her name a	nd ask o	thers											
•	Ask, answer and un	nderstand	d question	ns on nat	ionality									
•	Identify, say and u	nderstand	d number	s from 1	-20									
•	Orally present ones	self brief	ly. (using	g simple a	adjective	s)								
•	Recognize and spe	ll correct	ly alphat	bet in Fre	nch	,								
•	Understand and us	e basic c	lassroom	instructi	ons.									
Un	it 2 Basic Communication and Social Etiquette 09 hours													
٠	Topics: Greetings, introductions, simple conversations, Identify, say and understand numbers from 21-50													
•	Listening Activities: Audio recordings of daily conversations (e.g., asking directions)													
•	Speaking Practice: Role-playing everyday scenarios (e.g., at a café, meeting new people)													
•	Cultural Focus: French social etiquette, mealtime behavior													
Un	Unit 3 Expressing Needs and Asking Questions 09 hours													
٠	Topics: Asking for	help, ma	aking req	uests, and	d inquirie	es, Identi	- fy, say a	nd unders	stand nur	nbers fro	m 51-100)		
•	Listening: Simple	dialogues	s (e g or	dering fo	od askir	ng for inf	ormation	n)						

- Speaking: Formulating questions and responses •
- Cultural Focus: Formal vs. informal communication in France •
- Unit 4

Respecting French and Indian Cultures in Global Context

- 09 hours Topics: Understanding French family values, traditions, and how they differ from Indian values, French language in international ٠ diplomacy, travel, and business
- Activities: Discussions on holidays, family dynamics, and festivals •
- Comparison: French cuisine vs. Indian cuisine, cultural symbolism •

						Total Lect	ure Hours	30 ho
Mode of Ev	aluation							
M	SE		СА		ESE	Total]	
MSE1	MSE2	CA1	CA2	CA3				
40	40	6	7	7				
8	0		20		-	100		
						•	-	

Theory Course Code: K24FL104PTheory Course Name: Basic Proficiency in SpanishLTPCCourse Offered in: CSE/CS/IT/CSIT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME0042														С
Co	urse Offered in: CS	SE/CS/IT	C/CSIT/C	CSE(AI)	CSE(AI	ML)/EC	E/EEE/	ELCE/M	E			0	0 4	2
Pro	e-requisite: NA													
<u>Co</u>	urse Objectives:						·	41	1				:	-1-:11-
1. ว	To Develop basic its	stening, s	peaking,	reading a	and writh	ng prone	tionlorly	hotwoon	Indian or	e, enablir	ig global (commur	a cultur	SKIIIS.
2. 3	Introduce students t	o the glo	bol signit	illural co	f the torg	uton, par	ucularly	pprociete	ite cultu	ro & othi	os in into	-speakii	lg cultur	es.
з. С								ppreciate				mationa	I COIITEX	
1	Understand how lan	er comple	etion of the	interest	in global	lent Will	be able to	0 oot intoro	ultural or	mmunio	ation			
1. 2	Introduce themselve	iguage ai	respective	a languag	in gioba	derstand	the sylla	act interc	number	Jiiiiuiiic	ation			
2. 3	Apply their learning	t in basic	converse	tions an	d underst	and the s	ocial eti	ulter and	nrofessio	nal worl	d			
<i>4</i> .	Utilize the skills of	listening	speakin	g and not	n-verbal	commun	ication ir	the targ	et langua	ge	u			
CC	-PO Mapping (Sca	le 1: Lov	w. 2: Me	dium. 3:	High)					8-				
	$\begin{array}{c c} \hline \hline$													
C	O-PO Mapping PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12													
CO1 1 3 - 1														
CO2 1 3 - 1														
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$												1		
C	04	-	-	-	-	-	-	-	-	1	3	-	1	
C	05	-	-	-	-	-	-	-	-	1	3	-	1	
Un	it 1	1	Basic (Compon	ent of Sp	anish	1	1	1	1			09 ho	ours
•	Express and under	stand bas	ic greetii	ngs										
٠	Say his/her name a	ind ask of	thers											
٠	Ask, answer and u	nderstand	d question	ns on nat	ionality									
٠	Identify, say and u	nderstand	d number	rs from 1	-20									
٠	Orally present one	self brief	ly. (using	g simple a	adjective	s)								
•	Recognize and spe	ll correct	ly alphat	oet in Spa	anish.									
٠	Understand and us	e basic c	lassroom	instructi	ons.									
Un	Unit 2 Navigating Common Situations 09 hours													
٠	Topics: Asking for	help, giv	ving dire	ctions										
٠	Listening: Directio	ons, shop	ping dial	ogues										
٠	Speaking: Role-pla	aying trav	vel and sl	nopping	scenarios									
٠	Cultural Focus: Politeness in Spanish-speaking cultures, regional differences													
Un	it 3		Using '	Technol	ogy in Sp	oanish C	ommuni	cation					09 ho	ours
•	Topics: Writing en	nails, tex	ting, usir	g social	media									

- Listening: Voice notes, social media interactions
- Speaking: Practicing digital communication in Spanish
- Cultural Focus: The use of technology in Spanish-speaking countries
- Unit 4
 Respecting Spanish and Indian Cultures in Global Context
 09 hours
- Topics: Spanish festivals, cultural differences in communication, The importance of Spanish in global communication
- Listening: Cultural discussions, traditions in Spain
- Cultural Comparison: Spanish siesta vs. Indian work culture, family structure

						Total Lecture		30 hours
Mode of E	valuation							
Ν	ISE		CA		ESE	Total		
MSE1	MSE2	CA1	CA2	CA3				
40	40	6	7	7				
80			20		-	100		
_							_	

	Theory Course Code:	<u>K24HS1</u>	<u>.01P</u>	Theo	ory Cours	<u>se Name</u>	e: Comm	<u>unicatio</u>	n Skills			L	T P	C
Course Offered in: CSE/CS/IT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME 0 0 4											2			
]	Pre-requisite: NA													
•	Course Objectives:													
1	. To develop the Liste	ening ski	lls in pro	fessional	l setting.									
2	2. To acquaint students	s with the	e techniq	ues of Re	eading co	mpreher	nsion and	note ma	king for	specific i	nformatio	on, and	gramma	tically
	correct organization	of ideas												
3	5. To help students dev	velop the	ir Writin	g skills b	y buildin	g their v	ocabulary	y through	n word fo	rmation 1	nethods a	nd writ	ing prin	ciples.
4	To help students apply the basics of Communication and voice dynamics for effective speech delivery.													
5	To develop Professional practices of communication at workplace.													
•	Course Outcome: After completion of the course, the student will be able to													
1	1. Get basic understanding of language dimensions (LSRW) and Communication Skills.													
2	2. Apply correct English usage and formal style of writing.													
3	Analyze the usage of verbal and non-verbal cues in presentation and day-to-day communication.													
4	4. Evaluate Communication skills with respect to the nature and objectives of workplace.													
CO-PO Mapping (Scale 1: Low, 2: Medium, 3: High)														
	CO-PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO1	2
	C01			-	-						2		1	
		-	-			-	-	-	-	-	5		1	
	CO2	-	-	-	-	-	-	-	-	-	3	-	1	
	CO3	-	-	-	-	-	-	-	-	-	3	-	1	
	CO4	-	-	-	-	-	-	-	-	-	3	-	1	
	CO5	-	-	_	-	-	-	-	-	-	3	-	1	
Г	List Of Activities' (Ind	licative d	& Not Li	imited T	 '0)							4		
	1. Ice Braking Sessio	n-Self A	nalysis u	sing SW	OC Activ	vities								
	(Identification of I	ndividual	l Strengtl	n, Weakn	iess, Opp	ortunity	and Thre	ats/Chall	lenges					
	2. Vocabulary Enhand	cement A	Activity u	ising wor	rksheet									
	3. Formal day-to-day	Convers	ation act	ivity on j	planning	real time	e situatior	n using p	ast week	Vocabul	ary.			
	4. Paragraph develop	ment in 1	100-120	words us	ing news	paper ed	itorials.							
	5. Speaking to introdu	uce perso	on, places	s and eve	nts.									
	6. Evaluation of Stud	ents usin	g written	and spea	aking acti	ivity								
_	7. Reading Comprehe	ension												
	8. Idea pitching using	g (Group)												
	9. Role play activity c	creating a	awarenes	s on real	time situ	ation (G	roup)							
L	10. Essay writing on P	ESTLE 1	ange of t	topics										
1	11. Blog writing using	PESTLE	z range o	t topics										

12. Thematic presentation											
13. Review of scientific article/ books/blogs/news											
14. Evaluation of Stude	ents using writ	tten and speaking	g activity- JAM								
Total Lecture Hours 30 hours											
Mode of Evaluation	Mode of Evaluation										
MSE		CA		ESE	Total						
MSE1 MSE2	CA1	CA2	CA3								
40 40	6	7	7								
80		20		-	100						

1	Theory Course Code:	K24IE1	01P	Theo	ory Cour	<mark>se Name</mark>	: Innova	ation and	<mark>l Entrep</mark>	<mark>reneursh</mark> i	р	L	Т	Р	С
Course Offered in: CSE/CS/IT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME 0 0 2 Pre-requisite: NA										2	1				
P	re-requisite: NA														
Course Objectives:															
1.	To cultivate an inn	ovative n	nindset a	mong st	udents by	introdu	cing ther	n to vari	ous types	s of innov	ation, su	ccess	stori	es, an	d the
	importance of creativity in problem-solving and entrepreneurship.														
2.	To equip students v	with pract	tical tool	s for idea	a generati	on and c	commerc	ialization	by teacl	ning them	techniqu	es for	bra	instorr	ning,
	creativity, and developing structured business models using the Business Model Canvas.														
3.	To enhance students' understanding of market dynamics by providing them with skills to conduct market research, understand														
	customer segmentation, and validate the feasibility of their business ideas through data-driven insights.														
4.	To foster hands-on	learning	through	prototyp	e develop	oment wo	orkshops	where st	tudents c	an transfo	rm their	innov	vativo	e ideas	into
	minimum viable pre	oducts (N	(IVP) and	l prepare	for inves	tor pitch	ing.								
5.	To provide real-wo	rld pitchi	ng exper	ience by	organizir	ng Demo	Day pre	sentation	s where	students c	an pitch (heir i	deas	to ind	ustry
	experts and investor	rs, receiv	e feedbaa	ck, and e	xplore po	tential of	pportuni	ties for fu	inding or	mentorsh	ip.				
0	Course Outcome: Afte	er comple	etion of the	ne course	e, the stud	lent will	be able t	0							
1.	Students will be a	ble to de	emonstrat	e an une	derstandi	ng of the	e various	s types o	of innova	tion, their	r importa	ance i	n pe	ersonal	and
	professional growth	n, and how	w to appl	y innova	tive think	ting to so	lve real-	world pr	oblems.						
2.	Students will gain t	the ability	y to gene	rate and	refine in	novative	ideas the	rough cre	eative tec	hniques a	nd utilize	e the I	Busi	ness M	lodel
	Canvas to structure	viable bu	asiness co	oncepts.											
3.	Students will devel	op the sk	cills to co	onduct co	omprehen	sive mai	ket resea	arch, idei	ntify and	segment	target cu	stome	rs, a	nd val	idate
	their business ideas	based or	n market	insights a	and data a	analysis.									
4.	Students will be ca	apable of	transfor	ming the	eir innova	tive idea	as into ta	angible p	rototype	s (Minimu	ım Viab	e Pro	duct	s) and	will
	acquire the ability t	o craft an	nd deliver	compel	ling pitch	es for po	tential ir	vestors a	ind stake	holders.					
5.	Students will be ab	le to effe	ctively p	resent the	eir busine	ess ideas	to indust	try exper	ts and in	vestors, ap	ply feed	back t	o im	prove	their
	ideas, and explore of	opportuni	ties for s	ecuring f	funding of	r mentor	ship.								
0	CO-PO Mapping (Sca	ale 1: Lov	w, 2: Me	dium, 3:	High)	1	-		-		1				
		DO1	DOJ	DO2	DO4	DO5	DOC	DO7	DOP	DOD	DO10	DO1	1	DO13	
	CO-PO Mapping	POI	POZ	POS	P04	P05	PUo	PO/	PUð	P09	POIO	PUI	.1	POIZ	
	CO1	-	-	-	_	-	_	_	-	-	-	-		-	_
	CO2	_	_	_	_	_	_	_	_	_	_	-		_	
	CO3	_	_	_	_	_	_	_	_	_	_	_		_	_
	<u>CO4</u>										_	<u> </u>			_
-	co4		-	+		+		-					_		
	CO5	-	-	-	-	-	-	-	-	-	-	-		-	
l	J nit 1		Innova	Innovation & Creativity 03 hours											
•	Resource Person: '	Technica	1 Expert/	Innovato	or/Entrep	reneur									
•	• Content Overview	: Introdu	ction to	Innovatio	on, the in	nportance	e of Inno	ovation ir	n life, Ty	pe of Inno	ovation,	Stages	s of	Innova	tion,
	success stories, an	d opportu	inities av	ailable to	o students	5.									
ι	J nit 2		Idea/	Innovati	ion Gene	eration,	Comme	ercializat	tion &	Business	Model	Canva	as	04 ho	urs
			Works	hop		,									

Resource Person: Innovation Coaches/Startup Mentors

Course Booklet (B.Tech 1st year)

• Conten	• Content Overview: Techniques for brainstorming, creativity exercises, introduction to the Business Model Canvas, and developing										
busines	ss concepts.										
Unit 3		Ma	rket Research a	nd Validation Wo	rkshop		04 hours				
Resource Person: Market Research Analysts/Marketing Professors											
• Conten	• Content Overview: Conducting market research, understanding target customers, market segmentation, and validating business										
ideas.	ideas.										
Unit 4 Prototype Development & Pitching Workshop											
• Resour	ce Person: P	roduct Devel	opers/Venture Ca	pitalists							
• Conten	t Overview:	Creating a m	inimum viable pr	oduct (MVP), hands	s-on prototyping, o	crafting, and deliv	vering a compelling pitch.				
						Total Lect	ture Hours 15 hours				
Mode of Evaluation											
MSE			CA		ESE	Total					
MSE1	MSE2	CA1	CA2	CA3							
40	40	10	20	20							
8	0		50		-	100					

Theory Course Code: K24HSVVD Theory Course News Self Crowth/Indian Knowledge										
1 110	Sory Course Code. K24HSAAAI	L	I	I	C					
Co	urse Offered in: CSE/CS/IT/CSIT/CSE(AI)/CSE(AIML)/ECE/EEE/ELCE/ME	0	0	2	NC					
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Self	belf-Growth: Students need to choose any one from the Courses offered									
1.	Piano (K24ID01P)									
2.	Tabla (K24ID02P)									
3.	Guitar (K24ID03P)									
4.	Drums (K24ID04P)									
5.	Vocals (Classical) (K24ID05P)									
6.	Vocals (Western) (K24ID06P)									
7.	Harmonium (K24ID07P)									
8.	Rap (K24ID08P)									
9.	Beatboxing (K24ID09P)									
10.	Acting (K24ID10P)									
11.	Script Writing (K24ID11P)									
12.	Makeup And Props (K24ID12P)									
13.	Classical Dance (K24ID13P)									
14.	Folk Dance (K24ID14P)									
15.	Western Dance (K24ID15P)									
16.	Bollywood Dance (K24ID16P)									
17.	Cinematography (K24ID17P)									
18.	Sound Production (K24ID18P)									
19.	Photography & Photo Editing (K24ID19P)									
20.	Graphic Designing (K24ID20P)									
21.	Social Service (K24ID21P)									
22.	Painting (K24ID22P)									
23.	Poetry (Hindi) (K24ID23P)									
24.	Shooting (K24ID24P)									
25.	Table Tennis (K24ID25P)									
26.	Billiards (Pool) (K24ID26P)									
27.	Badminton (K24ID27P)									
28.	Lawn Tennis (K24ID28P)									
29.	Cricket (K24ID29P)									
30.	Basketball (K24ID30P)									
31.	Kabaddi (K24ID31P)									
32.	Volleyball (K24ID32P)									

- 33. Football (K24ID33P)
- 34. Athletics (K24ID34P)
- 35. Karate (K24ID35P)
- 36. Power Yoga (K24ID36P)

Indian Knowledge System: Students need to choose any one from the Courses offered

- 1. Case Study of Indian water storage system (K24ID37P)
- 2. Case study of Indian urban planning (Indus valley civilization) (K24ID38P)
- 3. Learning of Geeta for Engineers (K24ID39P)
- 4. Vasudhaiva kutumbakam: Indian model of multiculturalism (K24ID40P)
- 5. Basic treatments through yoga (K24ID41P)
- 6. Review socialism in light of Ramayana (critical thinking) (K24ID42P)
- 7. The relevance and applicability of Chanakya's (Kautilya) Arthaśāstra for solving current societal problems (K24ID43P)
- 8. Corporate Social Responsibility: A Philosophical Social Engineering approach from an ancient Indian Perspective. (K24ID44P)
- 9. Lessons of leadership from Mahabharat (K24ID45P)
- 10. Case study of Jantar Mantar in Delhi. (K24ID46P)
- 11. Study of Ancient Indians technology for extraction, purification, and alloying of metals such as gold, silver, copper, and iron. (K24ID47P)
- 12. Study of herbs used in kitchen for healthy life (Haldi, Garlic etc.) (K24ID48P)
- 13. Study of Indian Astro log system (K24ID49P)
- 14. Study Significance of the Asanas, Pranayams and Surya Namaskar (K24ID50P)
- 15. Study of Indian Ragas in music (K24ID51P)
- 16. Study of Vaastu Shastra (K24ID52P)
- 17. Study of Importance of gum bads in ancient structure of India (K24ID53P)
- 18. Study of Ayurveda (K24ID54P)
- 19. Impact of Satvik Food on the Gut-Microbiome Diversity (K24ID55P)
- 20. Orientation of temples of South India and their astronomical associations(K24ID56P)