

Department of Information Science and Engineering Academic Year 2023-24

3rd and 4th Semester Scheme & Syllabus BATCH: 2022-26 CREDITS:160

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NEW HORIZON COLLEGE OF ENGINEERING

VISION

To emerge as an institute of eminence in the fields of engineering, technology and management in serving the industry and the nation by empowering students with a high degree of technical, managerial and practical competence.

MISSION

- To strengthen the theoretical, practical and ethical dimensions of the learning process by fostering a culture of research and innovation among faculty members and students.
- To encourage long-term interaction between academia and industry through their involvement in the design of the curriculum and its hands-on implementation.
- To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

QUALITY POLICY

To provide educational services of the highest quality both curricular and co-curricular to enable students integrate skills and serve the industry and society equally well at global level.

VALUES

- Academic Freedom
- > Integrity
- ➢ Inclusiveness
- Innovation
- Professionalism
- Social Responsibility

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING

VISION

To emerge as a Department of Eminence in Information Science and Engineering in serving the Information Technology industry and the nation by empowering students with a high degree of technical and practical competence.

MISSION

- To strengthen the theoretical, practical and ethical dimensions of the learning process by continuous learning and establishing a culture of research and innovation among faculty members and students, in the field of Information Science and Engineering.
- To build long-term interaction between the academia and Information Technology industry, through their involvement in the design of curriculum and its hands on implementation.
- To strengthen and mould students in professional, ethical, social and environmental dimensions by encouraging participation in co-curricular and extracurricular activities.

PEO1	Excel as Information Science Engineers with the ability to solve a wide range of computational problems in the IT industry, Government or other work environments.
PEO2	Pursue higher studies with profound knowledge enriched with academia and industrial skill sets.
PEO3	Exhibit adaptive skills to develop computing systems using modern tools and technologies in multidisciplinary areas to meet technical and managerial challenges, which meet societal requirements.
PEO4	Possess the ability to collaborate as a team member and leader with professional ethics to make a positive impact on society.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO TO MISSION STATEMENT MAPPING

PEO Statements	M1	M2	M3
PEO 1:			
Excel as an Information Science Engineer with the ability to solve a wide	2	2	n
range of computational problems in the IT industry, Government or	3	3	Z
other work environments.			
PEO 2:			
Pursue higher studies with profound knowledge enriched with academia			
and industrial skill sets.	3	3	2
PEO 3:			
Exhibit adaptive skills to develop computing systems using modern tools			
and technologies in multidisciplinary areas to meet technical and	3	3	3
managerial challenges which meet societal requirements.			
PEO 4:			
Possess the ability to collaborate as a team member and leader with			
professional ethics to make a positive impact on society.	2	2	3

Correlation: 3- High, 2-Medium, 1-Low

PROGRAM OUTCOMES (POs)

	Graduate Attributes	Program Outcomes (POs)
1	Engineering Knowledge	PO1: The basic knowledge of Mathematics, Science and Engineering.
2	Problem analysis	PO2: An Ability to analyze, formulate and solve engineering problems.
3	Design and Developmentof Solutions	PO3: An Ability to design system, component or product and develop interfaces among subsystems of computing.
4	Investigation of Problem	PO4: An Ability to identify, formulate and analyze complex engineering problem and research literature through core subjects of Computer Science.
5	Modern Tool usage	PO5: An Ability to use modern engineering tools and equipment for computing practice.
6	Engineer and society	PO6: An Ability to assess societal, health, cultural, safety and legal issues in context of professional practice in Computer Science & Engineering.
7	Environment and sustainability	PO7: The broad education to understand the impact of engineering solution in a global, economic, environmental and societal context.
8	Ethics	PO8: An understanding of professional and ethical responsibility.
9	Individual & team work	PO9: An Ability to work both as individual and team playerin achieving a common goal.
10	Communication	PO10: To communicate effectively both in written and oral formats with wide range of audiences.
11	Lifelong learning	PO11: Knowledge of contemporary issues, Management and Finance.
12	Project management and finance	PO12: An Ability to recognize the need and thereby to engage in independent and life-long learning for continued professional and career advancement.

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
PEO1	3	3	3	2	3	-	-	-	3	-	3	-
PEO2	3	3	3	2	3	-	-	-	3	-	3	-
PEO3	3	3	3	2	3	-	-	-	3	-	3	-
PEO4	3	3	3	2	3	-	-	-	3	-	3	-

Mapping of POs with PEOs

Correlation: 3- High, 2-Medium, 1-Low

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: The ability to understand, analyze and develop computer programs in the areas of Information Science and Engineering related to System Software, Web Design, Big Data Analytics, Machine Learning, Internet of Things, Data Science, Networking and Security for efficient design of computer-based systems of varying complexity.

PSO 2: The ability to apply standard practices and strategies in software project development using innovative ideas and open-ended programming environment with skills in teams and professional ethics to deliver a quality, sustainable product for business success in the field of Information Science.

NEW HORIZON COLLEGE OF ENGINEERING B. E. in Information Science and Engineering Scheme of Teaching and Examinations for 2022- 2026 BATCH (2022 Scheme)

III Se	emester												
S.	Course a	nd Course	Course Title	BoS	Di	Cred strib	lit utior	1	Overall Crodits	Contact		Marks	
NO.		Joue			L	Т	Р	S	creuits	nours	CIE	SEE	Total
1	BSC	22MAC31	Mathematical Foundation for Computing Sciences	BS	3	0	0	0	3	3	50	50	100
2	PCC	22ISE32	Digital Logic Design	IS	3	0	0	0	3	3	50	50	100
3	PCCL	22ISL32	Digital Logic Design Lab	IS	0	0	1	0	1	2	50	50	100
4	РСС	22ISE33	Advanced Data Structures	IS	3	0	0	0	3	3	50	50	100
5	PCCL	22ISL33	Advanced Data Structures Lab	IS	0	0	1	0	1	2	50	50	100
6	ESC	22ISE34X	Programming Language Course (PLC)	IS	2	0	1	0	3	3	50	50	100
7	AEC	22ISE35X	Ability Enhancement Course – III	IS	0	0	1	0	1	2	50	50	100
8	BSC	22BIK36	Bio Inspired Design and Innovation	Any Dept	3	0	0	0	3	3	50	50	100
9	UHV	22UHK37	Universal Human Values and Life Skills	Any Dept	1	0	0	0	1	2	50	50	100
		22NSS30	National Service Scheme (NSS)	NSS coordinator									
10	NCMC	22PED30	Physical Education and Sports	Physical Education Director	0	0	0	0	0	2	50		50
		22YOG30	Yoga	Yoga Teacher							50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 50 1 50 $$ 1 50 $$ 1 50 $$ 1 50 $$ 1 50 $$ 5 Course, NCMC: Non- Cr 50 $ 50$ $ 5$ Course, NCMC: Non- Cr 50 $ 50$ $ 5$ 50 $ 5$ 50 $ 5$		
	<u> </u>		Total						19	25	500	450	950
11	NCMC	22DMAT31	Basic Applied Mathematics -1	BS	0	0	0	0	0	2	50	-	50
BSC: Man cour Lang	Basic Science datory Cours se code indie guage Cour	e Course, PCC : Pr se, AEC : Ability cates common t se, CIE : Contin	rofessional Core Course, PCCL : Pro ⁷ Enhancement Course, L : Lectur to all the stream of engineering. E nuous Internal Evaluation, SE	ofessional Core Co re, T : Tutorial, P S C: Engineering E: Semester Er	ourse la : Practi Science Id Eval	borato cal S: S cours uatior	ry, UI SDA: S e, ET 1.	HV: U Self S C: Em	niversal Hu tudy for Sk nerging Tec	man Value(till Developy hnology Co	Course, <mark>N</mark> ment, K: urse, PLC	CMC: Nor This lette 2: Progra	- Credit r in the mming

22DMAT31*: This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

	Programming Language Course (PLC)								
22ISE341	Linux System Programming	22ISE343	Python for Data Analytics						
22ISE342	Web Design Technologies	22ISE344	Object Oriented Modeling and Design using Star						

	Ability Enhancement Course-III								
22ISE351	Ruby Programming	22ISE353	Advanced Office Automation						
22ISE352	GoLang Programming	22ISE354	Game Development						

National Service Scheme /Physical Education / Yoga: All students have to register for anyone of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition:	03-Credits courses are to be designed for 40 hours in Teaching-Learning Session
Hour Lecture (L) per week =1Credit 2 hours Tutorial(T)	02-Credits courses are to be designed for 25 hours of Teaching-Learning Session
per week =1Credit	01-Credit courses are to be designed for 15 hours of Teaching-Learning
Hours Practical/Drawing(P) per week=1Credit 2-hous Self	Sessions
Study for Skill Development (SDA)	
per week = 1 Credit	

NEW HORIZON COLLEGE OF ENGINEERING B. E. in Information Science and Engineering Scheme of Teaching and Examinations for 2022- 2026 BATCH (2022 Scheme)

IV Se	emester								-	-	-		
S.	Cou	rse and	Course Title	BoS	Di	Cre istrib	dit outio	on	Overall	Contact		Mark	5
No.	Cour	se Code			L	Т	Р	S	Credits	Hours	CIE	SEE	Total
1	BSC	22MAC41	Discrete Mathematics and Graph Theory	BS	3	0	0	0	3	3	50	50	100
2	PCC	22ISE42	Data Base Management Systems	IS	3	0	0	0	3	3	50	50	100
3	PCCL	22ISL42	Database Management Systems Lab	IS	0	0	1	0	1	2	50	50	100
4	PCC	22ISE43	Object Oriented Programming with Java	IS	3	0	0	0	3	3	50	50	100
5	PCCL	22ISL43	Object Oriented Programming with Java Lab	IS	0	0	1	0	1	2	50	50	100
6	PCC	22ISE44	Operating Systems	IS	3	0	0	0	3	3	50	50	100
7	PCCL	22ISL44	Operating Systems Lab	IS	0	0	1	0	1	2	50	50	100
8	ESC	22ISE45X	Programming Language Course (PLC)	IS	2	0	1	0	3	3	50	50	100
9	AEC	22ISE46X	Ability Enhancement Course – IV	IS	0	0	1	0	1	2	50	50	100
10	UHV	22SCK47	Social Connect and Responsibility	Any Dept	0	0	1	0	1	2	50		50
11	PROJ	22ISE48	Mini Project	IS	0	0	1	0	1	2	50	50	100
		22NSS40	National Service Scheme (NSS)	NSS coordinator									
12	NCMC	22PED40	Physical Education (PE)	Physical Education Director	0	0	0	0	0	2	50		50
		22Y0G40	Yoga	Yoga Teacher									
			Total						21	29	600	500	1100

13	NCMC	22DMAT41*	Basic Applied Mathematics - II	BS	0	0	0	0	0	2	50		50
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BSC: Basic Science Course, **PCC**: Professional Core Course, **PCCL**: Professional Core Course laboratory, **UHV**: Universal Human Value Course, **NCMC**: Non-Credit Mandatory Course, **AEC**: Ability Enhancement Course, **PROJ**: Mini Project Work, **L**: Lecture, **T**: Tutorial, **P**: Practical **S**: **SDA**: Self Study for Skill Development, **K**: This letter in the course code indicates common to all the stream of engineering. ESC: Engineering Science Course, **ETC**: Emerging Technology Course, **PLC**: Programming Language Course, **CIE**: Continuous Internal Evaluation, **SEE**: Semester End Evaluation.

22DMAT41*: This non-credit mandatory course to be offered with only CIE and no SEE to Lateral entry students.

	Programming Language Course (PLC)										
22ISE451	C# and .NET	22ISE453	Advanced Excel for Data Analytics								
22ISE452	Programming for UI and UX design	22ISE454	Fundamentals of Open Source Software								

	Ability Enhancement Course–IV										
22ISE461	Visual programming Techniques	22ISE463	File Structures								
22ISE462	Google Workspace Laboratory	22ISE464	IoT Programming								

Mini-project work: Mini Project is a laboratory-oriented/ hands on course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications etc. Based on the ability/abilities of the student/sand recommendations of the mentor. A student can do mini project as

(i) A group of 2 if mini project work is single discipline (applicable to all IT allied branches)

(ii) A Group of 2-4 if mini project work is single discipline (applicable to all Core Branches)

(iii) A Group of 2 -4 students if the Mini Project work is a multidisciplinary (Applicable to all Branches)

CIE procedure for Mini-project:

(i) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batches mates.

(ii) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project.

The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the percentage ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batch mates

National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE) (Sports and Athletics), and Yoga (YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.

Credit Definition:	03-Credits courses are to be designed for 40 hours in Teaching-
1-hour Lecture (L) per week=1Credit	Learning Session
2-hoursTutorial(T) per week=1Credit	02- Credits courses are to be designed for 25 hours of Teaching-
2-hours Practical / Drawing (P) per week=1Credit	Learning Session
2-hous Self Study for Skill Development (SDA) per	01-Credit courses are to be designed for 15 hours of Teaching-Learning
week = 1 Credit	Sessions

	M	ATHE	MATI	CAL F	OUND	ATIO	N FOF	COM	PUTI	NG SCII	ENCES	
Course Code	22MA	7 21				AIM,		SE, UD	'5, ISE	J		FO
Louise coue	3.0.0.0 SFF Marke										50	
L.I.F.J Hrs. / Wook	JULY JEE Marks 2 Tatal Marks											100
Credits	03							Fyam H	0115			03
Course outcom	mes:											
At the end of t	t the end of the course, the student will be able to:											
22MAC31.1	Use app	Use appropriate numerical methods to solve algebraic equations and transcendental equations.										
22MAC31.2	Solve in integra	nitial v Is num	alue pr ierically	oblems ı y.	using a	ppropr	iate nu	merical	metho	ds and al	so Evaluate defi	nite
22MAC31.3	Demon	strate	the ide	a of Line	ear Dep	enden	ce and I	ndepen	dence	of sets in	the vector space	e.
22MAC31.4	Gain ab	oility to	use pr	obabilit	y distri	bution	s to ana	lyze and	d solve	real time	e problems	
22MAC31.5	Justify	the cor	icept of	f samplii	ng distr	ibutio	n to solv	ve the er	nginee	ring prob	olems.	
22MAC31.6	Use the	e large	/small s	samples	to anal	vse the	e data to	make o	decisio	n about t	he hypothesis.	
Mapping of Co	ourse Oi	utcom	es to P	rogran	1 Outc	omes:					51	
11 5	P01	P02	PO3	P04	P05	P06	P07	P08	P09	P010	P011	P012
22MAC31.1	3	3	-	-	-	-	-	-	-	-	-	-
22MAC31.2	3	3	-	-	-	-	-	-	-	-	-	-
22MAC31.3	3	3	-	-	-	-	-	-	-	-	-	-
22MAC31.4	3	3	-	-	-	-	-	-	-	-	-	-
22MAC31.5	3	3	-	-	-	_	-	-	-	-	-	_
22MAC31.6	3	3	-	-	-	_	-	-	-	-	-	-
	0	U				l						
MODULE-1	NUME	RICAL	METH	ODS-1							22MAC31.1	8 Hours
Numerical solu	tion of al	gebrai	c and ti	ranscend	dental e	equatio	ns: Reg	ula-fals	i meth	od and N	ewton-Raphson	Method-
Problems. Inter	polation	: Newt	on's for	rward ai	nd back	ward f	ormula	e for eq	ual inte	ervals, N	ewton divided d	ifference,
Lagrange's forr	nula and	Lagrai	nge's in	verse in	terpola	ation fo	r unequ	ual inter	vals (v	vithout p	roofs)-Problems	5.
Case Study	Case st	udy oi	n Nume	erical Aı	nalysis	•						
Text Book	Text Bo	ook 1: 2	28.2, 28	3.3, 29.6,	29.10,	29.11,	29.13,	Text Bo	ok 2: 1	9.2, 19.3	•	
MODULE-2	NUME	RICAL	METH	ODS-2							22MAC31.2	8 Hours
Numerical solu	tion of o	rdinary	y differ	ential eq	uation	s of firs	st order	and of	first de	gree: Tay	ylor's series met	hod, Modified
Euler's method	and Run	ige-Ku	tta met	hod of fo	ourth-o	rder-P	roblem	s. Milne	's pred	ictor and	l corrector meth	ods-Problem
Numerical integ	gration: S	Simpso	$\frac{n's 1/3}{f}$	S ^{ra} rule, S	Simpso	n's 3/8	th rule,	Weddle	s rule	(without	t proofs)-Proble	ns.
Applications	Applica	$\frac{1}{2}$		rical interpretent		$\frac{1}{20720}$	00111 01	a parti	Cie and		01 SOIIQS.	
MODULE-3	VECTO		52.5, 52	2.3, 32.7,	52.9, 3	50.7, SU	0.0, 30.1	0, Text	DOOK 2	.: 19.3, 2.	22MΔC31 3	8 Hours
Vector Space d	ofinition	and e	vampl	os Subs	nacos /	and Sn	anning	cote Li	noar D	enender	22MACS1.5	dence
Linear Indene	ndence a	and Sn:	anning	Sets Ba	paces a	rthogo	nal and	l Orthou	norma	l hases a	nd Dimension	luence,
Text Book	Tovt B	ook 3.	<u>414</u>	$\overline{)}$ $\underline{4}$ $\underline{3}$ $\underline{4}$	<u>4 4 5</u>	i tilogo	nai anc		norma	1 54363 4		
MODIILE-4	PROBABILITY AND IOINT PROBABILITY DISTRIBUTIONS 22MAC31.4 8 Hours											
Random variak	Pandom variables (discrete and continuous), probability density functions, memory concerning function.									on Discrete		
Probability dist	tribution	s [.] Bino	mial ar	nd Poiss	on Dist	ributio	ins-Prol	hlems (Continu	ious Prol	nability distribut	ion: Normal
Distributions-Problems												
Concept of joint probability-Joint probability distribution, Discrete and Independent random variables. Expectation, Covariance, Correlation coefficient.												
Case Study	Case st	udy on	Distrib	outions.								
Text Book	Text Bo	ook 1: 2	26.8, 26	5.9, 26.1	0,26.11	1,26.12	2, 26.14	, 26.15,	26.16.			
MODULE-5	SAMPI	LING T	HEOR	Y							22MAC31.5 22MAC31.6	8 Hours

Sampling, Sampling distributions, test of hypothesis of large samples for means and proportions, Inferences for variance and proportion. Central limit theorem (without proof), confidence limits for means, Student's t-distribution, F-distribution and Chi-square distribution for test of goodness of fit for small samples.

Case Study Case Studies on sampling theory and significant measures of scores.

Text Book Text Book 1: 27.2, 27.3, 27.4, 27.5, 27.6, 27.7, 27.8, 27.9, 27.10, 27.11, 27.12, 27.14, 27.15, 27.16,

CIE Assessment Pattern (50 Marks – Theory)

27.19.

		Marks Distribution							
	RBT Levels	Test (s)	Qualitative Assessment (s)	MCQ's					
		25	15	10					
L1	Remember	5	5	-					
L2	Understand	5	5	-					
L3	Apply	10	5	10					
L4	Analyze	2.5	-	-					
L5	Evaluate	2.5	-	-					
L6	Create	-	-	-					

SEE Assessment Pattern (50 Marks – Theory)

	RBT Levels	Exam Marks
	RBT Levels	Distribution (50)
L1	Remember	10
L2	Understand	10
L3	Apply	20
L4	Analyze	5
L5	Evaluate	5
L6	Create	-

Suggested Learning Resources:

Text Books:

- 1) B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Forty fourth Edition, 2022, ISBN: 9788193328491.
- 2) Erwin Kreyszig, Advanced Engineering Mathematics, Wiley-India Publishers, Tenth Edition, Reprint 2016, ISBN: 9788126554232.
- 3) David C Lay, Linear Algebra and its applications, Addison-Wesley Publishers, Fourth Edition, 2012, ISBN: 9780321385178.

Reference Books:

- 1) Glyn James, Advanced Modern Engineering Mathematics, Pearson Education, Fourth Edition, 2015, ISBN: 9780273719236.
- 2) B. V. Ramana, Higher Engineering Mathematics, McGraw Hill Education (India) Private Limited, Fourth Edition, 2017, ISBN: 9780070634190.
- 3) H. K. Dass, Advanced Engineering Mathematics, S. Chand & Company Ltd., Twenty Second Edition, 2018, ISBN: 9789352533831.
- 4) N.P.Bali and Manish Goyal, A Text Book of Engineering Mathematics, Laxmi Publications (P) Ltd., Ninth Edition, 2014, ISBN: 9788131808320.

Web links and Video Lectures (e-Resources): 1)https://youtu.be/IgoJV4g_0LM?si=JO1_bkIvMR8xlC0V 2)https://youtu.be/mIFwzg11u04?si=Xd13dh0eNlmIswPS 3)https://youtu.be/74g5_3TC-tQ?si=yB2PHVGr4hxIlqPo 4)https://youtu.be/QQFIWwDA9NM?si=3wJrtlm1NdPSbXmB 5)https://youtu.be/5817fLmsTGE?si=Y7ORyV2ETSCxZRAZ 6)https://youtu.be/a3xj16shDuw?si=ewdlKAC8UEc6oRQV 7)https://youtu.be/89Z0tOvHjNU?si=3jT-oriJZaC1kSzx 8)https://youtu.be/dOr0NKyD31Q?si=dMBU-BXGdGL6jIZy 9)https://youtu.be/BR1nN8DW2Vg?si=melzz97SqhK3wr--10)https://youtu.be/ugd4k3dC_8Y?si=xF5U2gjIgP0woDQt 11)https://youtu.be/z0Ry_3_qhDw?si=6IG2a65BZgdbaKsn 12)https://youtu.be/36cAE10vpq4?si=jfR8gkFmM0CkWNZ_ 13)https://youtu.be/vFz2FG65HBc?si=SCHi3Y1XuHWg-pPT 14)https://youtu.be/2Dsz1lZBJ3Y?si=8ATLUE-mkJSMew03

- Activity-Based Learning (Suggested Activities in Class)/Practical Based Learning:
- Contents related activities (Activity-based discussions) For active participation of students, instruct the students to prepareAlgorithms/Flowcharts/Programming Codes
 - $\,\circ\,$ Organizing Group wise discussions on related topics
 - $\circ \ \text{Seminars}$

DIGITAL LOGIC DESIGN														
Course Code	e 22	22ISE32 CIE Marks										50		
L:T:P:S	3:	0:0:0						SEE Marks 50						
Hrs / Week	3								Tota	tal Marks 100				
Credits	03	3							Exar	n Hours		03		
Course outo	Course outcomes:													
At the end o	of the c	ourse,	the st	udent v	vill be a	ble to:								
22ISE32.1	Uı	ndersta	and th	e basic	princip	oles of t	he digit	tal circu	its and	their sig	nificance	9		
22ISE32.2	Aj	oply th	e Kno	wledge	for des	sign of c	combina	ational	circuits	5				
22ISE32.3	Ar	nalyze d	ifferer	nt types	of seque	ential cii	rcuits ba	ised on t	he give	n applicat	ion with t	he given s	pecificatio	ons
22ISE32.4	De	esign a	nd an	alyze th	ie appli	cation	of regis	ters.						
22ISE32.5	De	esign a	nd an	alyze tł	ie appli	cation	of coun	ters.						
22ISE32.6	Us	se HDL	tools	to simı	ılate an	d verify	y Digita	l circuit	S					
Mapping of	f Cour	se Ou	tcom	es to I	Progra	m Out	tcome	s and H	Progra	ım Spec	ific Out	comes:	-	n
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE32.1	3	3	3	3	-	-	-	-	-	-	-	2	3	3
22ISE32.2	3	3	3	3	-	-	-	-	-	-	-	2	3	3
22ISE32.3	3	3	3	3	-	-	-	-	-	-	-	2	3	3
22ISE32.4	3	3	3	3	-	-	-	-	-	-	-	2	3	3
2215E32.5	3	3	3	3	-	-	-	-	-	-	-	2	3	3
ZZISE32.6	3	Z	Z	Z	-	-	-	-	-	-	-	Z	3	3
MODULE-2	1 S	IMPL	IFICA	TION	OF BO	OLEA	N FUN	CTION	S		22ISE3	2.1	8 H	ours
Review of Boo McCluskey n	lean alg ninimi	ebra, lo zation	gic ga techr	tes, cano nique	onical fo	rms, Th	ree Vari	able K–N	laps, Fo	our Variab	le K–Map	s, Quine-		
Text Book			Tex	t Book	1 – Cha	pter 2,3	3 Text E	300k 2 -	· Chapt	er 3				
MODULE-2	C	OMBI	NAT	IONAL	LOGI	C CIRC	UITS				22ISE 3	32.2	8 H	lours
Introduction to Encoders, De	o Adder	s, Subtr s. Mult	actors	s, Carry I cers.	Look Ah	ead Add	ler, Para	llel Add	er, Magr	nitude Cor	nparator,	Priority		
Text Book		Text Bo	ook 1	- Chap	ter 4 Te	ext Boo	k 2 – Cł	napter 5						
MODULE-3	S	EQUE	ITIA	L LOĜ	IC CIR	CUITS		•		22IS	E32.3, 2	2ISE32	.4 8 H	lours
The Basic Flip- Flip-flops, ty	flop cir pes of	cuit, Cl Shift F	ocked Regist	Flip-flog ers, ap	os, Trigg plicatio	ering of	f Flip-flo hift reg	ps, type: gister.	s of Flip	-flop, Mas	ter Slave	Flip- Flop:	s, Convers	ion of
Text Book	Te	Text Book 1 – Chapter 8,9 Text Book 2 – Chapter 7.8												
MODULE-4	Α	ANALYSIS OF SEQUENTIAL CIRCUIT22ISE32.58 Hours												
Design of Binary Counters, counters for other sequences using SR and JK Flip-flop, Verilog implementation of counters, Mealy and Moore Models, State Reduction and Assignment, Design Procedure, Design with State Equations, Case study applications														
Text Book	ext Book Text Book 1 – Chapter 10 Text Book 2 – Chapter 9,10													
MODULE-5	IN	INTRODUCTION TO VERILOG 22ISE32.6 8 Hours												
Basic Concept Different typ sequential ci	s, data es of r ircuits	types, nodelli	Compi ing st	iler dire yle, Vei	ctives. I rilog im	Modules apleme	and Po ntation	orts, Mo of com	dule de binatio	finition, p onal circu	ort decla uits, Veri	ration, co log imple	nnecting ementatio	ports, on of
Text Book	Те	'ext Book 3 – Chapter 4,5												

CIE Assessment Pattern (50 Marks - Theory)									
		Marks Distribution							
	RBT Levels	Test (s)	Qualitative Assessment (s)	MCQ's					
		25	15	10					
L1	Remember	5	5	-					
L2	Understand	10	5	5					
L3	Apply	5	5	5					
L4	Analyze	5	-	-					
L5	Evaluate	-	-	-					
L6	Create	-	-	-					

SEE Assessment Pattern (50 Marks – Theory)

	-	
	RBT Levels	Exam Marks Distribution (50)
L1	Remember	10
L2	Understand	20
L3	Apply	10
L4	Analyze	10
L5	Evaluate	
L6	Create	

Suggested Learning Resources:

Text Books:

- 1) Donald P Leach and Albert Paul Malvino, Digital Principles and Applications, 8thEdition, Tata McGraw Hill, 2014.
- 2) James W.Bignel, Digital Electronics, Cengage learning, 5th Edition, 2007
- 3) M.Morris Mano, 'Digital Design with an introduction to the VHDL', Pearson Education, 2013.

Reference Books:

- 1) Digital Fundamentals, Thomas Floyd, 11th edition, 2014, Pearson Education
- 2) An Illustrative Approach to Logic Design, R.D.Sudhakar Samuel, 2010, Pearson Education.
- 3) Stephen Brown, Zvonko Vranesic: Fundamentals of Digital Logic Design with VHDL, 2nd Edition, Tata McGraw Hill, 2005

Web links and Video Lectures (e-Resources):

- <u>https://onlinecourses.swayam2.ac.in/nou23_ec05/preview</u>
- <u>https://www.youtube.com/playlist?list=PLxCzC0Wd7aiGmXg4NoX6R31AsC5LeCPHe</u>

- Video demonstration of latest trends in the field of Logic design
- Mini projects related to logic design (Hardware or Simulation)
- Contents related activities (Activity-based discussions)
 - > For active participation of students, instruct the students to prepare Flow charts and Handouts
 - > Organizing Group wise discussions on issues
 - Seminars

				D	IGITA	L LOGI	C DES	GN LA	BORA	ΓORY				
Course Code 22ISL32								CIE	Marks		50			
L:T:P:S	0:0:1:0								SEE Marks			50		
Hrs / Week	2 Total Marks 100													
Credits	0	1							Exa	m Hours		03		
Course outcomes:														
At the end of	At the end of the course, the student will be able to:													
22ISL32.1	D	esign	comb	oination	nal logio	c circui	ts.							
22ISL32.2	In	nplen	ient f	lip flop	and ve	rify the	e truth t	able.						
22ISL32.3	In	nplem	ienta	tion of o	counter	rs using	g flip flo	ops.						
22ISL32.4	In	nplem	ienta	tion of l	logic cii	rcuits u	ising DI	LD.						
Mapping of	Cours	e Out	tcom	es to I	Progra	ım Ou	tcome	s and l	Progra	am Spec	ific Out	comes:		
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISL32.1	3	3	3	2	2	1	-	-	-	-	-	2	3	3
22ISL32.2	3	3	3	2	2	1	-	-	-	-	-	2	3	3
22ISL32.3	3	3	3	2	2	1	-	-	-	-	-	2	3	3
2215L32.4	3	3	3	Z	Z	1	-	-	-	-	-	Z	3	3
Pgm. No.					Li	st of P	rograr	ns				Hours		COs
							PAR	T-A						
1	Given a 4-variable logic expression, simplify it using Entered Variable Map and realize the simplified logic expression using 8:1multiplexer2ICIC													
2	Perfo	rm ha	alfano	d full ad	lder us	ing con	nbinatio	onal cire	cuits.			2	221	SL32.1
3	Perfo	rm ha	alfano	d full su	ıbtracti	on usir	ıg comł	oination	al circı	uits.		2	221	SL32.1
4	Realiz	ze JK,	D and	d T Flip	-Flops a	and vei	rify its t	ruth tal	ole			2	221	SL32.1
5	Design and d	n and i lemoi	imple nstra	ment Rii te its w	ng coun vorking	ter and g.	Johnson	i counter	using 4	4-bit shift	register	2	221	SL32.2
6	Desig J-K F	n and lip-Fl	imple op IC	ement a s and d	mod-n lemons	(n<8) s strate i	synchro ts worl	nous up king.	or dow	n counte	r using	2	221	SL32.2
							PAR	T-B						
7	Simul	ate an	d ver	ify the v	working	of 8:1	multiple	exer usir	ıg Veril	og code.		2	221	SL32.2
8	Simula Code	ate an	d ver	ify the v	working	of half	and ful	l adder ı	ising V	erilog		2	221	SL32.2
9	Simu	Simulate and verify the working of half and full sub tractor using Verilog 2 22ISL32.3												
10	Simulate and verify the working of the JK, D and T Flip flop using Verilog 2 22ISL32.3													
11	code. Simulate and verify the working of Ring and Johnson Counter using Verilog 2 22ISL32.4													
12	code. 2 Simulate and verify mod8 synchronous up or down counter using 2 221SL 32 4							SL32.4						
	Verilog code.													
PART-C Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE)														
• Simu	 Simulation of half and full adder using logic sim (<u>https://www.voutube.com/watch?v=0Up2YfMYTOA</u>) 													

- Simulation of 8:1 Mux using logic sim (<u>https://www.youtube.com/watch?v=DJhwWMixTRU</u>) Simulation of half and full subtraction using logic sim •
- ٠

|--|

CIE Assessment Pattern (50 Marks – Lab)									
		Test (s)	Weekly Assessment						
RBI Levels		20	30						
L1	Remember	-	-						
L2	Understand	-	05						
L3	Apply	10	10						
L4	Analyze	10	10						
L5	Evaluate	-	05						
L6	Create	-	-						

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	10
L3	Apply	20
L4	Analyze	20
L5	Evaluate	-
L6	Create	-

Suggested Learning Resources:

Reference Books:

1) Joseph Cavanagh, "Verilog HDLD design Examples", Publisher: CRC Press, Taylor & Francis group, 2018, ISBN-9781138099951

2) Dr. Cherry Bhargava and Dr. Rajkumar Sarma, "Hardware Description Language Demystified: Explore Digital System Design using Verilog HDL and VLSI Design Tools", Publisher: BPB Publications, 2020, ISBN-9789389898040

3) Charles H Roth and Larry L Kinney, Analog and Digital Electronics, Cengage Learning, 2019

ADVANCED DATA STRUCTURES														
Course Code	221	SE33							CIE I	Marks		50		
L:T:P:S	3:0	:0:0							SEE	Marks		50		
Hrs/Week	3	Total Marks 100												
Credits	03	3 Exam Hours 03												
Course outco	Course outcomes:													
At the end of the course, the student will be able to:														
22ISE33.1	2ISE33.1 Understand the fundamentals of data structures and their types, essential for													
	Pro	gramn	ning/	proble	m solv	ing.								
22ISE33.2	Арр	oly the	opera	ational	aspect	ts of lin	ear dat	ta struc	tures:	stacks a	nd queu	es in Pro	blem sol	ving.
22ISE33.3	3 Implement the concept of different types of linked list data structure in Problem solving.													
22ISE33.4	4 Examine the operational aspects of non-linear data structures: Trees, Graphs in Problem solving.													
22ISE33.5	App	oly app	ropri	ate dat	ta struc	ctures f	for a sp	ecified	applic	ation.				
22ISE33.6	Ana	alyze tł	ie sor	ting al	gorithr	ns and	approx	ximatio	n algo	rithms.				
Mapping of C	ourse	Outco	mes	to Pro	gram (Outcon	nes an	d Prog	ram S	pecific C	Outcome	s:		
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE33.1	2	2	2	2	1	-	-	-	-	-	-	2	2	2
22ISE33.2	2	2	2	2	1	-	-	-	-	-	-	2	2	2
22ISE33.3	2	2	2	2	1	-	-	-	-	-	-	2	2	2
22ISE33.4	2	2	2	2	1	-	-	-	-	-	-	2	2	2
22ISE33.5	2	2	2	2	1	-	-	-	-	-	-	2	2	2
22ISE33.6	$\begin{array}{c c c c c c c c c c c c c c c c c c c $													
MODULE-1				BAS	SIC COI	NCEPTS	S				22ISE	33.1	8 H	lours
Data Structur	es, Clas	ssificat	ions	(Primit	tive & I	Non Pri	imitive), Data	Struct	ure Opei	ations, I	Review o	f Arrays,	
Structures, Se	lf-Refe	rential	l Stru	ctures,	and U	nions. l	Pointer	s and I)ynami	ic Memo	ry Alloca	tion Fun	ctions, S	parse
Matrix, case s	tudy ai	nd app	licatio	ons.										
Text Book			Tex	t Book	1:2.1,	2.2,2.3	3,2.4,4.2	1,4.7						
			Tex	t Book	2:1.1-	1.5,2.1	-2.3							
MODULE-2				STAC	CKS AN	D QUE	UES				22ISE	33.2	8	Hours
Stacks, Applic	cations	of sta	cks: R	lecursi	on, Eva	aluatio	n of Ex	pressio	ons, Fa	ctorial, 1	Fower of	f Hanoi. I	Multiple	Stacks.
Queues: Queu	ie repr	esenta	tion,	Primit	ive ope	eration	s on q	ueue, a	rray re	epresent	ation of	queues,	Circular	queue,
Priority queu	ie, Dou	ible en	nded	queue,	Appli	cations	s of qu	eues, S	Sets, D	ictionari	es, Hasł	ning: The	e symbol	l table,
Hashing Func	tions,	Techn												
Comston Rest		+ Pool	1ques		1250	2								
Text DOOK	Tex	t Book	· 1:5.1	.,3.3,3.4 5 1 4 5	4,5.5,6. 3 4 5 4	.∠ 4565	1-54	6416	4364	L 4				
MODULE-3	104	L DOOR	2. 1.0	J.1, 1.3.	INKED	LISTS	,.1 0.1,	0. 1.1,0	1.0,0.1		22ISE	33.3	8 H	ours
Introduction	to link	ed list	Renr	esenta	tion of	linked	listin	memor	v. prim	itive on	erations	on linker	l list sea	rching
a linked list d	ouhlv	inked	list h	eaderl	inked	list Lin	ked re	nresen	tation	ofstack	Linked r	enresent	ation of	0116116
circular linke	d list-P	olynor	nial R	leprese	entatio	n, Appl	ication	ns of Li	iked Li	ist.	Linneur	epresent		queue)
Text Book	Tex	t Book	1:4.2	2,4.3,4.4	4,4.5,4	.8								
MODULE-4					TRE	EES					22ISE	33.4	8	Hours
Introduction,	Binary	Trees	, Bina	ry Tre	e Trave	ersals, '	Thread	led Bina	ary Tre	ees, Heap	os. Binar	y Search	Trees, Se	election
Trees, Forests	s, Balar	nced Ti	rees, I	AVL Tr	ees, Siı	ngle ro	tation,	Double	rotati	on, Splay	y Trees, I	Red-Blac	k Trees.	
Text Book Text Book 1: 5.1,5.2,5.3,5.4,5.5,5.6, 5.7,5.8,5.9,10.2,10.5,10.7														
MODULE-5GRAPHS AND SORTING22ISE33.5, 22ISE33.68 Hours														
Definitions, Terminologies, Matrix and Adjacency List Representation Of Graphs, Elementary Graph operations,														
Traversal methods: Breadth First Search and Depth First Search. Sorting-Internal Sorting, External Sorting,														
Insertion Sort, Selection Sort, Stable vs. Unstable sort, Linear Programming, Approximation Algorithms.														
Text Book	Tex	t Book	1:6.1	,6.2,7.	3,7.4	_ · · · ·								
	Tex	t Book	2:10	.1,10.2	,10.3,1	0.4,11.	5							

CIE A	ssessment	t Patt	ern (50 Mark	s – Theory) –							
			I	Marks Distribut	ion						
	RRT Leve	s	Test (s)	Qualitative	мсо	, ,					
	NDT LEVE	13	1030 (3)	Assessment (s)	MOQ						
14	D 1		25	15	10						
	Kememr	ber	5	-	-						
L2	Annly	anu	5		-						
	Apply		5	5	5						
LT	Evaluate	•	5	5	-						
L6	Create	•	-	-	-						
SEE /	SEE Assessment Pattern (50 Marks – Theory)										
JULI	Fyam Marks										
			RBT Levels	Distribu	tion						
				(50)							
		L1	Remember	10							
		L2	Understand	l 10							
		L3	Apply	10		-					
		L4	Analyze	10		•					
		L5	Evaluate	10							
		LO	Create]					
Sugg Tex	ested Lea t Books:	rning	g Resources:								
1) Fi	undament	als O	f Data Struc	tures, by Ellis I	Iorowitz	z, Sartaj Sahni, Computer Science Press, 2nd					
Editi	on, Univer	rsitie	s Press,2007.	-							
2) De	ebasis Sam	anta	: Classic Data	Structures,2 nd E	, dition	'HI,2009.					
Defe		1									
1) Vo	rence Boo	KS:	stoin Tannon	haumi"Data Str	icturaci	using C and C + + 2nd Edition Dearson					
I) IE	lucation 2	ugen: 003	stem, rannen	Daum: Data Str	letures	using C and C++,2 ^m Edition , rearson					
2) R	ichard F. G	ilber	g and Behrou	z A. Forouzan: D	ata Stru	ctures A Pseudocode Approach with C. Cengage					
Lear	ning,2005					rr					
3) Re	eema Thar	eja: "	Data Structu	res Using C", Oxf	ord univ	versity Press (2021)					
Web	links and	Vide	o Lectures (e	-Resources):							
	https://	/ / wi	ww.udemv.cor	n/course/datas	tructure	scncpp /					
	https:/	//w	ww.coursera.o	rg/specialization	s/data-	structures-algorithms					
	 https://www.coursera.org/specializacions/autu-structures-argorithms https://nptel.ac.in/courses/106102064 										
	<u>neeporg g npeciming consect a conver</u>										
Activ	Activity-Based Learning (Suggested Activities in Class) / Practical Based learning										
neuv				netivities in class	j i i ucc						
	• Lase S	luaie	sy case-lets								
	Proble	em So	olving Exercis	ses							

				A	DVAN(CED DA	ATA ST	RUCTI	JRES I	ABORA'	TORY			
Course Code	22ISL33 CIE Marks 50 2004 0 50 50													
L:T:P:S	0:0:1:0 SEE Marks 50													
Hrs / Week		3							Tota	al Marks		10	0	
Credits		03							Exa	m Hours	;	03		
Course outco	omes):												
At the end of	the c	course,	the st	udent	<i>w</i> ill be a	able to:								
22ISL33.1		Understand the fundamentals of data structures and their applications essential for Programming/problem solving.												
22ISL33.2		Examine the operational aspects of linear data structures: stacks, que										ues in P	roblem s	olving.
22ISL33.3		Imple	ment	the co	ncept o	oflinke	d list d	ata stru	icture	in Proble	em solvin	ig.		
22ISL33.4		Exami	ne the	e opera	itional	aspect	s of no	n-lineai	r data s	structure	es: Trees,	Graphs	in Proble	em solving.
Mapping of	Cour	se Ou	tcom	es to l	Progra	im Ou	tcome	s and I	Progra	am Spec	ific Out	comes:	7004	2000
00101004	P01	<u>PO2</u>	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PSO2
22ISL33.1	2	2	2	2	2	-	-	-	-	-	-	2	2	2
22ISL33.2	2	2	2	2	2	-	-	-	-	-	-	2	2	2
2215L33.3	2	2	2	2	2	-	-	-	-	-	-	2	2	2
2213135.4	2	2	2	2	2	-	-	-	-	-	-	2	L	L
Pgm. No.				List	of Pro	grams	;					Hour	5	Cos
						Pı	rerequ	isite P	rograi	ns				
	Con	cepts c	of C P	rograr	nming	Į.							2	NA
							l	PART-A	ł					
1	Des foll Dis Ele at fun of t	sign, D owing play o ment (a give actions che abo	evelo array of arr ELEM n val for ea	p and v opera ay Ele 1) at a id Pos ach peration	Implen tions. a ments given v ition (ns.	nent a . Creat with valid Pc POS) (menu ing an Suitab osition e. Exit.	driven array o le Hea (POS) o Suppo	Progr f N Into dings d. Dele ort the	am in C eger Eler c. Inser ting an E e progra	for the nents b. ting an Element m with		2	22ISL33.1
2	Des sto 10) of a to a the	sign, De re the) and st all the c add\$10 eir bala:	evelog name tore tl custor 00inth nce a	p and I , accou heir inf mers ha tebalar nd thei	mplem int nur formati aving b iceofall n print	ent a F mber a ion. 1 - oalance lthecus the inc	Program and bala Write less the stomers cremen	n in C t ance of a funct an\$200 shaving ted valu	o creat custor ion to 0 2 - gmoret ue of tl	te a struc ners(mo print the Write a f than\$10(heir bala	ture to re than names unction)0in nce		2	22ISL33.1
3	Design, Develop and Implement a menu driven Program in C for the following operations on STACK of Integers (Array Implementation of Stack with maximum size MAX) a. Push an Element on to Stack b. Pop an Element from Stack c. Demonstrate how Stack can be used to check Palindrome d. Demonstrate Overflow and Underflow situations on Stack e. Display the status of Stack f. Exit Support the program with										22ISL33.2			
4	Des Exp par +, -	sign, De pressio centhes , *, /, %	evelo n to sized 5 (Rer	p and I Postfix and fre nainde	mplem Æxpre e pare r), ^ (P	ient a I ession. nthesiz Power)	Program Progra zed exp and alj	m in C f am sho pression phanun	for cor ould su ns with neric o	verting upport for the ope perands	an Infix or both erators:		2	22ISL33.2
5	Des App ope	sign, De plicatic erands	evelog on: Ev and c	p and I aluation	mplem on of Pc ors: +	ent a P ostfix e	rogran xpressi 6. ^.	n in C fo ion witl	or the f h singl	following e digit	g Stack		2	22ISL33.2
6	Des Ap	sign, De	evelo on: So	p and I lving T	mplem 'ower c	ent a P	rogran pi probl	n in C fo lem wit	or the f h n dis	following sks.	g Stack		2	22ISL33.2

			PART-B					
7	Design, Develo following ope Implementatio Element on to QUEUE c. Demo QUEUE d. Disp program with appropriate fu	p and Impler rations on n of Queue Circular QU onstrate Over olay the statu	ment a menu driven Prog Circular QUEUE of Ch with maximum size M. IEUE b. Delete an Eleme rflow and Underflow situa us of Circular QUEUE e. ach of the above operation	gram in C for the haracters (Array AX) a. Insert an nt from Circular ations on Circular Exit Support the Is	2	22ISL33.2		
8	Design, Develo following opera the fields: USN, Data by using fi number of nod Perform Insertion / Delo	Design, Develop and Implement a menu driven Program in C for the following operations on Singly Linked List (SLL) of Student Data with the fields: USN, Name, Branch, Sem, Ph.No a. Create a SLL of N Students Data by using front insertion. b. Display the status of SLL and count the number of nodes in it c. Perform Insertion / Deletion at End of SLL d. Perform Insertion / Deletion at Front of SLL (Demonstration of stack) e. Exit22ISL33.						
9	 9 Design, Develop and Implement a menu driven Program in C for the following operations on Doubly Linked List (DLL) of Employee Data with the fields: SSN, Name, Dept, Designation, Sal, Ph.No a. Create a DLL of N Employees Data by using end insertion. b. Display the status of DLL and count the number of nodes in it c. Perform Insertion and Deletion at End of DLL d. Perform Insertion and Deletion at Front of DLL e. Demonstrate how this DLL can be used as Double Ended Queue f Exit 							
10	10Using circular representation for a polynomial, design, develop, and execute a program in C to accept two polynomials, add them, and then print the resulting polynomial.22ISL33.							
11	Design, Develo following opera a BST of N Integ in In order, Preoro (KEY) and repo	p and Imple ations on Bin gers: 6, 9, 5, 2 der and Post ort the appro	ment a menu driven Prog ary Search Tree (BST) of I 2, 8, 15, 24, 14, 7, 8, 5, 2 b. Order c. Search the BST fo priate message d. Exit	gram in C for the ntegers. a. Create Traverse the BST r a given element	2	22ISL33.4		
12	2 Demonstrate b techniques.	inary search	algorithm using anyone c	f the sorting	2	22ISL33.4		
• D • Ir • Ir ht	PART-C Beyond Syllabus Virtual LabContent (To be done during Lab but not to be included for CIE or SEE) Demonstrate QUEUE data structure in C. https://ds1-iiith.vlabs.ac.in/exp/stacks-queues/posttest.html Implement a c program to print reverse of a linked list. https://github.com/topics/virtual-lab Implement Graph data structure in C. https://cse01iiith.vlabs.ac.in/List%20of%20experiments.html 							
CIE Asse	ssment Pattern (50 N	Aarks – Lab)						
	RBT Levels	1 Test (s) 20	Weekly Assessment 30					
L1	Remember	-	-					
L2	Understand	-	5					
L3	Apply	10	10					
	Analyze	10	10					
L5 16	Evaluate	-	5					
LO	Lieale	ı -	-					

SEE As	EE Assessment Pattern (50 Marks – Lab)						
	RBT Levels	Exam Marks Distribution (50)					
L1	Remember	-					
L2	Understand	05					
L3	Apply	10					
L4	Analyze	20					
L5	Evaluate	10					
L6	Create	05					

Suggested Learning Resources:

Reference Books:

1) Yedidyah, Augenstein, Tannenbaum: "Data Structures using C and C++, 2nd Edition, Pearson Education, 2003.

2) Richard F. Gilberg and Behrouz A. Forouzan: Data Structures A Pseudocode Approach with C, Cengage Learning,2005.

3) Reema Thareja: "Data Structures Using C", Oxford university Press (2021).

LINUX SYSTEM PROGRAMMING														
Course Code	22	2ISE34	CIE Marks 50 0:1:0 SEE Morks 50											
L:T:P:S	2:	0:1:0							SEE 1	Marks		50		
Hrs / Week	2.	+2							Tota	l Marks		10	0	
Credits	03	3							Exar	n Hours		03		
Course outco At the end of	mes the c	: ourse, t	the st	udent v	vill be a	ble to:								
22ISE341.1	Ех	kplain t	he fui	ndamer	ntals of	Multi-U	Jser Op	erating	system	n and con	nmands			
22ISE341.2	Aj	pply the	e file 1	manipu	lation o	commai	nds and	l file AP	ls.					
22ISE341.3	ISE341.3 Analyze the mechanism of process creation and process APIs													
22ISE341.4 Apply the networking commands and IPC mechanism.														
22ISE341.5 Evaluate and execute shell scripts effectively														
22ISE341.6 Evaluate awk programs for various real-time applications.														
Mapping of (Cour	se Out	tcom	es to F	Progra	m Out	tcome	s and I	Progra	ım Spec	ific Out	comes:		
P01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P012 I												PSO1	PSO2	
22ISE341.1	3												3	3
22ISE341.2	2	3	1	3	1	-	-	-	-	-	-	2	3	3
22ISE341.3	3	2	3	3	1	-	-	-	-	-	-	2	3	3
22ISE341.4	2	3	3	2	1	-	-	-	-	-	-	2	3	3
22ISE341.5	3	3	3	3	1	-	-	-	-	-	-	2	3	3
22ISE341.6	2	2	3	1	1	-	-	-	-	-	-	2	3	3
MODULE-1	G	ENER/	AL PU	JRPOS	E UTI	LITIES					22ISE3 4	1.1		
Getting Start architecture, General Purp man, echo, so	, Feat ose U	tures of tilities: passw	f LINI passw d, un	UX, The vd, who, ame, w	POSIX tty, lock ho, dat	Standa , sty, sci ce. Case	ards, A ript, clea study,	PI Com ar and tp / Appli	mon Cl out, unar cations	haracter me, date, c S	istics. al, calend	ar, bc,	5 10	urs
Laboratory (1. Execution	Com of va	ponen irious g	i t: enera	al purpo	ose utili	ty com	mands						3 Ho	urs
2. Execution	ofva	rious fi	lle /di	ommar	handli	ng com	mande							
Text Book	UI Va	liious ii	Tex	t Book	1 chapt	er 1	manus							
										- F	001050			
MODULE-2	F	ILE SY:	STEN	<u>A AND</u>	ATTR	IBUTE	5	1 50			2215E34	41.Z		
File System and Attributes: Introduction to LINUX file system, inode, FileTypes, File Attributes, Applicationprogram Interface to Files, LINUX kernel support for filesFile Handling Commands: ls, cat, cp, mv, rm, wc, od, printf, pwd, mkdir, rmdir, cd, file and directorypermissions- chmod, file ownership- chown, chgrp, umask, tar										urs				
Laboratory Component: 3 Hours											urs			
1. Write a program to emulate the ln command.														
2. Write a program to read the alternate nth byte and write it in another file.														
3. Write a	prog	ram tha	at crea	ates a z	ombie a	and the	n calls							
system to	exec	ute the	ps co	mmano	l to veri	ify that	the pro	ocess is	zombie	2.				
Text Book	Te	ext Boo	k 1 : c	chapter	2 & cha	apter 3							<u> </u>	

MODULE-3	PROCESS					22ISE341.3		
PROCESS: Pro	cess, LINUX kernel	support for p	processes, process attributes, p	rocess tab	ble, vie	ewing processes	5 Hours	
– ps, system processes, starting new processes, waiting for a								
process, zomb	oie processes, orp	han process	s, fork, vfork, exit, wait, wai	tpid, exe	ec.			
Laboratory	Component:						3 Hours	
1. Write a p	rogram to implen	nent the sys	tem function.					
2. Write a program which demonstrates inter-process								
communication between a reader process and a writer								
process.		(1) I I						
3. Write a she	Il script to accept	a file and c	heck if it is executable. If no	ot make i	t exec	utable.		
Text Book	Text Book 1 c	napter 4 , I	ext Book 2 chapter 5					
MODULE-4	NETWORKI	NG COMM	ANDS			22ISE341.4		
Networking co	ommands: ifconfig	ulimit , finge,	er, arp, ftp, telnet, hostname, t	raceroute	e, ping	, netstat, ns lookup	5 Hours	
INTER PROCESS	S COMMUNICATION	: Pipe, proce	ss pipes, pipe call, Named Pip	es-FIFO,	Messa	ge Queues- msgget,		
msgsnu, msgr	cv, msgcu							
Laboratory	Component:						3 Hours	
1. Write a s	hell script to accep	ot a file and c	heck if it is executable. If not	: make it			onouro	
executable.								
2.Write a she	ll script which di	splays a list	of all the files in the					
current dired	ctory to which yo	u have read	, write and execute permiss	sions.				
3.Write a shell	script which gets	executed the	e moment the user logs in.It s	should dis	splay t	the message, "Good		
Morning", "Go	od Afternoon", "(Good Evenin	g" ,depending upon the tim	ne at whi	ch the	e user logs in.		
Text Book	Text Book 1 c	hapter 6 ,Te	ext Book 2 chapter 6					
MODULE-5	SHELL & AV	VK PROGI	RAMMING			22ISE341.5,		
						22ISE341.6		
Shell Program	ming : Shell variab	les, shell scri	pts, read, positional parameter	rs ,exit sta	atus, lo	gical operators, exit, if	5 Hours	
conditions, t	est and[],case, ex	pr, sleep an	d wait, while and for.	mnariaa	n 0.00	atona numbor		
nrocessing RE	GIN and END sect	ion position	al narameters get line huilt	in variah	ii opei iles an	d functions		
Laboratory	Component:		ai parameters, get mie, bant	iii vai lab	nes un		2 Hours	
1. Write a sc	ript to demonstrat	e built in v	ariables available in AWK				5 11001 5	
2. Write a so	ript to demonstrat	e built in fu	nctions available in AWK					
3. Writeas	hellscriptwhicha	iccentsanvi	numberofargumentsandpi	rintsthe	minre	everseorder		
Text Book	Text Book 2 c	hanter 7	guinenteurup					
CIE Assessm	ent Pattern (50	Marks – T	'heory and Lah)					
			Marks Distribution					
RBT Levels Qualitative								
Test (s) Assessment Lab								
		25	05	20				
L1 Ren	nember	5	-	-				
L2 Und	lerstand	5	-	5				
L3 App	oly	5	5	10				
L4 Analyze 5 - 5								
L5 Eva	luate	5	-	-				
L6 Cre	ate	-	-	-				

SEE A	EE Assessment Pattern (50 Marks – Theory)					
DBT Levels Exam Marks						
	RBI Levels	Distribution (50)				
L1	Remember	10				
L2	Understand	10				
L3	Apply	10				
L4	Analyze	10				
L5	Evaluate	10				
L6	Create					
		·				
Sugge	uggested Learning Resources:					

Text Books:

1) Linux for Beginners: A Practical and Comprehensive Guide to Learn Linux, Ethem Mining, ISBN: 978-1671228085,2019.

2) Your UNIX – The ultimate Guide, SUMITABHA DAS, TATA McGraw Hill Edition, 4th Edition Paper back 2017, McGraw Hill, ISBN:978-0070446878

Reference Books:

1) UNIX System Programming Using C++, Terrence Chan, Prentice-Hall of India Private Limited, ISBN:978-9332549975,2015.

2) Advanced Programming in the UNIX Environment, WRichard Stevens and Stephen A Rago, Addison Wesley Publications, Third Edition, 2013, ISBN: 978-0321637734.

3) UNIX and SHELL Programming, Richard F Gilberg and Behrouz A Forouzan, 15th impression, 2015, Cengage Learning, ISBN : 978-8131503256

Web links and Video Lectures (e-Resources):

- <u>https://nptel.ac.in/courses/117106113</u>
- https://web.njit.edu/~alexg/courses/cs332/OLD/F2020/hand3f20/Linux-Tutorial.pdf
- <u>https://www.youtube.com/watch?v=8lwx0AecpLQ</u>

- Video demonstration of latest trends in programming
- Contents related activities (Activity-based discussions)
 - > For active participation of students, instruct the students to prepare Flowcharts and Handouts
 - > Organizing Group wise discussions on issues
 - ➢ Seminars

WEB DESIGN TECHNOLOGIES														
Course Code22ISE342CIE Marks50														
L:T:P:S	2:0:	1:0							SEE N	Marks		50		
Hrs / Week	2+2								Tota	l Marks		100		
Credits	03								Exan	n Hours		03		
Course outcom	nes: the cou	e s: le course, the student will be able to:												
22ISE342.1	Design web pages using XHTML and HTML5.													
22ISE342.2	342.2 Design web pages using Cascading Style Sheets.													
22ISE342.3	ISE342.3 Develop JavaScript programs to validate dynamic Web pages.													
22ISE342.4 Develop Java script and DHTML programs.														
22ISE342.5	Des	scribe	the n	netho	ds to h	andle	XML an	d PHP p	orogran	nming				
22ISE342.6	Ins fac	pect t ilitate	he ma s dev	anage elope	ement o er to fo	of state cus on	e in wel core fe	o applic eatures.	ations	and Java	Script fr	amewor	ks whicl	1
Mapping of Co	ourse	Outo	come	s to l	Progra	nm Ou	tcome	s and	Progra	am Spec	ific Out	comes:		
	P01	P02	PO3	P0 4	P05	P06	P07	P08	P09	P010	P011	P012	PS01	PSO2
22ISE342.1	3	2	3	-	3	3	-	-	-	-	-	-	3	3
22ISE342.2	3	2	3	-	3	3	-	-	-	-	-	-	3	3
22ISE342.3	3	2	3	-	3	3	-	-	-	-	-	-	3	3
22ISE342.4	3	2	3	-	3	3	-	-	-	-	-	-	3	3
22ISE342.5	3	2	3	-	3	3	-	-	-	-	-	-	3	3
22ISE342.6	3	2	3	-	3	3	-	-	-	-	-	-	3	3
MODULE-1	. 3	КНТМ	IL								22ISE34 22ISE34	2.1, 2.2		
XHTML: Basic	syntax	k, Star	ıdard	XHT	ML doo	cumen	t struct	ture; Ba	isic tex	t marku	p, Image	s;	5 H	lours
Hypertext Link Cascading Sty Selector forms,	ts, List 7 le Sh ,The B	s, Tab eets: ox mo	oles, F Intro odel, E	orms ducti Backg	, Synta on, Le round	ctic di vels o image	fferenc f style s, The <	es betv sheets, 	veen H' Style and <d< td=""><td>TML and specifica liv> tags</td><td>XHTML ation for</td><td>rmats,</td><td></td><td></td></d<>	TML and specifica liv> tags	XHTML ation for	rmats,		
Laboratory Component: 1. Design a personal web page using HTML5 which should include: a.) A brief description about yourself. b.)Your photo as the profile picture using canvas c.)An index which should be a list of different headings/sections present in a document in the form of link which when clicked takes you to that heading/section The different sections: 1. Your educational details(Has to be displayed using a table)									3H	lours				
3. Apply	styles	to the	e web	page	using	CSS								
Text Book Text Book 1:Ch 2,Ch 3														
MODULE-2 HTML 5 22ISE342.2														
Detecting HTM Floating Eleme input types. Le images.	4L 5 f ents. Ca et's cal	leatur anvas Il it di	res – , vide rawin	Adva o, loc g sui	anced al stor face -	CSS: 1 age, w Simpl	Layout, eb wor e shape	Norma kers, of es, canv	al Flov ffline a vas, Pat	v, Positi pplicatio ths ,text	oning E ons, geo- s, gradie	lements, location, ents and	51	Hours
Laboratory Co 1. Design a web 2.Write a HTM	o mpor opage 1 L Prog	tent: form gram t	using to des	the t ign a	extbox simple	, check e calcu	xbox, ra lator.	idio but	tons, s	ubmit ar	nd reset	buttons	31	lours

Text Book	Text Book 1:Ch 4		
MODULE-3	JAVASCRIPT	22ISE342.3	
Overview of Jav	vaScript, General syntactic characteristics, Screen outp	out and keyboard input,	5 Hours
Control stateme	ents, Object creation and modification, Arrays, Functio	ns, Constructor, Pattern	
matching using	regular expressions.		
Laboratory Com	ponent:		
1. Write a Pro	gram to display current date and time using HTML5 Se	mantic Elements.	3Hours
2. Write a Java	Script Program for the following problem:		
a) Input: A	number n obtained using prompt Output: The first n Fil	oonacci numbers	
b) input : A	number output : factorial of the number.		
Text Book	Text Book 4 : Chapter 5		
	-		
MODULE-4	IavaScript and DHTML Documents	22ISE342.4	
JavaScript and D	HTML Documents: The Document Object Model, Elem	ent access in JavaScript	5Hours
, Events and even	t handling. Moving elements, Element visibility, Dynan	nic content, Slow	
movement of eler	nents.		
Laboratory Com	ponent:		
1. Design and	develop a XHTML document that includes JavaScript	script to create stack of	3Hours
images such	n that images appear one top on another with images sli	ghtly visible. Whenever	
cursor is pla	ced on an image that image should be completely visible a	nd on moving cursor out	
image shou	ld go back to original position	-	
2. Develop an	d demonstrate, using Javascript, a XHTML document th	at collects the USN (the	
valid forma	t is: A digit from 1 to 4 followed by two upper-case cha	racters followed by two	
digits follo	wed by two upper-case characters followed by thre	e digits; no embedded	
spaces allo	wed) and semester (valid format digit from 1 to 8) of	the user. Event handler	
must be inc	luded for the form element that collects this information	on to validate the input.	
Messages II	i the alert windows must be produced when errors are	detected.	
Text Book	Text Book 4 · Chapter 6 7		
MODULE-5	Basics of PHP and XML	22ISE342.5	
		22ISE342.6	
PHP: Origins a	nd uses of PHP, Overview of PHP, General syntactic	characteristics, Output,	5Hours
Control stateme	nts, Arrays, Functions, Pattern matching, Form handlir	ng, Files, Cookies	
XML: Introducti	on to XML, The Syntax of XML, Document structure, Do	cument Type Definition	
(DTD).		51	
Laboratory Com	ponent:		
1. Design a w	eb page using XHTML and PHP to store current date	e-time in a COOKIE and	3Hours
display the	'Last visited on' date-time on the web page upon reope	ning of the same page.	
TextBook:	Text Book 3 : Chapter 4		

CIE Ass	CIE Assessment Pattern (50 Marks - Theory)									
			Marks Distribution							
	RBT Levels	Test (s)	Qualitative Assessment (s)	Lab						
		25	5	20						
L1	Remember	5	-	-						
L2	Understand	10	-	5						
L3	Apply	5	5	5						
L4	Analyze	5	-	5						
L5	Evaluate	-	-	5						
L6	Create	-	-	-						

SEE Assessment Pattern (50 Marks – Theory)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	10
L2	Understand	10
L3	Apply	20
L4	Analyze	10
L5	Evaluate	-
L6	Create	-

Suggested Learning Resources:

Text Books:

- Robert W.Sebesta, "Programming the WorldWideWeb", 8thEdition, Pearson Education, 2015.
- Randy Connolly, RicardoHoar, "Fundamentals of Web Development", 4stEdition, Pearson Education India, 2016
- Mark Pilgrim,"HTML5:Up and Running: Dive into HTML5", 1stEditionO'Reilly, Google Press Publishers & Distributors Pvt Ltd, 2010
- Robin Nixon, "Learning PHP, MySQL & JavaScript with jQuery, CSS and HTML5",5thEdition,O'Reilly Publications, 2018.

Reference Books:

- Paul Deitel, Harvey Deitel, Abbey Deitel, "Internet & World Wide Web How to program", 5th Edition, Pearson Education/PHI, 2012.
- Robin Nixon, "Learning PHP, My SQL & Java Script with jQuery, CSS and HTML5", 5thEdition, O'Reilly Publications, 2018.

Web links and Video Lectures (e-Resources):

- https://developer.mozilla.org/en-US/docs/Web/XML/XML_introduction
- https://www.browserstack.com/guide/top-html5-features
- https://www.w3schools.com/php/php_intro.asp
- https://www.w3schools.com/js/js_operators.asp
- https://onlinecourses.swayam2.ac.in/aic20_sp11/preview

- Demonstration mini projects.
- Contents related activities (Activity-based discussions)
- Organizing Group wise discussions
- Seminars

				PYTI	HON F	OR DA'	ΓA ANA	LYTI	CS				
Course Code	22ISE3 4	13						CIE I	Marks		50		
L:T:P:S	2:0:1:0							SEE	Marks		50	-	
Hrs / Week	2+2							Tota	l Marks		10)	
Credits	03							Exar	n Hours		03		
At the end of th	ies: ie course, i	the st	udent v	vill be a	able to:								
22ISE343.1	Understa	and th	e funct	ion in p	ython								
22ISE343.2	Apply th	e cono	cept of i	inherita	ance an	d overl	oading	the giv	en proble	em.			
22ISE343.3	Perform	essen	tial ope	eration	on Nur	npy and	l Panda	s.					
22ISE343.4	Structuri	ing th	e data i	n the d	ata set	for a giv	ven pro	blem.					
22ISE343.5	Analyzing	the d	lata for	missing	g value a	and cori	elation	among	the paran	neters cor	nsidered,		
22ISE343.6	Demonst	trate t	he con	cept of	Data Vi	sualiza	tion.						
Mapping of Co	ourse Ou	tcom	es to I	Progra	ım Ou	tcome	s and I	Progra	am Spec	ific Out	comes:		
P	01 P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE343.1	3 3	3	3	2	1	-	-	-	-	-	2	3	3
22ISE343.2	3 3	3	3	2	1	-	-	-	-	-	2	3	3
22ISE343.3	3 3	3	3	2	1	-	-	-	-	-	2	3	3
22ISE343.4	3 3	3	3	2	1	-	-	-	-	-	2	3	3
2215E343.5	$\frac{3}{2}$	3	3	2	1 1	-	-	-	-	-	2	3	3
2213E343.0	5 5	3	3	L	1	-	-	-	-	-	L	3	3
MODULE-1	FUNCT	ON I	N PYT	HON						22ISE3 4	13.1		
Creating a functio parameter value,	n, Calling a Passing Li	funct st, Dic	ion, Arg tionary	uments, and fur	, Arbitra nctions	ary Argu as argu	ments, A ments, F	Arbitrar Recursiv	y keywor ve functio	d argumei n.	nts, Defau	lt	urs
 Laboratory Control Write a pyth Write a Python Write a Python<	omponen non progra on Program naracter. Python pr data struc	t: am to to Cre ogran cture	find sur eate a Di n to cou	m of n r ictionary	natural y with K numbe	numbe Tey as Fin ers of ch	rs using rst Chara naracter	g recurs acter an rs in th	sive funct d Value as e string a	tion. Words St and store	the min	3 Ho a	urs
Text Book		Tex	t Book	1:Chap	ter 1,2,	3							
MODULE-2	OBJECT	'S AN	D CLA	SS IN I	РҮТНО	ON				22ISE34	43.2		
List, Tuples, Basi	c operatior	ı in Lis	st and T	'uples. (Class de	finition	Constru	uctors,	Inheritan	ce and		5 H	ours
Overloading.	_			-									
Laboratory Co	omponer	lt: thon	Drogram	to Ann	and Da	lata and	Dicolor	Flomer	nte of a Li	t Heing Cl	16606	3 H	ours
and Objects		/uioii	riogiali	i to App	ienu, De	iete allu	Display	Liemer		st USIIIg CI	185565		
2. Demonstrat	e the conc	ept of	f Metho	d Reso	lution o	order in	multip	le inhe	ritance ir	Pvthon	Program		
3. Design and Ir	nplement a	Pvthc	on Progr	am to p	erform	addition	. subtra	ction. m	ultiplicati	on of two	8		
complex nu	mbers usi	ng bir	nary op	erators	overlo	ading.	,		pilouu				
	Toxt Roo	b 2.01	hantor	1 7 2									
Text Book	IEXL DUU	K 2:U	lapter	1,2,3									

MODULE-3	NUMERICAL PYTHON AND PANDAS	22ISE343.3	
Numpy: Creating array, Numpy o	an array, Generating array using built in functions, Advantage operation, Accessing element from an array.	l of Numpy, Reshapean	5 Hours
Introduction to Pa Checking data ty	andas, Importing data, Creating copy of the data, Attributes of Data, ypes, selecting data based on the data types, Summary of da	Indexing and selecting Data. ta frame.	
 Laboratory Control Write a population Write a population 	Omponent: a program to generate array in numpy using line space, arran strate with a python program to show the speed of execution is python program to perform numpy addition, subtraction, multiplication on.	nge and random functions. more when using numpy n and remainder	3 Hours
Text Book	Text Book 4 : Chapter 5		
MODULE-4	DATA LOADING	22ISE343.4, 22ISE343.5	
Reading and writing string manipulat	ng data from text, csv and excel format, interacting with databases, ion, Exploring data analysis–Frequency Table, Two Way table a	dealing with missing values, nd Correlation.	5 Hours
Laboratory Co 1. Perfor 2. Write data. 3. Write a joint p	omponent: ming an experiment to read the data in txt, csv and excel for a program to analyzing the given data and perform the oper program to read the data and perform correlation, Two way condi robability and marginal probability.	mat. ation to find the missing tional probability,	3 Hours
Self-study / Case Study / Applications	Download any business data set [House price, sale value etc] data, followed by that use the knowledge you can acquire and summarize the same.	and perform cleaning operat d to find the key in sight abo	ion of the out the data
Text Book	Text Book 4 : Chapter 6,7		
MODULE-5 Data Visualizatior born library, Scat library.	VISUALIZATION Is and its merits, Matplot lib, Scatter Plot, Histogram and Bar Plot u ter Plot, Histogram and Bar Plot, Grouped bar plot, box and wh	22CSE35.6 Ising Matplotlib library. Sea iskers pot using Matplotlib	5 Hours
Laboratory Co 1) Read the dat 2) Read the dat 3) Read the dat 4)	Omponent: ta set and perform scatterplot, Histo gramand Barplot using Mat _j ca set and perform scatterplot, Histogram and Barplots using sea ca set and perform Box and whiskers plot using eaborn library.	olotlib library.s born library.	3 Hours
Self-study / Case Study / Applications	Download any business data set and perform cleaning operations knowledge you can acquired to find the key insight about graphical representation using python libraries.	tion of the data, followed by t the data and summarize th	hat use the le same using
Text Book	Text Book 3 : Chapter 4		
	<u> </u>		

CIE Ass	CIE Assessment Pattern (50 Marks – Theory and Lab)							
		Marks Distribution						
	RBT Levels	Test (s)	Qualitative Assessment	Lab				
		25	05	20				
L1	Remember	5	-	-				
L2	Understand	10	-	5				
L3	Apply	5	5	10				
L4	Analyze	5	-	5				
L5	Evaluate	-	-	-]			
L6	Create	-	-	-				

SEE Assessment Pattern (50 Marks – Theory)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	10
L2	Understand	20
L3	Apply	10
L4	Analyze	10
L5	Evaluate	
L6	Create	

Suggested Learning Resources:

Text Books:

1) Allen B. Downey, "Think Python: How to Think Like a Computer Scientist", Publisher: Shroff/O'Reilly Publishers, 2nd edition, 2022, ISBN-10:1636390471, ISBN-13:978-1636390475

2) Mark Lutz, "Programming Python", O'Reilly Media, 4thedition, 2010.

3) Jake Vander plas, "Python Data Science Hand book: Essential tools for working with data", O'Reilly Publishers, IEdition.

5) Wes Mc Kinney, "Python for Data Analysis", O'Reilly Media,2012MarkLutz, "Programming Python", O'Reilly Media,4thedition,2010.

Reference Books:

- Tim Hall and J-P Stacey, "Python3 for Absolute Beginners", Apress, 1st edition, 2009.
- Magnus Lie Hetland, "Beginning Python: From Novice to Professional", Apress, Second Edition, 2005.
- Shai Vaingast, "Beginning Python Visualization Crafting Visual Transformation Scripts", Apress, 2nd edition, 2014

Web links and Video Lectures (e-Resources):

- https://onlinecourses.nptel.ac.in/noc23_cs99/preview
- https://www.youtube.com/watch?v=_uQrJ0TkZlc
- https://www.python.org/

- Demonstration mini projects using python for Data Science.
- Contents related activities(Activity-based discussions)
 - > For active participation of students ,instruct the students to prepare Flowcharts and Handouts
 - > Organizing Group wise discussions on issues
 - ➤ Seminars

Course Code CIE Marks 50 Code 2:7:P:S 2:0:1:0 SEE Marks 50 LT:P:PS 2:0:1:0 SEE Marks 50 Credits 03 Total Marks 100 Course outcomes: Ram Hours 03 Course outcomes: Understand Object Oriented Modeling techniques. 2215E344.2 Develop class models using class diagrams from the requirements specified for a particular problem. 2215E344.2 Develop state models using state diagrams from the requirements specified for a particular problem. 2215E344.4 Construct activity models, collaboration diagrams from the requirements specified for a particular problem. 2215E344.5 Construct a component and deployment diagram for a given problem description and analyze the use of Reverse Engineering. PO1 Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes: PO1 PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO12 PS01 PS02 2215E344.1 2 2 2 3 - - - - 2 2 3 2215E344.2 2 2 2 <			0	BJECT	ORIE	NTED	MODE	LING	AND DE	ESIGN U	JSING ST	FAR UM	IL		
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belence that left in the account and prints as reasint. When the sustamer coloris, the	ontions M	/hen th	e ciista	omers	electe	the hal	lance e	nauir	v ontior	then:	the syste	m show	is the		
Datalice that left in the account and prints as receipt, when the customer selects the	balance th	at left i	n the a	accour	it and	prints	as rece	eipt. W	hen the	custor	ner selec	ts the	2		

withdrawa	l option then the system should ask the amount and disper	ıse	
the amoun	t after enquiring the balance. After all transactions, the cus	tomer should collect the eje	ected card.
Text Book	Text Book 1: Ch 1,3,4		
MODULE-2	MODELING CONCEPTS-2	22ISE344.2	
State Mode	ling: Events, States, Transitions and Conditions; State di	iagrams; State diagram	5 Hours
behavior, A	dvanced State Modeling: Nested state diagrams; Nested	states; Concurrency; A	
sample state	model; Relation of class and statemodels.		
Laboratory	Component:	2	
1. Identify	the classes, States, Event and Event Flow for Telephone Lir	ie System.	3 Hours
2. Drawa	class diagram for Telephone Line System.		
3. Draw a s	state chart diagram for Telephone Line System.		
Descrip	tion: This software is designed for the verification of the	details of the caller and	
receiver	, validity of the telephone number by the central compute	r. The details regarding	
the send	er and receiver will be provided to the central computer th	rough the administrator	
in the te	le communication system will verify		
the deta	ils of the users and provide approval to the office. Then th	e call will be connected to	
the rece	iver.		
Text Book	Text Book 1: Ch 5,6		
MODULE-3	MODELING CONCEPTS-3	221SE344.3, 22ISE344.4	
Interaction	Modeling: Use case Scenario, Use case Diagrams; Use case	relationships, Sequence	5 Hours
scenario, Se	quence Diagrams; Procedural sequence models; A sample I	Jse case Sequence Model.	
Laboratory	Component:		
1. Identify	/ the classes, use cases, Actors for Library Management Sys	tems.	2.11.
2. Drawa	use case diagram for Library Management Systems.		3 Hours
5. Diawa	This software is designed for the verification of the details	of the student by the	
central comp	iter. The details regarding the student will be provided to	the central computer	
through the a	dministrator in the	the central compater	
library and th	e computer will verify the details of student and provide a	pproval to the office. Then	
the books tha	t are needed by the student will issue from the office to the	him.	
Text Book	Text Book 1: Ch 7,8		
MODULE-4	MODELING CONCEPTS-4	22ISE344.5	
Activity Mode	ls: Activity Diagram Notations, Activity Diagram Guidelines	s, Sending and Receiving	5 Hours
Signals, Swim	lanes, Activity Diagram with Object Flow.		
Laboratory	Component		
1. Draw a cla	ss and use case diagram for Exam Registration System.		3 Hours
2. Draw an se	equence diagram for Exam Registration System.		0
3. Draw a Ac	tivity diagram for Exam Registration System.		
Description:	This software is designed for the verification of the details	of the candidate by the	
central comp	uter. The details regarding the candidate will be provided	to the central computer	
through the a	administrator and the computer will verify the details of	candidate and provide	
approval. The	n the hall ticket will be issued from the office to the candid	ate.	
Text Book	Text Book 1: Ch 8,9 TextBook2 : Ch 27		
MODULE-5	ARCHITECTURAL MODELING	221SE344.6	1

Component, Deployment, Component diagrams and Deployment diagrams. Case Study: The Unified Library application.	5 Hours
Laboratory Component: 1. 1. Draw a class, use case diagram for Recruitment System. 2. Draw a component diagram for Recruitment System. 3. Draw a deployment diagram for Recruitment System. Description: The recruitment system allows the job seekers to enroll their names through the process of registration. The employee also can get the list of available candidates and shortlist for their company requirement. Once the applicant enrolls he receives an id, which helps him in further correspondence. A fees amount is received from the job seekers for enrollment. This system makes the task of the job seeker easier rather than waiting in queue for enrollment. This also reduces the time consumption for both for the job seeker and employee. The recruitment system will select the candidate for an organization based on aptitude test, Interview. It generates results for the test taken up the candidates and reports to view the systems usage by the graduates and the employers in the	3 Hours
recruitment process in a periodical base.	

Text Book	Text Book 2	l: Ch 24,29,30	1	
CIE Assessm	ient Pattern	(50 Marks -	Theory) –	
		Ma	arks Distribution	
			Qualitative	
RBT Le	vels	Test (s)	Assessment	MCQ's
			(s)	
		25	5	20
L 1	Remember		-	-
L 2	Understan	10		5
	d	1.0		1.0
L 3	Apply	10	5	10
1.4	A 1	-		
L 4	Anaiyze	5	-	5
IF	Evaluato			
ГЭ	Evaluate	-	-	-
L	Create	-	-	-
6	Sicute			

SEE Assessment Pattern (50 Marks - Theory)

R	BT Levels	Exam Marks Distribution (50)
L 1	Remember	-
L 2	Understand	20
L 3	Apply	20
L 4	Analyze	10
L5	Evaluate	-
TEXT BOOKS:

1. Michael Blaha, James Rumbaugh: Object-Oriented Modeling and Design with UML, Pearson Education ,2nd Edition, 2009.

2. Frank Buchmann, Regine Meunier, Hans Rohnert, Peter Som merlad, Michael Stal: Pattern - Oriented Software Architecture, A System of Patterns, Volume1, JohnWileyandSons, 2007.

REFERENCES:

1. Grady Booch et al: Object-Oriented Analysis and Design with Applications, Pearson Education ,3rd Edition, 2007.

2. Brahma Dathan, Sarnath Ramnath: Object-Oriented Analysis, Design, and Implementation, Universities Press, 2009.

DJeya Mala,S Geetha, Object-Oriented Modeling and Design with UML, McGraw-Hill Education(India) Private Limited, 2013

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

- Demonstration of mini project using Star UML
- Contents related activities (Activity-based discussions)
- For active participation of students, instruct the students to prepare UML Diagrams and Organizing Group wise discussions

						RUBY	PROG	RAMMI	NG					
Course Code		22ISE3	351						CIE	Marks		50		
L:T:P:S	(0:0:1:0	0						SEE	Marks		50		
Hrs / Week		2							Tota	l Marks		100)	
Credits		03							Exar	n Hours		03		
At the end of	the c	: ourse,†	the st	udent v	vill be a	ble to:								
22ISE351.1	1	Unders	stand	the fu	ndamei	ntals o	f Ruby	Progra	mming	essentia	al for pro	oblem sol	ving.	
22ISE351.2]	Exami	ne the	e opera	tional	aspect	s of Str	ings an	d Arra	ys in Rul	oy Progra	amming		
22ISE351.3]	Inspect the concept of Classes and Objects in Ruby Programming.									ning.			
22ISE351.4	1	Analyse the Web-App Framework of Ruby on Rails.												
Mapping of	Cour	ourse Outcomes to Program Outcomes and Program Specific Ou								ific Out	comes:			
	P01	201 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011									P012	PSO1	PSO2	
22ISE351.1	2	2	2	2	2	-	-	-	-	-	-	2	2	2
22ISE351.2	2	2	2	2	2	-	-	-	-	-	-	2	2	2
22ISE351.3	2	2	2	2	2	-	-	-	-	-	-	2	2	2
22ISE351.4	2	2	2	2	2	-	-	-	-	-	-	2	2	2
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						0	PAR'	T-A						
1	Wri	ite Rub	v pro	gram t	o get ri	uby ve	rsion w	vith pat	ch nun	ıber.		2	22IS	E351.1
2	Wri	ite a Rı	iby p	rogram	to dis	play th	e curre	ent date	and ti	me.		2	22IS	E351.1
3	Wri	ite a Rı	ıby p	rogram	which	accep	t the ra	adius of	a circl	e from tl	ne user	2	2215	F351 1
	and	comp	ute tł	ie para	meter	and ar	ea.		<u> </u>		-	2	2213	2331.1
4	Wri give	ite a Ru en striv	נאג iby p שי אי	rogram iere n i	i to cre s a non	ate a n -negat	ew stri tive inte	ing whi eger.	ch is n	copies o	ta	2	22IS	E351.2
5	Wri	ite a Rı	lby p	rogram	n to che	eck wh	ether a	string	'Ruby'	appears	at		22IS	E351.2
	inde	ex 1 in	a giv	en stin	g, if 'Ru	ıby' ap	pears r	return t	he stri	ng witho	out	2		
	'Ru	by'	water	م مأم من			and					2		
6	Wri	erwise	iby n	rn the s	which		gea.	sor's fir	et and	last nam	e and		2215	F351 2
0	prir	nt then	n in re	everse	order v	with a	space b	oetweer	them		ic and	2	2210	1001.2
		PART-B												
7	Wri 20.	Write a Ruby program to check whether the sequence of numbers 10, 20, 30 appears anywhere in a given array of integers.								2	22IS	E351.2		
8	Wri	Write a Ruby program to merge two integer arrays without using									22IS	E351.2		
	libr	library 2												
Q	Wri	te a Ri	ihv n	rngram	to sor	t an ar	ravin	descen	ling or	der usin	σ		2215	E351 2
	sele	ection s	sort.		0 301		.uy 111 (ь 	2		2001.2
10	Rub	y prog	gram	to crea	te a cla	ss witl	n data r	nembe	rs and	initialize	9	2	22ISE351.	
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11	Write a	Write a Ruby program to initialize instance variables using the 2 22ISE351.3													
12	Build a number the info specifie heading	iz. Accessio age and stor with the titl h proper	r e e 2	22ISE351.4											
				PART-	·C										
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	L6 Create														
SEE Assessm	ent Patte	ern (50 l	Marks – Lab)												
		RE	ST Levels	Ex Disti	am Marks ribution (50)										
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Suggested Lo	earning	Resour	ces:												
Reference E 1)	BOOKS:	nming fo	n Doginnong	An Introduc	tion to Looming	Duby Drogr	ammingu	th							
I) KUDy	1) Ruby Programming for Beginners: An Introduction to Learning Ruby Programming with														
Tuto	rials and	Hands-	On Examples	Kindle Editi	ion by Nathan M	etzler(Auth	or).	Tutorials and Hands-On Examples Kindle Edition by Nathan Metzler (Author).							
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Course Code		22ISE:	352						CIE	Marks		50				
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Hrs / Week		2							Tota	al Marks		100)			
Credits		01							Exa	m Hours		03				
Course outco At the end of	the c	: ourse, 1	the st	udent v	vill be a	ble to:										
22ISE352.1		Apply t	pply the basic programming Go Lang constructs to develop standalone ap									plications.				
22ISE352.2		Apply the concept of functions and recursive functions in GoLang progr									g progra	mming				
22ISE352.3]	Develop applications using Go Routines and channels														
22ISE352.4		Solve the real-world concurrency issues using concurrency with go cor								n go conce	epts.					
Mapping of	Cour	rse Outcomes to Program Outcomes and Program Specific Ou								ific Out	comes:					
	P01	P02	P03	P04	P05	P06	P07	P08	PO- 9	P010	P011	P012	PSO1	PSO2		
22ISE352.1	3	3	3	3	2	-	-	-	-	-	-	2	3	3		
22ISE352.2	3	3	3	3	2	-	-	-	-	-	-	2	3	3		
22ISE352.3	3	3	3	3	2	-	-	-	-	-	-	2	3	3		
22ISE352.4	3	3	3	3	2	-	-	-	-	-	-	2	3	3		
Pgm. No.				List	of Pro	gram	S					Hours Co		Cos		
				Prer	equisit	e Expe	erimen	ts / Pr	ogran	ns / Den	10					
	Hello	o Wor	ld pro	ogram	in Gol	lang						2		NA		
							PAR	Г-А								
1	Desig numł imple	n and per of ement	Imple days the s	ement a based ame.	Go pro on user	ogram r input	to print numbe	t the na er. Appl	me of y swit	the mon ch stater	ths and nent to	2	2215	E352.1		
2	Imp 1. A Rea ope use dis	olement Add 2. S ad 2 nu eration er press playing	a calo ub 3. 1 umber , the 1 s Yes o g the 1	culator Mul 4. D s and p prograr or Y, the menu e	program Div Derform n shoul en the p Ise the p	that d the rel d ask t program	isplays a levant o he user n shoul m shoul	a menu operation if he w d contin ld termi	with op n. Afte ants to ue nate.	ptions r perform o continu	ing the e. If the	2	2215	E352.1		
3	Accej posit form	pt a n a ive int ed fron	rray eger i n the s	of 5 pos in the u sum of	sitive in Iser inp 2 numb	ntegers out arra oers in f	. Create ay whic the arra	a prog ch canno iy.	ram to ot be	find the	smallest	2	2215	E352.1		
4	Devel	elop a Go Program to check whether the user given matrix is a sparse or no								e or not.	2	22IS	E352.1			
5	Design and develop a simple Go function to find the longest substring without repeating characters in a given String.									2	22IS	E352.2				
6	Illust Indir	rate the ect, Ta	e diffe iil and	erent ty d Head	pes of 1 Recurs	recursic	on in Go) with si	uitable	program	s. Direct,	2	2215	E352.2		

	PART-B		
7	Design a structure Employee with name and salary as its filed. Create	2	22ISE352.2
	Three employee instances.Print the details and computer the average salary.		
8	Create a program to swap two numbers using pointers in Go.	2	22ISE352.2
9	Applypointertostructureconcepttoprintthedetailsof3student records. Assume Student record to contain USN, name and marks.	2	22ISE352.3
10	Develop a program to illustrate how to create an anonymous Goroutine.	2	22ISE352.3
11	Develop a program to illustrate how to start multiple Go routines.	2	22ISE352.4
12	Solve Producer Consumer concurrency issue using Go concurrency concept.	2	22ISE352.4

PART-C

Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE)

• Develop a Golang program to replace all occurrences of a word with another word in the given string. https://www.youtube.com/watch?v=vFqjpJfCG6Q

• Develop a calculator program using switch cases in Golang. https://www.youtube.com/watch?v=ca8xBxKWXsM

• Develop bubble sort implementation in Golang. <u>https://www.youtube.com/watch?v=98yDJ5vao50</u>

CIE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Test (s)	Weekly Assessment
		20	30
L1	Remember	-	-
L2	Understand	-	5
L3	Apply	10	10
L4	Analyze	10	10
L5	Evaluate	-	5
L6	Create	-	-

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	-
L3	Apply	10
L4	Analyze	20
L5	Evaluate	10
L6	Create	10

Reference Books:

1) A Donovan, Brian W. Kernighan,"The Go Programming Language",Addison-Wesley Professional Computing Series,2016(Reprint)

E-Reference Books:

1) <u>www.tutorialgateway.org/go-programs</u>

2) <u>https://gobyexample.com</u>

					ADV	ANCED	OFFIC	E AUTO	MATIC	DN				
Course Code		22ISE3	353						CIE	Marks		50		
L:T:P:S		0:0:1:0)						SEE	Marks		50		
Hrs. / Week		2							Tota	al Marks		100)	
Credits		01							Exa	m Hours		03		
Course outco	omes	:												
At the end of	the c	ourse,	the st	udent v	vill be a	able to:								
22ISE353.1		Unders	tand	the fun	damen	tals of I	MS. Wo	rd						
22ISE353.2		Unders	tand	the con	cepts c	of MS. E	Ixcel to	perform	n accou	inting ope	erations			
22ISE353.3		Develo	p a Po	owerPo	int pre	sentati	on from	the rec	quirem	ents spec	cified for	a particul	ar probl	em.
22ISE353.4		Design a PowerPoint presentation by inserting background images, Slide tr								Slide trar	sition			
Mapping of	Cour	irse Outcomes to Program Outcomes and Program Specific Out							comes:					
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE353.1	2	2	2	-	1	-	-	-	-	-	-	2	3	3
22ISE353.2	2	2	2	-	1	-	-	-	-	-	-	2	3	3
22ISE353.3	2	2	2	-	1	-	-	-	-	-	-	2	3	3
22ISE353.4	2	2	2	-	1	-	-	-	-	-	-	2	3	3
Pgm. No.														
0				List	of Exp	erime	ents / P	rogran	ns			Hours	(Cos
				Prere	quisi	te Exp	erimer	nts / Pr	ogran	ns / Den	10			
					•	-			0					
	Basio	c conce	epts o	f MS. W	/ord, M	IS. Pow	verPoin	t, MS.E	EXCEL			-		
			-									2		NA
							PAR	Г-А						
1	Crea	ate a Ma	thema	tical qu	estion p	aper us	ing ,at le	east						
	five	equati	ons											
			a.	With fr	actions	, expor	ients, si	ummati	on fund	ction			2215	E3531
			b.	With at	least o	one "m*	*n" mati	rix				2	2210	100011
			C.	Basic m	athem	atical a	and geor	metric c	perato	ors.				
			d.	Use proj	per text	formatt	ting, pag	e color a	nd page	border.				
2	Cre	ate a flo	owcha	art usin	g,							_		
			a.	Proper s	hapes li	ike ellip	se, arrov	v, rectan	gle, and			2		
				paralle	logram								2215	E353.1
			b.	Use gro	uping t	o group	all the	parts of	the flow	wchart in	to one			
		single object.												
3	Gra	reate a latter which must be cent to multiple reginients												
0	CIE	the a fetter, which must be sent to multiple fectplefits.										2		
			a. Use Mail-Merge to create the recipient list. 22ISE										E353.1	
			D.	Use exce	I SNEET T	o enter t	the recipi	ient. Star	t the ma	ll merge				
				using le	iter and	unecto	n y 101111	ai state	uie uill	erence				
	_										a. 1			
4	Crea and	ate a nev clinart	vslett Draw	er Featu ving too	res to b I har av	e cover nd Wor	ed:-New dArt Fo	spaper c rmattin	olumns o Imag	, Images fi es Texth	rom files	2	2215	F352 1
	and	Paragi	aphs		. bui ui			····uttill	8 mag	CO, ICALDO		-	2213	1999.1

5	 Create a table "Student result" with following conditions. 1. The heading must contain, Sl. No, Name, Mark1, Mark2, Mark3, Total, average and result with manual entry. 2. Use formulas for total and average. 3. Find the name of the students who has secured the highest and lowest marks. 4. Round the average to the nearest highest integer and lowest integer (use ceiling and floor function n respectively). 	2	22ISE353.2
6	Do as directed Create a notepad file as per the following fields Sl.no name th1 th2 th3 th4 th5 total % grade Import this notepad file into excel sheet using "data from text" option☑ The grade is calculated as, i. If%>=90, then grade A ii. If%>=80 and<90, then grade B iii. If%>=70 and<80, then grade C iV. If%>=60 and<70, then grade D V. If%<60, then grade F	2	22ISE353.2
	PART-B		
7	Create as ales table for three items purchase din past three consecutive years and perform the following operations a. Draw the bar-graph to compare the sales of the three items for four years using insert option. b. Draw a line-graph to compare the sales of three items for four years using insert option. c. Draw different pie-charts for the given data using insert option. d. Use condition, to highlight all the cells Having value>=1000withredcolor (use conditional formatting). 	2	22ISE353.2
8	Create a Cricket Score Card-Features to be covered:-PivotTables, Interactive Buttons, Importing Data, Data Protection, Data Validation.	2	22ISE353.2
9	 Create a power-point presentation with minimum 10 slides a. Use word art to write the heading for each slides b. Insert at least one clip-art, one picture c. Insert at least one audio and one video d. Hide at least two slides 	2	22ISE353.3, 22ISE353.4
10	Create a power-point presentation with minimum 5 slides a. Use custom animation option to animate the text;	2	22ISE353.3, 22ISE353.4

	The b.	text mus Use prope	t move left to er transition fo	right one or the slid	line at a time es.					
11	Create a slide sh	eate a slide show presentation for a seminar. 22ISE353.3, 22ISE353.4								
12	Use bar chart (X	-axis: Sen	iester, Y-axis:	%marks)	for 6 subjects	5.	2	22ISE353.3, 22ISE353.4		
	PART-C									
		Bey	ond Syllabus	s Virtual	Lab Conten	t				
1. Create new https://ww 2. create a sch https://ww 3. create a crie https://ww	(To be d sletter using MS w.edrawmax.con eduler using MS w.zoomshift.com/ cket score card b w.exceldemy.con	lone dur word n/newsle Excel blog/wor y importi n/make-o	ing Lab but i tter/how-to- k-schedule-in ng data using cricket-score	not to be make-a-r a-excel/ g pivot ta card-in-e	included fo lewsletter-in bles in MS Ex xcel/	r CIE or SEE) -word/ ccel				
CIE Assessme	E Assessment Pattern (50 Marks – Lab)									
			RBT Levels	;	Test (s)	Weekly As	sessment			
		L1	Remembe	r	- 20		,	-		
		L2	Understar	ıd	10	10)			
		L3	Apply		10	5				
		L4	Analyze		-	5		_		
		L5 16	Evaluate		-	10)	-		
SEE Assessm	ent Pattern (50	Marks -	Lah)		-	_				
		RBT Le	vels	Ex: Distr	am Marks ibution (50)					
		Remen	1ber stand		-					
	L2 L3	Apply			10					
	 L4	Analyz	e		20					
	L5	Evalua	te		10					
	L6	Create			05					
Suggested L Reference B 1) Comdex In 2) Comdex14 3) The Comple	 Suggested Learning Resources: Reference Books: Comdex Information Technology course tool kit Vikas Gupta,WILEY Dreamtech,2005 Comdex14-1in-1Computer course Kit by Vikas Gupta, published by Dream Tech The Complete Computer up grade and repair book, 3rd edition Cheryl A Schmidt, WILEY Dreamtech 									

GAME DEVELOPMENT														
Course Code	2	22ISE3	354						CIE	Marks		50		
L:T:P:S	(0:0:1:0)						SEE	Marks		50		
Hrs / Week	2	2							Tota	ıl Marks		100)	
Credits	(01							Exai	n Hours		03		
Course outco At the end of	Course outcomes: At the end of the course, the student will be able to:													
22ISE354.1	22ISE354.1 Apply the workflows for creating 2D video games.													
22ISE354.2	.2 Analyse different types/genres of video games and the components thereof.													
22ISE354.3	1	Apply t	:he be	est pra	ctices t	o enab	ole an e	ntrepre	eneuria	al positio	n in the g	gaming n	narketpl	ace.
22ISE354.4	(Create	multi	iple ga	ming aj	pplicat	tions.							
Mapping of	Cour	se Out	tcom	es to I	Progra	ım Ou	tcome	s and l	Progra	am Spec	ific Out	comes:		
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE354.1	3	3	3	3	2	2	-	-	2	-	-	2	3	3
22ISE354.2	3	3	3	3	2	2	-	-	2	-	-	2	3	3
22ISE354.3	3	3	3	3	2	2	-	-	2	-	-	2	3	3
22ISE354.4	3	3	3	3	2	2	-	-	2	-	-	2	3	3
Pgm. No.	Pgm. No. List of Programs Hours COs								COs					
				Prere	equisit	te Expo	erimer	nts / Pr	ogran	ns / Den	10		-	
	Kno	owledg	ge of	Progra	ammin	ıg lang	guage					2		NA
							PAR	T-A						
1	Crea	ate a pi	rotot	ype usi	ing C fo	or tic ta	ic toe g	ame				2	22IS	E354.1
2	Des	ign a P	rotot	ype for	r Rock	Paper	Scissor	`S				2	22IS	E354.1
3	Des	ign a P	rotot	ype for	r Dot ai	nd Box	es					2	22IS	E354.1
4	Dev	elop a	Proto	otype f	or Flap	py Bir	d					2	2215	E354.1
5	Dev	elop a	Proto	otype f	or Han	gman						2	2215	E354.2
6	6 Design a Prototype for Matching game									2	22IS	E354.2		
							PAR	T-B						
7	7Design a Prototype for Fruit Ninja using C++222ISE354.2								E354.2					
8 Design a Prototype for Connect – Four using python 2 22ISE354.2														
9	9 Design a Prototype for memory matching puzzle 2 22ISE354.3							E354.3						
10	Des	ign a P	rotot	ype for	r Duck	Hunt						2	22IS	E354.3
11	Des	ign a P	rotot	ype for	r Snack	game						2	22IS	E354.4
12Design a Prototype for Sliding puzzle game222ISE354.4														
PART-C Beyond Syllabus Virtual Lab Content														

Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE)

• Design a Prototype for Mind Reader (<u>https://github.com/amauboussin/mind-reader</u>)

- Design a Prototype for Guess the Colour (<u>https://www.geeksforgeeks.org/color-game-python/</u>)
- Design a Prototype for Maze Game (<u>https://github.com/mbourmaud/Ruby-MazeGame</u>)

CIE Assessment Pattern (50 Marks – Lab)								
	DDT Lovele	Test (s)	Weekly Assessment					
RBI Leveis		20	30					
L1	Remember	-	-					
L2	Understand	-	5					
L3	Apply	10	10					
L4	Analyze	10	10					
L5	Evaluate	-	5					
L6	Create	-	-					

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	-
L3	Apply	10
L4	Analyze	20
L5	Evaluate	10
L6	Create	10

Suggested Learning Resources:

E-Reference Books:

- 1) Learning 2D Game Development with Unity-A Hands-On Guide to Game Creation by Matthew Johnson, James A. Henley.
- 1) Beginning C++ Through Game Programming by Michael Dawson
- 2) https://ptgmedia.pearsoncmg.com/images/9780321957726/samplepage/9780321957726.pdf
- 3) https://books.google.co.in/books?id=ARVvCgAAQBAJ&sitesec=buy&source=gbs_atb

BIO INSPIRED DESIGN AND INNOVATION														
Course Code	221	BIK36							CII	E Marks		50		
L:T:P:S	3:0	:0:0							SE	E Marks		50		
Hrs/Week	3								То	tal Mar	ks	10	0	
Credits	03								Exa	am Hour	ſS	03		
Course outco At the end o	mes: of the	course	e, the	studen	t will b	e able	to:							
22BIK36.1	Ver	ify the	biom	nimetic	s princ	iples i	n relati	on to tł	ie ne	eds at th	at momen	t.		
22BIK36.2	Eva	Evaluate the Bio-material properties for health care applications.												
22BIK36.3	Inv	Investigate novel bioengineering initiatives by evaluating design and development principles.												
22BIK36.4	Inv	Investigate creative biobased solutions for socially vital issues with critical thought.												
22BIK36.5	Uno	Understand the bio computing optimization through research and experiential learning.												
22BIK36.6	Explain the fundamental biological ideas through pertinent industrial applications and case studies.													
Mapping of C	f Course Outcomes to Program Outcomes and Program Specific Outcomes:													
l	PO 1	PO2	P03	P04	P05	P06	P07	P08	P09	P10	P011	P012	PSO1	PSO2
22BIK36.1	3	3	3	3	2	-	2	-	1	-	-	2	-	-
22BIK36.2	3	3	3	3	2	-	2	-	1	-	-	2	-	-
22BIK36.3	3	3	3	3	2	-	2	-	1	-	-	2	-	-
22BIK36.4	3	3	3	3	2	-	2	-	1	-	-	2	-	-
22BIK36.5	3	3	3	3	2	-	2	-	1	-	-	2	-	-
22BIK36.6	3	3	3	3	2	-	2	-	1	-	-	2	-	-
Bio-Inspired Classification self- assembly	Engir Is, Ne y).	ed for	g and Bio-I	design Inspire	, Histor d Desi	ry, Evo gns. Bi	lution, o inspi	Basics ired Ad	of Bio ditive	omimeti e manuf	cs and oth	er Discip echnique	olines, Ra es, (self-	awling's healing,
Self-study / C / Application	lase S Is	tudy	Inv are	estigat as of s	e the (cience:	Challer and er	nges of nginee	Bio ins	spire	d desigr	ı, Compar	e with t	radition	al
Text Book			Tex	t Book	1: 1.2,	1.3, 1.	4, 1.13	, 1.15, 1	.16					
MODULE-2	BIC) MATI	ERIAI	LS AND	BIO H	EALTH	CARE I	DESIGN			221	3IK36.2	8	Hours
Biomaterials, (Hierarchy, fr Mechanics, A Wasp-Inspire Inspired Surg Robotics, Mar	Desi ractu pplic ed Ne gical (rine a	ign of re toug ations eedle, Glue) and Aei	Form gh ma of Bi Octop ronau	ıs- (He aterials omater ous-Ins ıtical.	exagon s, struc rials an pired	al unit :tural c 1d Bio Sucker	: cells, colours system r for T	Intrins , Actua is in He `issue(ic di ting l alth Grafti	sorder, Material care des ing, Pea	anisotropy s, Bio-Con ;ign (Hum; cock-Inspi	y), Desig npatible an Prost red Bio	ın of ma Materia hetics, P sensors,	aterials- ls). Bio- 'arasitic Gecko-
Self-study / Case Study/ Applications	-study / Investigate Bio-Compatible alloys and polymers for human implants and health e Study/ care applications. Dications													
Text Book	Тех	<u>ct Book</u>	<u>(1:2.</u>	2, 2.3, 1	2.4 to 2	2.15								
MODULE-3BIO SUSTAINABLE DEVELOPMENT22BIK36.3, 22BIK36.48 Hours														
Innovation (purificatio of spaces, d	22BIK36.4 Innovations in Energy (Termite mound inspired shopping malls), Innovations in Resource-Air (purification, filtration), Dew water collection systems, water purification, desalination, Management of spaces, designs for megastructures.													

Lase Study /	Explore the Bio inspired environmental constructions and development.											
Text Book Text Book 2: 31 33 35 37 310												
MODULE-4BIO COMPUTING AND OPTIMISATION22BIK36.5	8 Hours											
No Free Lunch Theorem, Bat Algorithm, Flower Pollination Algorithm, Genetic Algorithm- Crosso Mutation Operations. Bio-Inspired Optimisation, Ant Colony Optimisation (ACO), Swam Intell Particle Swam Optimisation (PSO).	ver and igence-											
Self-study / Case Study / ApplicationsScrutinize the Different types of Optimization techniques, genetic research.	Scrutinize the Different types of Optimization techniques, genetic research. Text Book 1: 6.1, 6.3, 6.5, 6.7, Text Book 2: 10.1, 10.3, 10.5, 10.7											
Text Book Text Book 1: 6.1, 6.3, 6.5, 6.7, Text Book 2: 10.1, 10.3, 10.5, 10.7	Text Book 1: 6.1, 6.3, 6.5, 6.7, Text Book 2: 10.1, 10.3, 10.5, 10.7											
MODULE-5APPLICATIONS OF BIO-INSPIRED INNOVATIONS22BIK36.6	APPLICATIONS OF BIO-INSPIRED INNOVATIONS22BIK36.68 Hours											
Bioinspired innovations in– Automotive, Automation, Materials and Manufacturing, Sensors, Com Communications, Healthcare, Agriculture, food production, and Sports, Environment infrastruct Carbon Neutral Solutions (Coral Reefs, Eco-cements), Carbon Free Solutions (Lotus leaf inspired eco- restorations (Eco-friendly pesticide).	trollers, 1re. paints),											
Self-study / Survey on Bio inspired Innovations, design, applications and case studies of	the same.											
Case Study /												
Applications												
Text Book Text Book 2: 12.1 to 12.10												
CIE Assessment Pattern (50 Marks – Theory) –												
Marks Distribution												
RBT LevelsTest (s)Qualitative Assessment (s)MCQ's												
25 15 10												
L1 Remember 4												
L2 Understand 4												
L3 Apply 6 3 5												
L4 Analyze 8 7 5												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - -												
L4Analyze875L5Evaluate35-L6CreateSEE Assessment Pattern (50 Marks – Theory)												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory)												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory) RBT Levels Exam Marks Distribution (50)												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory) RBT Levels Exam Marks Distribution (50) L1 Remember 10												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory) RBT Levels Exam Marks Distribution (50) L1 Remember 10 L2 Understand 10												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory) RBT Levels Exam Marks Distribution (50) L1 Remember 10 L2 Understand 10 L3 Apply 10												
L4 Analyze 8 7 5 L5 Evaluate 3 5 - L6 Create - - SEE Assessment Pattern (50 Marks - Theory) RBT Levels Exam Marks Distribution (50) L1 Remember 10 L2 Understand 10 L3 Apply 10 L4 Analyze 10												
L4Analyze875L5Evaluate35-L6CreateSEE Assessment Pattern (50 Marks - Theory)RBT LevelsExam Marks Distribution (50)L1Remember10L2Understand10L3Apply10L4Analyze10L5Evaluate10L6Create-												

Text Books:

1) A Practical Guide to Bio-inspired Design, Helena Hashemi Farzaneh, Udo Lindemann, Publisher : Springer Vieweg; 1st ed. 2019 edition. ISBN-10 : 366257683X, ISBN-13 :978-3662576830

2) Biologically Inspired Design: A Primer (Synthesis Lectures on Engineering, Science, andTechnology), by Torben A. Lenau, Akhlesh Lakhtakia, Publisher : Morgan & Claypool Publishers, 2021. ISBN-10 : 1636390471, ISBN-13 :978-1636390475

Reference Books:

1)French, M., 1994. Invention and evolution: design in nature and engineering. Cambridge University Press. 2)Pan, L., Pang, S., Song, T. and Gong, F. eds., 2021. Bio-Inspired Computing: Theories and Applications: 15th International Conference, BIC-TA 2020, Qingdao, China, October 23-25, 2020, Revised Selected Papers (Vol. 1363). Springer Nature.

3)Wann, D., 1994. Bio Logic: Designing with nature to protect the environment.

Web links and Video Lectures (e-Resources):

- <u>https://onlinecourses.nptel.ac.in/noc22_ge24/preview</u>
- https://biodesign.berkeley.edu/bioinspired-design-course/
- <u>https://www.youtube.com/watch?v=cwxXY9Qe8ss</u>
- https://www.youtube.com/watch?v=V2GvQXvjhLA
- https://nsf-gov-resources.nsf.gov/2023-03/Bioinspired%20Design%20Workshop%20Report_2232327_October%202022_Final.508.pdf

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

- Quizzes & Assignments
- Visit to any manufacturing/aero/auto industry or any powerplant
- Demonstration of lathe/milling/drilling/CNC operations
- Demonstration of working of IC engine/refrigerator
- Demonstration of metal joining process
- Video demonstration of latest trends in mobility /robotics
- Contents related activities (Activity-based discussions)
 - For active participation of students, instruct the students to prepare Flow charts and Handouts
 - Organizing Group wise discussions on issues
 - ➢ Seminars

UNIVERSAL HUMAN VALUES AND LIFE SKILLS											
Course Code	22UHK37/ 22UHK47	CIE Marks	50								
L:T:P:S	1:0:0:0	SEE Marks	50								
Hrs / Week	2	Total Marks	100								
Credits	01 Exam Hours 02										
Course outcom At the end of th	n es: The course, the student will be able to:										
22UHKX7.1	Understand the concept and significance of life	e skills and universal hum	an values.								
22UHKX7.2	Develop Self-awareness and Self-management	skills to promote persona	al growth.								
22UHKX7.3	Apply Critical and Creative thinking and ethica	al decision-making skills in	n various contexts.								
22UHKX7.4	Promote teamwork and collaboration while respecting diversity and inclusivity.										

Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes:													
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	
22UHKX7.1	-	-	-	-	-	3	1	3	-	2	-	2	
22UHKX7.2	-	-	-	-	-	1	2	1	-	2	-	2	
22UHKX7.3	-	-	-	-	-	3	1	3	1	2	-	2	
22UHKX7.4	-	-	-	-	-	2	2	1	3	3	-	3	
MODULE-1	Self-Aw	arenes	s and Se	elf-Mana	igeme	nt		2:	2UHK 2UHK	X7.1 X7.2	3 H	lours	
Emotional Inte	lligence, T	'echniqu	es of sel	f-awarer	ness: SV	NOT and	I JOHAI	RI WIND	OWS,	Stress m	anageme	ent and	
Self-Exploration as a process of Value Education, the basic human Aspirations: Prosperity and Happiness, understanding infatuation.													
Self-study / Role playUnderstand qualities of Role Models, explore self and do SWOT analysis for growth; participate in role play and presentations to come out of comfort zone													
MODULE-2	Towa	rds Yo		2 2	2UHK 2UHK	X7.1 X7.3	3	Hours					
Exploring oppo Personal and P tool for Goal Se	ortunities, rofessiona tting	underst al, aligni	anding ong Perso	expectat nal and	ions ar Profes	nd self fo sional go	or right oals for	t fitmen greater	t in pr achiev	ofession, rement, N	Goal Se Aind-Ma	etting - ps as a	
Self-study / Mind Mans	Under	stand in	dustry e	expectati	ions to	set prof	fession	al goals	; realiz	ing con	nection		
MODULE-3	Leading	g self to	lead ot	hers		50013 101	peace	2 2	3	Hours			
making, Critica Exploring ethic	al thinking	g and Cr on-maki	eative th ng fram	ninking eworks	for cor and pr	itributio	on to te	chnical	world,	Six thin	king hat	S,	
Activities / Case study/Applic ations	Case stu	idies for	Critical	thinking	g and a	ctivities	for Cr	eative th	inkin	5			
MODULE-4	Owners	ship tow	vards Fa	amily ar	nd Soc	iety		2 2 2	2UHK 2UHK 2UHK	X7.2 X7.3 X7.4	3	Hours	
Responsibility	, Diversity	y and Inc	clusivity	:									
Understanding promoting tea	g persona mwork ar	ll and sold and collab	ocial re ooration	sponsibi while r	llity; A espect	pprecia ing diffe	ting di rences	versity	and m	nanaging	g inclusi	vity,	
Self-study / Interview with corporate people	udy / Working on Task bar; team building activities; Interviewing Corporate experts to understand expectations												
MODULE-5	Toward	ls Natur	e and I	ndustry	,			2 2	2UHK 2UHK	X7.3 X7.4	3	Hours	
Personal code of conduct for harmony between self and nature, resisting external pressures, negotiation													
Role play	Role nla	v to und	eness di lerstand	contrib	utions	to natur	re and	inductry	7				
Note play	Note pla	y to unu	ici stanu	CONTIN	ations	to natu	i e allu	muusuy	/				

CIE As	sessment Pattern (50) Marks – Theor	ry) -								
		Marks I	Distributio	n							
	DDT Lovolc	Test (s)	Altern	ative							
	KDI Levels	Test (s)	Assessm	ient (s)							
		25	25	5							
L1	Remember	-	-								
L2	Understand	7	6								
L3	Apply	8	7								
L4	Analyze	10	7								
L5	Evaluate	-	5								
L6	Create	-	-								
SEE As	sessment Pattern (5	0 Marks – Grou	<u>p Discussi</u>	on)							
	RBT Levels	Exam Mar	rks								
11	Domomhor	Distribution	i (50)								
	Inderstand	10									
	Annly	20									
L3 L4	Analyze	10									
LT	Fyaluate										
L6	Create										
Sugge	sted Learning Resou	Irces.									
REFE	RENCE BOOKS:										
1.	The 7 Habits of Hig	zhly Effective F	People, Ste	ephen R (Covey, Neha publishers.						
2.	Seven Habits of Hi	ghly Effective	Teens, Coi	ivey Sea	n, New York, Fireside Publishers, 1998.						
3.	Emotional Intellig	ence, Daniel Co	oleman, Ba	antam B	ook, 2006.						
4.	How to win friends	s and influence	e people, I	Dale Carı	negie.						
5.	BHAGAVADGITA f	or college stud	ents, Sand	leepa Gu	ntreddy.						
Activi	ty-Based Learning (S	Suggested Acti	vities in C	lass)/ Pr	actical Based learning						
•	Conduct interviews Skills and Values	s with HR perso	onnel of con	porates t	to understand expectations in terms of Soft						
•	Participate in role	plays and prese	entations to	o come ou	it of comfort zone						
•	Talk to industry pe	ople to underst	and oppor	tunities a	vailable						
•	Make a short movie	e to display crea	ativity								
•	Use Mind maps to plan successful completion of semester										
•	Actively participate	in Group Discus	sions and J	AM sessio	ons						

BASIC APPLIED MATHEMATICS-I (Common to all Branches)														
Cours	e Code	22DM	IAT31		(0)				CIE M	arks			50	
L:T:P:	<u>s</u>	0:0:0:	:0						SEE M	arks				
Hrs. /	Week	2							Total	Marks			50	
, Credit	s	00							Exam	Hours				
Cours	e outcom	es:												
At the	end of the	course,	the st	udent w	vill be a	ble to:			.1		,			
22DM	1AT31.1	Know	the pr	inciples	s of engi	ineering	g mathe	ematio	s throu	igh calci	ılus			
ZZDM	IAT31.2	Deter	Find the definite integrals with standard limits and also develop the ability to solve difference											
22DM	1АТЗ1.3	Find t of diff	Find the definite integrals with standard limits and also develop the ability to solve different typ of differential equations											
22DM	1AT31.4	Apply ideas from linear algebra in solving systems of linear equations and determine the Eigen values and Eigen vectors of a matrix												
Марр	ing of Cou	irse Outcomes to Program Outcomes:												
		P01	P02	P03	P04	P05	P06	PO 2	7 PO	8 P09	P010	P011	P012	
22DM	1AT31.1	3	3	-	-	-	-	-	-	-	-	-	-	
22DM	1AT31.2	3	3	-	-	-	-	-	-	-	-	-	-	
22DM	1AT31.3	3	3	-	-	-	-	-	-	-	-	-	-	
22DM	IAT31.4	3	3	-	-	-	-	-	-	-	-	-	-	
MOE	DULE-1	DIFFI	ERENT	ΓIAL CA	ALCULI	JS						22DMAT31.1 22DMAT31.2	8 Hours	
Polar (equati	Curves-Pro on for pola	oblems ar curve	on ang es-Prob	gle betw plems. N	veen the Maclaur	e radius in's the	vector	and t	angent ction of	, Angle b one var	etween iable (sta	two curves-Proble atement only)-Pro	ems, Pedal blems.	
MODI				: 4.4, 4.7	(, 4.8, 1)	ON	K Z: 15	.4				22DMAT21.1	0 Lloure	
Dofinit	tion and Si	mplo p	roblom	Frene	r's thoo	rom for	Homo	TOPOOL	us func	tion (NO	Dorivati	ion and NO ovtand	o nours	
Proble	ems. Iacobi	ans of c	order t	wo - dei	finition	and pro	blems	geneor	us iunc		Derivat	ion and NO extend	ieu illeoi elli	
Text B	ook	Text I	Book 1	: 5.4, 5	.7,	und pro								
MODU	JLE-3	INTE	GRAL	CALCU	LUS AN	ND DIF	FEREN	TIAL	EQUA	TIONS		22DMAT31.3	8 Hours	
Proble and fir	ems on eva rst-degree	aluation differe	n of sii ential e	n n x an equatio	d cos n ns-Vari	x integ able se	grals w parabl	ith sta e. Lin	indard ear and	limits (d Exact o	0 to π/2 lifferent). Solution of first ial equations.	order	
Text B	ook	Text I	Book 1	: 6.2. 1	1.6.11.	9.11.1	1. Text	Book	2: 1.3.	1.4.1.5		1		
MODU	JLE-4	LINE	AR AL	GEBRA	-1	,	_,			,		22DMAT31.4	8 Hours	
Proble	ems on rai	nk of a	matri	x by el	ementa	ry trar	nsforma	ations,	Soluti	on of sy	vstem of	linear equations	by Gauss	
elimin Toyt B	ation metr	100-Pro	Book 1	· 2 7 2	8 6 Tox	rt Book	2.73	7 /						
MODI	ILE-5	LINE		CERRA	- ?	IL DOOK	. 2. 7.3,	7.4				22DMAT314	8 Hours	
Linear	transform	nation. H	Eigen v	values a	nd Eiger	n Vecto	rs of so	iuare i	natrix-	Problem	15.	220000101.1	onours	
Text B	ook	Text I	Book 1	: 2.11,	2.13, Te	ext Boo	k 2: 7.9	9, 8.1.						
CIE As	sessment	t Patter	n (50	X2=10	0 Mark	s – The	eorv)							
					Mar	ks Dist	ributio	n						
	RBT Le	Levels Test (s) Qualitative MCQ's												
			_	25	A3.	<u>15 15 15 15 15 15 15 15 15 15 15 15 15 1</u>	int (3)		10					
L1	Remem	ber		5		5		-	-					
L2	Underst	tand		5		5		1	-					
L3	Apply			10		5			10					
L4	Analyze	9		2.5		-			-					
L5	Evaluat	e		2.5		-			-					
L6	Create			-		-			-					

Suggested Learning Resources:
Text Books:
1) B. S. Grewal, Higher Engineering Mathematics, Khanna Publishers, Forty fourth Edition, 2022,
ISBN: 9788193328491.
2) Erwin Kreyszig, Advanced Engineering Mathematics, Wiley-India Publishers, Tenth Edition, Reprint 2016, ISBN: 9788126554232.
Reference Books:
1) Glyn James, Advanced Modern Engineering Mathematics, Pearson Education, Fourth Edition, 2015, ISBN: 9780273719236.
 B. V. Ramana, Higher Engineering Mathematics, McGraw Hill Education (India) Private Limited, Fourth Edition, 2017, ISBN: 9780070634190.
3) H. K. Dass, Advanced Engineering Mathematics, S. Chand & Company Ltd., Twenty Second Edition, 2018, ISBN: 9789352533831.
4) N.P.Bali and Manish Goyal, A Text Book of Engineering Mathematics, Laxmi Publications (P) Ltd., Ninth
Edition, 2014, ISBN: 9788131808320.
Web links and Video Lectures (e-Resources):
1)https://youtu.be/IUV0_Nj4d1s?si=eO3s7keCbCO1_jcz
2)https://youtu.be/VzUcs7aiqgg?si=YLtTUGr4Xp88KGY3
3)https://youtu.be/LDBnS4c7YbA?si=udUOdJ-u0ZxFmBAW
4)https://youtu.be/palSdK9P-ns?si=7A8_VSxEI4lGvksB
5)https://youtu.be/Bw5yEqwMjQU?si=jzbklZmVev1w8K2S
6)https://youtu.be/LBqdGn1r_fQ?si=DWcAIiFnosT7zikY
7)https://youtu.be/N5YCGOyTSuU?si=Wsf75V5fkUpfVVxr
8)https://youtu.be/gd1FYn86P0c?si=7drzBEqVFSv6sQeZ
9)https://youtu.be/cSj82GG6MX4?si=4QN1DFXEqaJoUBn7
10)https://youtu.be/0c3yq9btr3A?si=jIoz8eu5TgV7mh8G
11) <u>https://youtu.be/PhfbEr2btGQ?si=HVK1uk65oHph0t8G</u>
Activity-Based Learning (Suggested Activities in Class)/Practical Based Learning:
 Contents related activities (Activity-based discussions)
➢ For active participation of students, instruct the students to prepare
Algorithms/Flowcharts/Programming Codes
Organizing Group wise discussions on related topics
➢ Seminars

DISCRETE MATHEMATICS AND GRAPH THEORY													
	223444	244	U)	ommo	n to A	AIM, C	. <u>ee, C</u>	SE, CD	5, ISE			50	
LTDC	22MA(.41						CIE Mar	'KS			50	
L:I:P:S	3:0:0:0)						SEE Mai	rks			50	
Hrs. / week	3							Total M	arks			100	
Credits	03							Exam H	ours			03	
At the end of th	nes: le course	, the st	udent	will be al	ble to:								
22MAC41.1	Explair	the co	ounting	technia	ues and	d comb	inatori	cs by us	ing the	context	of discrete proba	ability.	
22MAC41.2	Illustra	te the	princip	le of Inc	lusion	and Ex	clusion		0		r		
22MAC41.3	.3 Apply Pigeon hole principle to solve real life problems.												
22MAC41.4	C41.4 Solve the engineering problems involving relations and functions.												
22MAC41.5	C41.5 Analyze the computer science problems by using graph theory techniques.												
22MAC41.6 Justify the arguments with propositional and predicate logic and from truth tables.													
Mapping of Course Outcomes to Program Outcomes:													
	Pourse Outcomes to Program Outcomes: P01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P012												
22MAC41.1	3	3	-	-	-	-	-	-	-	-	-	-	
22MAC41.2	3	3	-	-	-	-	-	-	-	-	-	-	
22MAC41.3	3	3	-	-	-	-	-	-	-	-	-	-	
22MAC41 4	3	3	_	-	-	-	-	-	-	-		_	
22MAC41 5	3	3	_	-	_	_	-	-	_	-			
22MAC41.6	3	3	_		_	_	_					_	
22011011.0	5	5											
MODULE-1 MATHEMATICAL LOGIC 22MAC41.1 8 Hours													
Basic Connectiv	ves and T	Fruth T	ables,	Tautolog	gy and	Contra	diction	, Logic E	Equival	ence, Th	e Laws of Logic,	Converse,	
Inverse and Co	ntra posi	tive, L	ogical I	mplicati	on, Rul	les of Iı	nferenc	ce.	•		0		
Case Study	Case st	udies o	on roles	s of logic	in spec	cificatio	on of co	omputati	ion.				
Text Book	Text Bo	ook 1: 2	2.1, 2.2	, 2.3.									
MODULE-2	PRINC	IPLES	OF CO	UNTING							22MAC41.2	8 Hours	
Catalan Numbe	ers, Rams	ey Nur	nbers,	Stirling l	Numbe	rs and	Bell Nu	imbers, [Гhe pri	nciple of	Inclusion and E	xclusion,	
Generalization	s of the p	rincipl	e, Dera	ngemen	ts, Roo	k-Poly	nomial	s, Arrang	gement	s with F	orbidden Positio	ns.	
Text Book	Text Be	ook 1:	1.5, 8.	1, 8.2, 8.	3, 8.4,	8.5.					0004444	0.11	
MODULE-3	RELAT	TUNS	ANDF	UNCTIO	JNS			<u></u>			22MAC41.3	8 Hours	
Cartesian Prod	ucts and	Relatio	ons, On	e-to-One	e and oi	nto fun	ctions.	The Pige	eon hol	le Princij	ple, Function Cor	nposition	
and inverse Fu	nctions. I	Proper			s, Equi		e Relati	ions and	Paruu	ons.			
Text Book	Text Bo	00K 1:	5.1, 5.	2, 5.3, 5.	4, 5.5,	5.6, 7.4	ł.				22MAC41 4	Ollours	
MODULE-4	GRAPE	1 I HE		h ananha	Malle	a Dath	. Cinau	ita Camu		Lang Car		8 Hours	
icomorphism E	ions and Fulor grav	examp	nes, su	o grapns vian natk	s, walks	s, Path	s, circu	itts, com	iectear	less, con	nponents, graph		
Case Study	Case st	udies (n Netv	vork An:	is anu c	Lycles.							
Text Book	Text Bo	$\frac{1}{100}$	$\frac{111000}{1111}$	1 2 11	$\frac{1}{3}$ 11 5	Text I	Book 2	$\cdot 2127$	2 2 3 2	4 2 5 2	26272829		
MODULE-5	TREFS	CON	NECTI			NARI	TY	,	_,, 2	, 2.0, 2	22MAC41.5	8 Hours	
	TREES	,		••••			••				22MAC41.6	onours	
Trees, Properti	es of tree	es, Roo	ted and	l binary	trees. S	Spannir	ng trees	s, cut set	s, Prop	erties of	cut set, all cut se	ets,	
Fundamental c	ircuits Ne	etwork	flows:	Kruskal	's algor	rithm, I	Planar	graphs, I	Jual of	planar g	raphs, Different		
representation	of a plan	ar graj	ph.		-								
Case Study	Case st	udies o	on Socia	al Netwo	ork Ana	lysis.							
Text Book Text Book 1: 11.4, 12.1, 12.2, 12.3, 13.2, Text Book 2: 3.1, 3.5, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 5.2,													
	5.6, 5.7.												
CIE Assessmen	nt Patter	m (50	Marks	- Theor	ry)								

			Marks Distri	butio	n						
		T 1 1 1 1	Qualitati	ve	MCQ's	-					
	RBI Leveis	lest (s)	Assessmen	t (s)	-						
		25	15		10						
L1	Remember	5	5		-						
L2	Understand	5	5		-						
L3	Apply	10	5		10						
L4	Analyze	2.5	-		-						
L5	Evaluate	2.5	-		-	_					
L6	Create	-	-		-						
SEE As	ssessment Pattern (5	0 Marks - 1	Theory)								
RBT Levels Exam Marks Distribution (50)											
11	Romomhor	Distribu	10 (50)								
	Understand	· · · ·	10								
L3	Annly		20								
L4	Analyze		5								
L5	Evaluate		5								
L6	Create		-								
Sugge	sted Learning Resou	irces:									
Text E	Books:										
1) Ralp	ph P. Grimaldi, Discrete	e and Comb	inatorial Math	emati	cs-an applie	ed introduction	on, Pearson				
Edu	cation, Fifth Edition, 2	019, ISBN: 9	97893534330	55.							
2) Nars	singh Deo, Graph Theo	ry with App	lication to En	gineer	ring and Con	nputer Sciend	ce,				
Dov	er Publications Inc., Fi	rst Edition,	2016, ISBN: 9	78-04	86807935.						
Refer	ence Books:										
1) Basa	avaraj S. Anami and Ve	nakanna S.	Madalli, Discr	ete Ma	athematics -	- A Concept b	ased approach	1,			
Univ	versities Press, 2016, I	SBN: 97881	73719998.			• • •					
2) Ken	neth H. Rosen, Discrete	e Mathemat	ics and its App	olicatio	ons with Co	mbinatorics a	and Graph				
The	ory, McGraw Hill Educ	ation, Sever	ith Edition, 20)17,15	BN: 978007	/0681880.	_				
3 J D.S. The	mank and M.K. Sen, DI		ematical Stru	ctures	: Theory and	u Application	S,				
4) Tho	mas Kashy Discrete M	othomatics	00. with Applicat	ione E	Electricity Fire	st Edition 200)5				
ISB	Mias Rosny, Discrete M N· 9788181478870	athematics	with Applicat	10115, 1	130 101, 1113	St Eurion 200	,,				
Wehl	inks and Video Lect	ures (e-Re	sources).								
1)ht	tns / /voutu be /040f	OSOKkZw?	si=1r9ioVe2-	rP04f	СН						
2)ht	tps://youtu.be/Hbvi	6vEi7fY?si=	GaCiUHBNd	V2MA	ArP						
3)ht	tps://voutu.be/7hLv	m 4DNqs?s	si=viYHH fZD	Z09F	mdw						
4)ht	tps://youtu.be/7hLv	m_4DNqs?s	si=viYHH_fZD	ZQ9F	mdw						
5)ht	tps://youtu.be/6Z_ee	engdMVE?s	i=-ZlPy2xl18	oMUw	vfR						
6)ht	tps://youtu.be/fwSi1	CaCs8KM?s	i=wpZcCEG-p	NDuI	PkS						
7)ht	tps://youtu.be/iHC1Zo	dLdKjw?si=	tuN-6pLqhMV	WPN41	Mb						
8)ht	tps://youtu.be/auvG	QCoYdu4?s	i=3ELSyG5g-	475A	N1_						
9)ht	tps://youtu.be/GLHV	Vih_RB38?	si=FuoNQAzN	JR2IIY	pU0						
10)https://youtu.be/hru	mNRQwTV	8/s1=803hB11	3bFD-I	MCNXS						
11)	ty Record Logrania = (<u>VR112081</u>	si=ALqp]IIzr		<u>UQ</u>)/Dreatics	Deceditor	ming.				
Activity-based Learning (Suggested Activities in Class)/Practical based Learning:											
•	E For active	uviues (AC	uvity-based C	uscus:	siolisj ente inc	truct the	studanta	to	nranaro		
	Algorithms/Fl	parucipa owcharte /1	Programming	or Code	ciito, IIIS Is	und the	students	10	prepare		
	> Organizing Gr	owenarts/1 nin wise di	scussions on	relate	d tonics						
	 Seminars 			·····	a topico						

DATABASE MANAGEMENT SYSTEM														
Course Code	22IS	E42							CIE M	larks		50		
L:T:P:S	3:0:0	0:0							SEE N	Marks		50		
Hrs / Week	3								Tota	Marks		100)	
Credits	03								Exan	1 Hours		03		
Course outco	mes:													
At the end of t	he course, the student will be able to: Understand fundamental knowledge and practical experience with database concepts													
22ISE42.1	Unde	Understand fundamental knowledge and practical experience with database concepts.												
22ISE42.2	Builo	Build entity relationship diagrams and map into relational database schema												
22ISE42.3	Anal data	yze th bases.	e cono	cept of	functio	onal de	pender	ncies a	nd nor	malizati	on techr	niques to	refine	
22ISE42.4	Appl syste	y the o em.	concep	ots of r	elation	al data	base tł	neory t	to man	age relat	tional da	tabase n	nanagem	ent
22ISE42.5	Appl	y kno ed des	wledg	e about g and c	t basic onstru	SQL fu cting d	ndame ata mo	ntals a dels a	nd tab nd usir	le opera 1g SOL	tions. Pr	actical e	xperienc	e
22ISE42.6	Desi	gained designing and constructing data models and using SQL Design a database for any specified domain according to well-known design principles that balance data retrieval performance with data consistency guarantees												at
Mapping of C	ourse	balance data retrieval performance with data consistency guarantees												
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
22ISE42.1	3	2	3	2		1	-		-	-	-	1	3	2
22ISE42.2	3	2	3	2	-	1	-	-	-	-	-	1	3	2
22ISE42.3	3	2	3	2	-	1	-	-	-	-	-	-	3	2
22ISE42.4	3	2	3	2	-	1	-	-	-	-	-	1	3	2
22ISE42.5	3	2	3	2	2	1	-	-	-	-	-	1	3	2
22ISE42.6	3	2	3	2	2	1	-	-	-	-	-	1	3	2
MODULE- 1	INTI	RODU	CTION	N							22ISE42 22ISE4	2.1, 2.2	8 H	ours
Introduction	to Dat	abase	. Hier	archica	l, Netv	vork a	nd Rela	ationa	l Mode	els. Three	e-schem	a archite	ecture ar	nd data
independence	e. Data	a Defii	nition	Langua	ige (DI	DL), Da	ta Mar	nipulat	tion La	nguage	(DML). I	Database	Adminis	strator,
Users. Databa	se des	sign a	nd ER	Model	: overv	view, E	R-Mod	el, Coi	nstrain	ts, ER-D	iagrams	, ER Issu	es, weał	c entity
sets. ER mode	el conc	epts,	notati	on for I	ER diag	gram, n	nappin	g cons	traints	, keys, Co	oncepts	of Super	Key, can	didate
key, primary l	key. Ca	ase sti	udy/A	pplicat	tions									
Text Book	0		Text	Book 1	L: CH : 1	1,2,7								
MODULE-2	REL	ATIO	NAL D	ATA M	ODEL	AND L	ANGU	AGE		22IS	E42.2, 2	2ISE42.	3 8 H	lours
Relational dat	a mod	lel cor	icepts	, Logica	al view	of data	ı, keys,	integr	ity rule	es. integr	ity cons	traints: e	entity int	egrity,
referential int database desi	egrity gn, ato	, Keys omic c	const lomaiı	raints, 1 and N	Domaii Iormali	n const ization	raints. (1NF,	Funct 2NF, 3	ional d NF, BC	ependen NF).	icies, fea	tures of	good rela	itional
Text Book	Text	Book	1: CH:	3,9,15										
MODULE-3	REL	ATIO	VAL A	LGEBR	A						22ISE 4	2.4	8 H	lours
Introduction,	Selec	tion a	and pr	ojectio	n, set	opera	tions, 1	renam	ing, Jo	oins, Div	ision. O	perators	, groupi	ng and
ungrouping, r	elatio	nal co	mpari	son. Ca	alculus	: Tuple	relatio	onal ca	alculus	, Domair	n relatio	nal Calcu	lus, calc	ulus vs
algebra, comp	outatio	onal ca	apabili	ties										
Text Book	Text	Book	1:6											
MODULE-4	SQL										22ISE 4	2.5	8 H	lours
Introduction,	data c	lefinit	ion in	SQL, ta	ible, ar	id key a	and foi	eign k	key rev	isit, upda	ate beha	viors. Qu	ierying i	n SQL -
basic select-from-where block and its semantics, nested queries - correlated and uncorrelated, notion of aggregation, aggregation functions group by and having clauses, embedded SQL														
Text Book	Text	Book	1:4,5											

			NCY	22ISE42.6	8 Hours		
Transa	action proc	cessing and Error	recovery - con	cepts of tran	sactior	n processing. ACID n	roperties, and
serializ	zability coi	ncurrency control, I	Lock based concu	rrency contro	l (2PL,	Deadlocks), Time star	nping method
optimi	stic metho	ds, and database re	covery Managen	nent, RAID.			
Text B	ook Te	ext Book 1: 21,22,23	3				
CIE As	sessment	Pattern (50 Mark	s – Theory) –				
		M	arks Distributio	n			
			Qualitative				
	RBT Leve	ls Test (s)	Assessment	MCQ's			
		25	(\$)	10			
14	Derreer	25	15	10			
	Kemen	iber 5	-	-			
L2 12	Annly	10 10	- 10	5			
	Apply	10	10 5	5			
15	Fyalua	to -	5	-			
L6	Crosto	-	-				
10	Greate		_				
SEE As	ssessment	Pattern (50 Mark	s – Theory)				
	יייסס	Exam M	arks				
	RBT Level	ls Distribi	ltion				
11	Romon	10 (30)				
12	Undore	stand 20					
L2 L3	Annly	10					
L2 L3 L4	Apply Analyz	e 10					
L2 L3 L4 L5	Apply Analyz Evalua	e 10 te -					
L2 L3 L4 L5 L6	Apply Analyz Evalua Create	e 10 te -					
L2 L3 L4 L5 L6	Apply Analyz Evalua Create	e 10 te -					
L2 L3 L4 L5 L6	Apply Analyz Evalua Create	tanti 20 10 e 10 te -					
L2 L3 L4 L5 L6	Apply Analyz Evalua Create	ning Resources:					
L2 L3 L4 L5 L6 Sugges Fext B	Apply Analyz Evalua Create	ning Resources:					
L2 L3 L4 L5 L6 Sugges Fext B	Apply Analyz Evalua Create sted Learn Books: ez Elmasri	ining Resources:	the, "Fundament	als of Databas	e Syste	ms" , Sixth Edition, Pe	arson /
L2 L3 L4 L5 L6 Sugges Fext B L.Ramo	Apply Analyz Evalua Create sted Learn Books: ez Elmasri, on - Wesley	ing Resources:	the, "Fundament	als of Databas	e Syste	ms" , Sixth Edition, Pe	arson /
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DATABASE MANAGEMENT SYSTEMS LABORATORY

Course Code		22ISL4	12						CIE	Marks		50		
L:T:P:S	(0:0:1:0)						SEE	Marks		50		
Hrs / Week	2	2							Tota	al Marks		100		
Credits		01							Exai	n Hours		03		
Course outco	omes	:	_	_										
At the end of	the co	ourse, t	the st	udent	will be	able to):							
22ISL42.1	(Create	a dat	abase	as per	the giv	en requ	uireme	nts					
22ISL42.2	1	Use SQ	L to r	etriev	e and p	rocess	s the da	ita in th	e give	n databa:	se.			
22ISL42.3		Apply	the co	oncept	s of vie	ws and	l trigge	ers in D	BMS u	sing SQL				
22ISL42.4		Apply	the co	oncept	s of cor	nplex o	queries	to retr	ieve tł	ne data fr	om the d	atabase		
Mapping of C	f Course Outcomes to Program Outcomes and Program Specific Outcomes:													
	PO	PO PO2 PO PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO12											PSO1	PSO2
22101 42 1	1											1	2	2
2215L42.1 2215L42.2	3	<u>3 2 3 2 3</u>											3	2
2213L42 .2 2215L42 .3	3	2	3	2	3	-	-	-	-	-	-	1	3	2
2215L12.5	3	2	3	2	3	-	_	-	-	-	_	1	3	2
	U	-	0		U							-	0	-
Pgm. No.					I	ist of l	Progra	ms				Hours	3	Cos
					Pre	requis	ite Pr	ogram	s / De	mo				
	Con	nmons	set of	onerat	tions to	he ca	rried o	ut for a	l the e	vnerime	nts			
	•	C	reatio	operation of t	tables.	insert	ion of	values	with	Data De	finition			
	Con	nmand	s fus	e cons	straints	s while	e creat	ing tab	les) a	nd exerc	ises on			
	Dat	a Mani	nulat	ion Co	mman	ds			,					
	•	D	evelo	ning (Jueries	s using	r claus	ses SEI	ЕСТ	FROM V	VHERE			
	GRO)UP BY	. HAV	VING.	2		- oracio	00 011	201)			2		NΛ
	•	D	, evelo	ping Q	ueries	using	clauses	Aggre	gate fu	nctions (COUNT,	2		INA
	SUN	A, AVG	, MAX	and M	IN.	0		00	5					
	•	D	evelo	ping Q)ueries	(along	g with	NESTEI	D Quei	ries) usir	ng ANY,			
	ALI	., IN, EX	XISTS	, NOTI	EXISTS	, UNIO	, N, INTE	ERSECT	' Const	raints. C	reation			
	and	Manir	oulati	on of V	views.									
							PAR	T-A						
1	Intr	oducti	on to	SOL	Comm	ands:	DDL (I	Data De	finitio	n Langu	age).			
_	Imp	lemen	tatio	n of Cr	eate, A	lter, Di	rop, rer	name, ti	runcat	e		2	221	SL42 .1
2	Imp	lemen	tatio	n of rel	lationa	l and lo	ogical o	perato	rs			2	221	SL42 .1
3	Imp	lemen	tatio	n of SQ	L Func	tions						2	221	SL42 .1
4	DM	L (Dat	a Ma	nipula	tion La	inguag	e): Imp	olemen	tation	of Selec	t, Insert,	2	221	SI.42 1
	Upc	late, D	elete.	Retrie	val of c	lata fro	om a sii	ngle tab	le usii	ng simple	e queries			0212.1
5	Imp	lemen	tatio	n of Co	onstrai	nts: No	OT NU	LL, Prii	nary l	Key, Fore	eign Key,	2	201	
	Uni	que. Co	ombir	ling ta	bles an	d exect	ution o	fquerie	es on s	uch table	es.(Group	Z	221	SL42.2
6	by and Having Clause)												SL42 2	
		Name Type												
		Dept	No.				Num	ber				2	1	
		Dept	Name	9			Varch	nar2(20))			-		
		Loca	tion				Varch	nar2(20))				1	

	Calculate the average salary for each different job. b. Show the average salary of each job excluding manager. c. Show the average salary for all departments employing more than three people. d. Display employees who earn more than the lowest salary in department 30 e. Show that value returned by sign (n) function. f. How many days between day of birth to current date		
	PART-B		
7	Consider the following schema for a Library Database:		
	BOOK(Book_id, Title, Publisher_Name, Pub_Year)		
	BOOK_AUTHORS(Book_id, Author_Name)		
	PUBLISHER(Name, Address, Phone)		
	BOOK_COPIES(Book_id, Programme_id, No-of_Copies)		
	BOOK_LENDING(Book_id, Programme_id, Card_No, Date_Out,		
	Due_Date) LIBRARY_PROGRAMME(Programme_id, Programme_Name,		
	Address)		
	1.Insert at least 5 records for each table. Add appropriate database constraints	2	22ISL42 .2
	2. Retrieve details of all books in the library – id, title, name of publisher,		
	authors, number of copies in each Programme, etc.		
	3. Get the particulars of borrowers who have borrowed more than 3		
	books, but from Jan 2017 to Jun 2017.		
	4. Delete a book in BOOK table. Update the contents of other tables to		
	reflect this data manipulation operation.		
	5. Create a view of all books and its number of copies that are currently available in the Library.		
8	Consider the following schema for OrderDatabase: SALESMAN (Salesman_id, Name, City, Commission)		
	CUSTOMER (Customer_id, Cust_Name, City, Grade,Salesman_id)		
	ORDERS (Ord_No, Purchase_Amt, Ord_Date, Customer_id, Salesman_id)		
	Write SQL queries to Insert at least 5 records for each table. Add		
	appropriate database constraints.		
	1. Count the customers with grades above Bangalore'saverage.		
	2. Find the name and numbers of all salesmen who had more than one	2	22ISL42 .2
	customer.		
	3. List all salesmen and indicate those who have and don't have		
	customers in their cities (Use UNIONoperation.)		
	4. Create a view that finds the salesman who has the customer with the		
	highest order of a day.		
	5. Demonstrate the DELETE operation by removing salesman with id 1000. All his orders must also bedeleted.		
9	Consider the schema for MovieDatabase:	2	22ISL42.3

	ACTOR (Act_id, Act_Name, Act_Gender) DIRECTOR (Dir_id, Dir_Name,		
	Dir_Phone) MOVIES (Mov_id, Mov_Title, Mov_Year, Mov_Lang, Dir_id)		
	MOVIE_CAST (Act_id, Mov_id, Role)		
	RATING (Mov_id, Rev_Stars)		
	Insert at least 5 records for each table. Add appropriate database		
	constraints		
	Write SQL queries to		
	1. List the titles of all movies directed by 'Hitchcock'.		
	2. Find the movie names where one or more actors acted in two or		
	moremovies.		
	3. List all actors who acted in a movie before 2000 and also in a		
	movieafter 2015 (use JOINoperation).		
	4. Find the title of movies and number of stars for each movie that has		
	at least one rating and find the highest number of stars that movie		
	received. Sort the result by movie title.		
	5. Update rating of all movies directed by 'Steven Spielberg' to 5		
10	Consider the schema for CollegeDatabase:		
	STUDENT (USN, SName, Address, Phone, Gender)		
	SEMSEC (SSID, Sem, Sec)		
	CLASS (USN, SSID)		
	SUBJECT (Subcode, Title, Sem, Credits)		
	IAMARKS (USN, Subcode, SSID, Test1, Test2, Test3, FinalIA)		
	Insert at least 5 records for each table. Add appropriate database		
	constraints		
	Write SQL queries to 1. List all the student details studying in fourth		22ISL42 .3
	semester 'C'section. 2. Compute the total number of male and female		
	students in each semester and in each section.		
	3. Create a view of Test1 marks of student USN '1BI15CS101' in all		
	subjects.		
	4. Calculate the FinalIA (average of best two test marks) and update the		
	corresponding table for all students.		
	5. Categorize students based on the following criterion: If FinalIA = 17 to 20 then CAT = 'Outstanding' If FinalIA = 12 to 16 then CAT = 'Average' If FinalIA< 12 then CAT = 'Weak' Give these details only for 8th semester A, B, and C section students.		
11	EMPLOYEE (SSN, Name, Address, Sex, Salary, SuperSSN, DNo)		
	DEPARTMENT (DNo, DName, MgrSSN, MgrStartDate)	2	22ISL42 .4
	DLOCATION (DNo,DLoc)		

	PROJECT (PNo, PName, PLocation, DNo)		
	WORKS_ON (SSN, PNo, Hours)		
	Insert at least 5 records for each table. Add appropriate database		
	constraints		
	Write SQL queries to		
	1. Make a list of all project numbers for projects that involve an		
	employee whose last name is 'Scott', either as a worker or as a manager		
	of the department that controls the project.		
	2. Show the resulting salaries if every employee working on the 'IoT'		
	project is given a 10 percent raise		
	3. Find the sum of the salaries of all employees of the 'Accounts'		
	department, as well as the maximum salary, the minimum salary, and		
	the average salary in this department		
	4. Retrieve the name of each employee who works on all the projects		
	controlled by department number		
	5 (use NOT EXISTS operator). For each department that has more than five employees, retrieve the department number and the number of its employees who are making more than Rs.6,00,000		
12	CASE STUDY: GENERAL HOSPITAL		
	A General Hospital consists of a number of specialized wards (such as		
	Maternity, Paediatry, Oncology, etc). Each ward hosts a number of		
	patients, who were admitted on the recommendation of their own GP		
	and confirmed by a consultant employed by the Hospital. On admission, the		
	personal details of every patient are recorded. A separate register is to		
	be held to store the information of the tests undertaken and the results	2	22ISL42 .4
	of a prescribed treatment. A number of tests may be conducted for each		
	patient. Each patient is assigned to one leading consultant butmay be		
	examined by another doctor, if required. Doctors are specialistsin some		
	branch of medicine and may be leading consultants for anumber of		
	patients, not necessarily from the same ward.		
	LAB ASSIGNMENT: 1. Analyze the data required. 2. Normalize the attributes. 3. Create the logical data model using E-R diagrams		
	Beyond Syllabus Virtual Lab Content		
1. Write	(To be done during Lab but not to be included for CIE or SEE) a Pl/SOL program using FOR loop to insert ten rows into a database table	<u>م</u>	
1	 <u>https://www.youtube.com/watch?v=lSUZ04EE</u> 	<u>VHA</u>	
2. Giver five b	n the table EMPLOYEE (EmpNo, Name, Salary, Designation, DeptID) write nighest paid employees from the table.	a cursor t	o select the
	 <u>https://www.youtube.com/watch?v=QvVtDo9H</u> 	<u>KZKs</u>	

CIE Assessment Pattern (50 Marks – Lab)					
	DDT Lovele	Test (s)	Weekly Assessment		
KD1 Levels		20	30		
L1	Remember	-	-		
L2	Understand	-	5		
L3	Apply	10	10		
L4	Analyze	10	-		
L5	Evaluate	-	-		
L6	Create	-	15		

SEE Assessment Pattern (50 Marks - Lab)

RBT Levels		Exam Marks
		Distribution (50)
L1	Remember	-
L2	Understand	10
L3	Apply	20
L4	Analyze	20
L5	Evaluate	-
L6	Create	-

Suggested Learning Resources:

Reference Books:

1. Ramez Elmasri, Shamkant B. Navathe, "Fundamentals of Database Systems", Sixth Edition, Pearson / Addison - Wesley, 7th Edition 2021

2. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", Sixth Edition, Tata McGraw Hill, 2013.

OOPS WITH JAVA					
Course	22ISE43	CIE Marks	50		
Code					
L:T:P:S	3:0:0:0	SEE Marks	50		
Hrs / Week	3	Total Marks	100		
Credits	03	Exam Hours	03		
Course outco	omes:				
At the end of t	he course, the student will be able to:				
22ISE43.1	Model the real-world entities using Object Oriente	ed Programming concept	S.		
22ISE43.2	Identify the importance of inheritance and interface concepts and apply to model relationships				
22ISE43.3	Analyze the importance of exception handling and string handling operations				
22ISE43.4	22ISE43.4 Apply the concept of Multithreading in concurrent programming				
22ISE43.5	Develop applications using collections framework for managing user defined types				
22ISE43.6	Solve the real-world problems using Object Orien	ted concepts and collecti	on		
	Frame work in Java.				

Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes:						
PO PO2 PO PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12	PSO1	PSO2				
22ISE43.1 3 3 3 3 2 2	3	3				
22ISE43.2 3 3 3 3 2 2	3	3				
22ISE43.3 3 3 3 3 2 2	3	3				
22ISE43.4 3 3 3 3 2 2	3	3				
22ISE43.5 3 3 3 3 2 2	3	3				
22ISE43.6 3 3 3 3 2 2	3	3				
MODULE-1 INTRODUCTION TO JAVA 22ISE43.1	8 H	lours				
The Java Language, Java Development Kit (JDK); Java Buzzwords, Byte Code, JVM ,JRE and Java	enviro	nment,				
Data types, variables and Arrays, Operators, Control statement, command line Argumer	nts, La	nguage				
fundamentals Object Oriented Programming with JAVA: Object Oriented concepts, Classes, Objects	and Me	ethods,				
Method Overloading, Constructor, static members, Implicit this						
Self-study Investigate the concept of "Write Once and Run Everywhere" with suita	able Jav	7a				
standalone application on JDK19						
Text Book 1: Part 1Chapter 1 to 7						
MODULE-2 INHERITANCE AND INTERFACING 22ISE43.2	8 I	lours				
Inheritance, Method Overriding, Access specifiers, Abstract Classes, Final members, The Object Cla	ss, Inte	rfaces,				
Package Fundamentals. Case study/ Applications						
Text Book Text Book 1: Part 1 Chapter 8,9						
MODULE-3 STRING MANIPULATION 22ISE43.3,22ISE43.4	8 H	Hours				
Constructors, Length Operations, Character Extraction, Comparison, Searching, Modifying, String	Buffer,					
Exception handling: Fundamentals, Types, Using try, catch, throw, throws, finally, User Defined Ex	xceptio	ns.				
Text Book Text Book 1: Part 2 Chapter 15,16 Part 1 Chapter 10		_				
MODULE-4 Multi-Threading 22ISE43.5	81	lours				
Thread Concept, Java Thread Model, The main method, Creating Threads, Thread Priorities, Synch	nroniza	tion,				
join						
Text Book Text Book 1: Part 1 Chapter 11						
MODULE-5Collection Framework22ISE43.6	8 I	Hours				
Collections Overview, Collection Interfaces, Set, List, Map, Queue, Collection Classes, Generics, Type	e Wrapj	pers,				
Accessing a collection using an Iterator, Sorting collections, equals() and hashCode						
contract, overriding equals and hashCode methods in Java						
Text Book Text Book 1: Part 1 Chapter 14, Part 2 Chapter 17						
CIE Assessment Pattern (50 Marks – Theory) –						
Marks Distribution						
Oualitative						
RBT Levels Test (s) Assessment (s) MCQ's						
25 15 10						
L1 Remember						
L2 Understand 5						
L3 Apply 10 5 5						
L4 Analyze 5 5 5						
L5 Evaluate 5 5 -						
Lo Create						

SEE Ass	SEE Assessment Pattern (50 Marks – Theory)			
		Exam Marks		
R	BT Levels	Distribution (50)		
L1	Remember			
L2	Understand	10		
L3	Apply	20		
L4	Analyze	10		
L5	Evaluate	10		
L6	Create			

Text Books:

•

1)Herbert Schildt, "Java: The Complete Reference", 12th Edition, Oracle Press, Tata McGraw Hill, 2017 (Reprint) 2)T. Budd, "Understanding Object-Oriented Programming with Java", Updated Edition, Pearson Education, 2018

Reference Books:

1) J. Nino and F.A. Hosch, "An Introduction to programming and OO design using Java", John Wiley & sons, 2019 (Reprint).

2) Y. Daniel Liang, "Introduction to JAVA Programming", 10th Edition, Pearson Education.

3) R. A. Johnson, "Java Programming and Object-Oriented Application Development", Cengage Learning, 2020 (Reprint)

Web links and Video Lectures (e-Resources):

IDK 19 Documentation - Home (oracle.com)

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

- Contents related activities (Activity-based discussions) •
 - ▶ Hands-on with coding platforms using Java
 - ➢ Group wise hackathon in Java language

OOPS with JAVA LABORATORY															
Course Code	2	22ISL4	3						CIE I	Marks		50			
L:T:P:S	():0:1:0							SEE	Marks		50			
Hrs / Week	2	2							Tota	l Marks		100	100		
Credits	()1							Exar	n Hours		03			
Course outco	mes														
At the end of t	he co	urse, t	he st	udent v	will be	able to	:								
22ISL43.1	l	Model t	the re	eal wor	ld appl	licatior	ıs usin	g Objec	t Orier	ited Prog	grammin	g concep	ots.		
22ISL43.2	1	Apply t	he co	ncept	of Mult	tithrea	ding an	ld exce	otion h	andling	in java p	rogramn	ning		
22ISL43.3	1	Develop applications using collections framework for managing user defined types													
22ISL43.4	5	Solve tl ava.	ne rea	al worl	d prob	lems u	sing Oł	oject Or	iented	concept	s and co	llection f	ramewo	rk in	
Mapping of C	ours	e Outc	ome	s to Pr	ogram	Outco	mes a	nd Pro	gram	Specific	Outcom	les:			
	PO	P02	PO	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	
	1		3												
22ISL43.1	3	3	3	3	2	2	-	-	-	-	-	2	3	3	
22ISL43.2	3	3	3	3	2	2	-	-	-	-	-	2	3	3	
22ISL43.3	3	3	3	3	2	2	-	-	-	-	-	2	3	3	
22ISL43.4	3	3	3	3	2	2	-	-	-	-	-	2	3	3	

Pgm. No.	List of Programs	Hours	COs
	Prerequisite Experiments / Programs / Demo		
	• Hello World program on Eclipse must be run	2	NA
	PART-A		
	Design and Implement a Java program to print the sum of the elements of the array with the given below condition. If the array has 6 and 7 in succeeding orders ignore 6 and 7 and the numbers between them for the calculation of sum. Eg1) Array Elements - 10,3,6,1,2,7,9 O/P: 22 [i.e. 10+3+9] Eg2) Array Elements - 7,1,2,3,6 O/P:19 Eg3) Array Elements - 1,6,4,7,9 O/P:10	2	22ISL43.1
2	 Design and Implement a Java program that displays a menu with options 1. Add 2.Sub Based on the options chosen, read two numbers and perform the relevant operation. After performing the operation, the program should ask the user if he wants to continue. If the user presses y or Y, then the program should continue displaying the menu else the program should terminate. 	2	22ISL43.1
3	Design and implement an algorithm to accept an array of 5 positive integers. The algorithm must then find the smallest positive integer in the array which cannot be formed from the sum of 2 numbers in the array.	2	22ISL43.1
4	Develop a Java program Write a program to check if the program has received command line arguments or not. If the program has not received the values the n print "NoValues", else print all the values in a single lines separated by,(comma). Eg1) java Example O/P : No values Eg2) java Example Mumbai Bangalore O/P : Mumbai, Bangalore	2	22ISL43.1
5	Design and develop a simple Java program to find the longest substring without repeating characters in a given String. Accept the String through Command Line argument.	2	22ISL43.2
6	 Given a string and a non-empty word string, return a string made of each char just before and just after every appearance of the word in the string Ignore cases where there is no char before or after the word, and a char may be included twice if it is between two words. If inputs are "abcXY123XYijk" and "XY", output should be "c13i". If inputs are "XY123XY" and "XY", output should be "13". If inputs are "XY1XY" and "XY", output should be "11". Create a Java program for the same. 	2	22ISL43.2

	PART-B		
7	 Design a class that can be used by a health care professional to keep track of a patient's vital statistics. Here's what the class should do: Construct a class called Patient Store a String name for the patient Store weight and height for patient as doubles Construct a new patient using these values Write a method called BMI which returns the patient's BMI as a double. BMI can be calculated as BMI = (Weight in Pounds / (Height in inches x Height in inches)) x 703 Next, construct a class called "Patients" and create a main method. Create a Patient object and assign some height and weight to that object. Display the BMI of that patient. 	2	22ISL43.2
8	 Create a class in Java called "Calculator" which contains the following: A static method called powerInt(int num1,int num2) that accepts two integers and returns num1 to the power of num2 (num1 power num2). A static method called powerDouble(double num1,int num2) that accepts one double and one integer and returns num1 to the power of num2 (num1 power num2). Call your method from another class without instantiating the class. 	2	22ISL43.2
9	 Develop a Program to take care of Number Format Exception if user enters values other than integer for calculating average marks of 2 students. The name of the students and marks in 3 subjects are taken from the user while executing the program. In the same Program write your own Exception classes to take care of Negative values and values out of range (i.e. other than in the range of 0-100) Include finally to output the statement "Program terminated". 	2	22ISL43.3
10	Create class of SalesPersons as a thread that will display fives sales persons name. Create a class as Days as other Thread that has array of seven days. Call the instance of SalesPersons in Days and start both the Threads. Suspend SalesPersons on Sunday and resume on Wednesday.	2	22ISL43.3
11	Create a Student Attendance Management System using a HashMap Collection type. Perform the following operations: Add the key-value pair.Retrieve the value associated with a given key Check whether a particular key/value exist. replace a value associated with a given key in the HashMap	2	22ISL43.4
12	Develop a program to solve the problem given: An array of length N is provided. Count the number of (i,j) pairs where 1<=i <j<=n array="" difference="" elements="" indices<br="" of="" on="" such="" that="" the="">is equal to the sum of the square of their indices. Input : 4, 9, 6, 29, 30 Output: 3 (1,2), (2,4),(1,5) satisfy the above condition</j<=n>	2	22ISL43.4

PART-C

Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE)

• Develop a Java Program to calculate the average of students marks entered by the user. Create a User defined Exception to handle negative number for students marks. Provide appropriate exception message to the user.

https://java-iitd.vlabs.ac.in/exp/exceptions/

• Demonstrate how ArrayList can be used to add string objects and manipulate them.

https://java-iitd.vlabs.ac.in/

• Create an employee class with name and age as members. Add 5 employees into the arraylist and iterate to print their details.

https://java-iitd.vlabs.ac.in/

• Develop a java program to replace all occurrences of a word with another word in the given string. https://java-iitd.vlabs.ac.in/

CIE Assessment Pattern (50 Marks - Lab)

RBT Levels		Test (s)	Weekly Assessment
		20	30
L1	Remember	-	-
L2	Understand	-	5
L3	Apply	10	10
L4	Analyze	10	10
L5	Evaluate	-	5
L6	Create	-	-

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	-
L3	Apply	10
L4	Analyze	20
L5	Evaluate	10
L6	Create	10

Suggested Learning Resources: Reference Books:

1) J. Nino and F.A. Hosch, "An Introduction to programming and OO design using Java", John Wiley & sons,2019(Reprint).

2) Y. Daniel Liang, "Introduction to JAVA Programming", 10th Edition, Pearson Education.

3) R. A. Johnson, "Java Programming and Object-Oriented Application Development", Cengage Learning, 2017

OPERATING SYSTEM															
Course Code	221	22ISE44							CIE Marks 50						
L:T:P:S	3:0	3:0:0:0							SEE Marks				50		
Hrs / Week	3	3							Total Marks				100		
Credits	03	03 Exam Hours 03													
Course outco At the end of t	mes:	irse t	-he st	udenty	vill he :	able to									
221SF44 1	III Un	tourse, me succent will be able to:													
2215E11.1 221SE44.2	Cor	nnare	e vari		nedulin	g strat	egies i	n CPU s	chedu	ling algo	rithms.	operati	ing by ster		
2215E44 3	Abl	e to I	earn	and in	nlemer	nt vari		eration	s on de	eadlock					
2215E11.5	Ana	alvze	the e	fficien	v asper	rt of us	ing sve	stem re	source	eautoek.	morym	anaσem	ent scher	nes	
2215E11.1	Ani	$\frac{1}{1}$		ration	s for im	nleme	nting	lisk sch	edulin	g and file	- System			1105.	
2215E11.5	Eva	mine	vari			mand	s that		d to m		system	oneratio	one and f	ilo	
2215277.0	sys	tem c	comm	ands	iux con	manu	s that a	are used		ampulau	, system	operatio	Jiis allu I	iic	
Mapping of C	ourse	Outo	come	s to Pr	ogram	Outco	omes a	nd Pro	gram	Specific	Outcom	ies:			
	P01	P0 2	P0 3	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	
22ISE44.1	3	3	3	1	-	-	-	-	-	-	-	2	3	2	
22ISE44.2	3	3	3	1	-	-	-	-	-	-	-	2	3	2	
22ISE44.3	3	3	3	1	-	-	-	-	-	-	-	2	3	2	
22ISE44.4	3	3	3	1	-	-	-	-	-	-	-	2	3	2	
22ISE44.5	3	3	3	1	-	-	-	-	-	-	-	2	3	2	
MODULE-1	MODILLE-1 Operating System 221SE4.4.1 9 Hours														
Concept, Com	ponen	ts. On	erati	ons. Pr	otectio	1 and S	Securit	v. User	view. S	System V	iew. Svs	tem Calls	: Concep	t. Types	
of System Call Cooperating P	ls. Typ roces	oes of ses, Ir	f Ope nter-l	rating Process	System Comm	s. Pro unicat	cess M tion, cr	anagen itical se	nent: F	Process (problem,	Concept, semaph	Operatio lores,	on on Pro	ocesses,	
Text Book			Tex	t book	1: Char	ter 1.	2.1.2.3	3. 2.4. 2	5.2.6.	2.8.2.9.	2.10.3.1	. 3.2. 3.3	.3.4		
MODULE-2	CP	U Sch	edul	ing	F	,	,	,,_,_			22ISE 4	4.2	8	Hours	
Basic Concept	s, Pree	empti	ve st	rategie	s, Non-j	oreem	ptive s	trategie	es, Sch	eduling (Criteria,	Scheduli	ng algori	thms,	
Multilevel Que	eue Sc	hedu	ling, l	Multile	vel Feed	dback	Queue	Schedu	ling	0	,		0 - 0 -	,	
Text Book	T	ext bo	ook 1	: Chapt	er 4.1, 4	4.2, 4.3	3, 4.4, 5	5.1, 5.2,	5.3, 5.	4, 5.5, 6.2	2, 6.3, 6.4	4, 6.5, 6.6	, 6.7		
MODULE-3	Dea	adloc	:k								22ISE 4	4.3	8	Hours	
System Model Detection and	ls, De Recov	adloc zerv.]	k Ch Bank	aracte er's alg	rization orithm.	, Reso	ource	Allocat	ion Gi	raph, De	adlock	Preventi	on, Avoi	dance,	
Text Book	Tex	t boo	ok 2: (Chapte	r 8										
MODULE-4	Me	mory	y Mai	iagem	ent						22ISE 4	44.4	8	Hours	
Contiguous M	emory	y Allo	catio	n, Frag	gmental	tion, P	aging,	And Se	gment	tation. V	irtual M	emory: I	Demand	Paging,	
Page Replacer	nent, l	Page	repla	cement	algorit	.hm, A	llocatio	on of fra	ames, T	Fhrashin	g				
Text Book	Тех	t boo	ok 2: (Chapte	r 9 to 10	C									
MODULE-5	File	e-Sys	tem	I <mark>nterf</mark> a	ce						22ISE 4	15.5	8	Hours	
Concepts, Acc system: File sy space manage	ess Me /stem ment.	ethod struc	ls, Dii ture;	rectory File sy	and Di stem im	sk Str ipleme	ucture. entatio	. File-Sy n; Direo	/stem ctory ii	Structur mplemer	e Protec itation; <i>I</i>	c tion : Im Allocatio	plement n methoo	ing File ls; Free	
Text Book	Tex	Text book 1: Chapter 91. To 9.6, 10.1 to 10.5													

CIE Assessment Pattern (50 Marks – Theory)								
		Marks Distribution						
	RBT Levels	Test (s)Qualitative Assessment (s)		MCQ's				
		25	15	10				
L1	Remember	5	-	-				
L2	Understand	10	-	5				
L3	Apply	5	10	5				
L4	Analyze	5	-	-				
L5	Evaluate	-	-	-				
L6	Create	-	5	-				

SEE Assessment Pattern (50 Marks – Theory)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	10
L2	Understand	20
L3	Apply	10
L4	Analyze	10
L5	Evaluate	-
L6	Create	-

Suggested Learning Resources:

Text Books:

Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles 7th edition, Wiley-India, 2006
 William Stallings, "Operating Systems – Internals and Design Principles", 9th Edition, Prentice Hall, 2018.

Reference Books:

1) Andrew S Tanenbaum, Albert S Woodhull, "Operating systems design and implementation", 3rd edition. 2) UNIX-Concepts Applications, SUMITABHADAS,McGraw Hill, TATA McGraw HillEdition, 4th edition, 26th reprint 2019

3) D M Dhamdhere, "Operating Systems: A Concept-Based Approach", 3rd Edition, Tata McGraw Hill Education, 2017

Web links and Video Lectures (e-Resources):

- <u>https://www.geeksforgeeks.org/what-is-an-operating-system/</u>
- <u>https://www.javatpoint.com/operating-system</u>
- https://www.tutorialspoint.com/operating_system/os_overview.htm
- https://www.cs.uic.edu/~jbell/CourseNotes/OperatingSystems/5 CPU Scheduling.html
- https://www.scaler.com/topics/operating-system/deadlock-in-os/
- <u>https://www.guru99.com/deadlock-in-operating-system.html</u>
- <u>https://onlinecourses.nptel.ac.in/noc21_cs72/preview</u>
- <u>https://www.udemy.com/course/operating-system-j/</u>

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

- Contents related activities (Activity-based discussions)
- For active participation of students, instruct the students to prepare Flowcharts and Handouts
- Organizing Group wise discussions on issues
- Seminars

OPERATING SYSTEM LABORATORY																
Course Code	2	22ISL44							CIE Marks				50			
L:T:P:S	0	0:0:1:0 SEE M							Marks		50	50				
Hrs / Week	2	2 Total Marks								100	100					
Credits	0	01 Exam Hours								03	03					
Course outco At the end of t	L ourse outcomes: At the end of the course, the student will be able to:															
22ISL44.1	II L	Illustrate the basic knowledge of Linux commands and file handling utilities by using Linux shell environment.														
22ISL44.2	A	Analyze and implement various process scheduling algorithms.														
22ISL44.3	E	Evaluate various operations on deadlock.														
22ISL44.4	D	esign	variou	s File ()rganiz	zation,	File A	llocatio	on Stra	ategies ar	nd Disk So	chedulir	ng Alg	orith	ıms.	
Mapping of C	ourse	Outco	omest	to Prog	gram (Jutcor	nes ar	ıd Pro	gram	Specific	Outcom	es:				
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PS	01	PSO2	
22ISL43.1	3	3	3	1	3	-	-	-	-	-	-	2	3	3	2	
2215L43.2	3	3	3		3	-	-	-	-	-	-	2	3	5 >	2	
2215L43.3 2215L42.4	2	3	3	1	3	-	-	-	-	-	-	2	3))	2	
2213L43.4	3	3	3	1	3	-	-	-	-	-	-	2	3)	Z	
Pgm. No.					L	ist of (Progr	ams				Но	Hours		Cos	
	Prerequisite Programs															
	 To understand the basics of Unix command and shell programming. To implement various CPU scheduling algorithms. To implement Deadlock Avoidance and Deadlock Detection Algorithms To implement Page Replacement Algorithms To implement various memory allocation methods. To be familiar with File Organization and File Allocation Strategies. 										-		NA			
1	Intro	ductio	n Lin	uv Arc	hitoctu	iro Sh		rnol S	uctom	calle		1				
	 Introduction- Linux Architecture- Shell, Kernel, System calls. Linux installation- Steps for installing Linux Operating System Internal & External commands in Linux. Internal commands- echo, type, etc. External commands- ls, cp, mv, rm, cat, etc Other commands – tput clear, who, cal, date, bc, man, passwd, uname(with different options). Expressions & search patterns .(dot operator), *, A, +, ?, grep, egrep, fgrep 											2	:	22ISL44.1		
2	 egrep, fgrep Working with files & directories. Know the categories of files. Directory related Commands – pwd, mkdir, rmdir, cd, ls Manipulating Absolute paths and Relative paths using cd command. File related Commands – cat, cp, mv, rm, comm, cmp, diff, tar, umask, wc Basic File attributes. Listing seven attributes of a file : ls and its options File Permissions: Absolute and Relative permissions 										nd.	2	:	22ISL44.1		

	Manipulating File permissions using chmod command						
	Manipulating File Ownership using chown command						
	Manipulating Hardlink and Softlink using ln command						
3	Process Management commands.						
	 Process creation, status, Identifying process, ps -f &its options, Running process in background, Job control, and Process termination. 	2	22ISL44.1				
	• Changing process priority, scheduling process (Usage of sleep and wait commands)						
4	Design, Develop and Implementation of CPU scheduling by using a. FCFS b. Priority	2	22ISL44.2				
5							
	Design, Develop and Implementation of CPU scheduling by a. SJF b. Round Robin	2	22ISL44.2				
6	Design, Develop and Implement Threading and synchronized applications	2	22ISL44.3				
	PART-B						
7	Design, Develop and Implement an Algorithm for Dead Lock Detection.	2	22ISL44.3				
8	Design, Develop and Implement an Algorithm for Deadlock using Banker's Algorithm.	2	22ISL44.3				
9	Design, Develop and Implement a Program by using page replacement 2 22ISL44.						
10	Design, Develop and Implement the various File Organization Techniques	2	22ISL44.4				
11	Design, Develop and Implement the following File Allocation Strategies	2	22101 4 4 4				
	a. Sequential b. Indexed c. Linked	Z	2213144.4				
12	Design, Develop and Implement various disk scheduling algorithms	2	22ISL44.4				

PART-C **Beyond Syllabus Virtual Lab Content**

(To be done during Lab but not to be included for CIE or SEE)

1. Develop a Program to implement shared memory and IPC

(https://www.geeksforgeeks.org/ipc-shared-memory/)

- 2. Develop a Program to implement Multilevel Queue Scheduling
- (https://digitalthinkerhelp.com/multilevel-feedback-queue-scheduling/)
- 3. Design a Program to copy the contents of one file to another file
- (https://programmersportal.com/c-program-to-copy-the-content-of-one-file-into-another/)
- 4. Design a Program to implement memory allocation methods for fixed partition (Best, Worst, First Fit)

CIE Assessment Pattern (50 Marks – Lab)								
	DDT Lovele	Test (s)	Weekly Assessment					
	KBI Levels	20	30					
L1	Remember	-	-					
L2	Understand	-	-					
L3	Apply	10	10					
L4	Analyze	5	10					
L5	Evaluate	5	10					
L6	Create	-	-					
SEE As	ssessment Pattern (5	0 Marks - Lab)						
--------	----------------------	-------------------	--					
	RBT Levels	Exam Marks						
	7	Distribution (50)						
L1	Remember	-						
L2	Understand	-						
L3	Apply	10						
L4	Analyze	20						
L5	Evaluate	ite 20						
L6	Create	-						

Suggested Learning Resources:

Text Books:

1) Abraham Silberschatz, Peter Baer Galvin, Greg Gagne, Operating System Principles 7th edition, Wiley-India, 2006 2) Silber schatz, Galvin, Greg, "Operating System Concepts", Wiley and Sons, 10th Edition, 2018.

3) William Stallings, "Operating Systems – Internals and Design Principles", 9th Edition, Prentice Hall, 2018. **Reference Books:**

1) Andrew S Tanenbaum, Albert S Woodhull, "Operating systems design and implementation", 3rd edition. 2)UNIX-Concepts Applications, SUMITABHADAS,McGraw Hill, TATA McGraw HillEdition, 4th edition, 26th reprint 2019

3)D M Dhamdhere, "Operating Systems: A Concept-Based Approach", 3rd Edition, Tata McGraw Hill Education, 2017

	C# & .NET														
Course	22I	SE451							CIE Ma	arks		50			
Code															
L:T:P:S	2:0:	1:0							SEE M	arks		50			
Hrs / Week	2+2								Total	Marks		100			
Credits	03								Exam	Hours		03			
Course outco	mes:														
At the end of t	he course, the student will be able to:														
22ISE451.1	Understand the technologies of the.NET framework														
22ISE451.2	Understand the basic and object oriented concepts in C#.														
22ISE451.3	Mod	Model the real world entities as classes and objects using C# object oriented Programming concepts.													oncepts.
22ISE451.4	Арр	ly exce	eption	handlin	g and g	gain ef	ficient	testing	, debug	gging sk	ills C#.				
22ISE451.5	Арр	lying i	nterfa	ces and	Events	s in C#	progr	amming	3.						
22ISE451.6	Dev	elop W	Vindow	vs appli	cations	s based	l on C‡	‡ progra	ammin	g librari	es and .I	NET Frar	newo	ork.	
Mapping of C	ours	e Outc	omes	to Prog	gram C)utcon	nes an	d Prog	ram Sj	pecific (Outcom	es:			
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO	01	PSO2
22ISE451.1	3	3	3	2	2	-	-	-	-	-	-	2		2	2
22ISE451.2	3	3	3	2	2	-	-	-	-	-	-	2		2	2
22ISE451.3	3	3	3	2	2	-	-	-	-	-	-	2		2	2
22ISE451.4	3	3	3	2	2	-	-	-	-	-	-	2		2	2
22ISE451.5	3	3	3	2	2	-	-	-	-	-	-	2		2	2
22ISE451.6	3	3	3	2	2	-	-	-	-	-	-	2		2	2
MODULE-1	INT	RODU	CTION	TO.NE	Т						22ISE4	51.1			•
The C# Environment: .NET Framework – An Overview, Components of .NET , Common Language 5 Hours Specification(CLS), Common Language Runtime (CLR),Microsoft Intermediate Language 5 Hours ("MSIL" or "IL"),The Common Type System(CTS), .NET Framework Base Classes, Object- 0 Oriented Programming concents; Encapsed to the programming; Encapsed to the pr															

r			
List of Progra		3 Hours	
1) Dow			
2) Crea 3) Writ	ting First Console application.		
Text Book	Text Book 1: 1 2 1 3 1 4 1 2 1 Text Book 2:7 2		
MODULE-2	AN OVERVIEW OF C#	22ISE451.2, 22ISE451.3	
			5 Hours
C# Program	-Execution, Sample Programs, Command Line Argument	s, Programming Examples,	
Literals, Varia	ables and Data Types: Keywords, Identifiers, Literals, Variab	les, Data Types, Boxing and	
Unboxing. Op	erators, branching and looping.		
List of Progra	ims:		3 Hours
1) Develop			
1) Develop	L# program to snow command line arguments.		
2) Demonstr 3) Develop (ate boxing and unboxing. # console application with looping and branching logics		
bevelop e			
Text Book	Text Book 1: chapter 2.2,3.1- 3.8,4.1-4.3,5.1-5.9 & 11.11		
MODULE-3	STRUCTURESANDENUMERATIONS	22ISE451.3	
Structures- D	efining a Structure, Assigning Values to Members , Structur	es with Methods, Nested	5 Hours
Structures, Cl	asses Vs Structures, Guidelines to use Structures; Enumera	tions- Enumerator	
Initialization,	Enumerator Base Types, Enumerator, Type Conversion. Cl	asses and Objects:	
Liat of Drogra	tructors & Destructors, Nesting of Classes, Members, Prope	erties.	2 11
1) Develop c	illis: t application using classes and object to display student dat	a hy using	5 HOULS
1) Develop cr	a Ordinary method b Constructors		
2) Develop st	tatic classes and show how to display current salary and ut	praised salary using static	
methods	······································		
3) C# program	m to illustrate Nesting of structures.		
Text Book	Text Book 1: 6.1-6.2,6.4-6.5,10.2,12.10-12.13		
MODULE-4	EXCEPTION HANDLING	22ISE451.4	
			5 Hours
Exceptions –	An Overview, Exception Handling Syntax, Multiple Catch S	tatements, The Exception	
Hierarchy, Ge	eneral Catch Handler, Using 'Finally', Nested Try Blocks,	User Defined Exceptions,	
Checked and	Unchecked.		2.11
List of Progra	IMS:		3 Hours
2) Dem	onstrate user Defined exception in c#		
2) Dem 3) Dem	onstrate Checked and unchecked in C#		
Text Book	Text Book 1: 13.1-13.13		
MODULE-5	INTERFACES AND DELEGATES	22ISE451.5, 22ISE451.6	
-			5 Hours
Defining In	terfaces, Extending Interfaces, Implementing Interf	aces, Explicit Interface	
Implementat	ion, Abstract Classes and Interfaces, Delegates, Multica	st Delegates. Developing	
Windows App	plications		
List of Progra	ims:		3 Hours
1) Dem	onstrate usage of delegates.		
2) Dem	onstrate interface concept.		
J Deve	Toyt Book 2: 6 2 6 4		
I EXL DOOK	1CXL DOUK 2: 0.2-0.4		

CIF A	sessment Patt	ern(50 Mar	vks – Theory) –									
	sessment r att	N	larks Distributio	n								
			Qualitative									
F	RBT Levels	Test (s)	Assessment	Lab								
		(-)	(s)									
		25	05	20								
L1	Remember	5	-	-								
L2	Understand	10	-	5								
L3	Apply	5	5	10								
L4	Analyze	5	-	5								
L5	Evaluate	-	-	-								
L6	Create	-	-	-								
SEE A	ssessment Patt	ern(50 Ma	rks – Theory)									
F	RT Levels	Exam M	Marks									
-		Distribut	ion (50)									
L1	Remember	10										
L2	Understand	20										
L3	Apply	10										
L4	Analyze	-										
L5	Evaluate	-										
L6	Create	10										
Sugar	stad Laarning	Decouração										
Jugge	Steu Lear mig I Rooks	Resources:										
1) Her	chert Schildt "T	he Complete	Reference: C# 4	0" Tata Mc(Graw Hill 2012 2 Christian Nageltal "Professional C# 2012							
with	NET 4.5" Wilow	India 2012			araw mil, 2012.2.0m Stan Nageran. Trolessional di 2012							
2 Ma	rl_{L} Drico "C#O	A and NET	Cara 2 0" Madar	n Croce Dla	tform Dovelopment Fourth Edition Export Insight 2010							
	ікј. РПСЕ, С# 8	.0 allu .INE I	Core S.O - Moder	n cross-Pla	uorin Development, Fourtil Edition, Expert insignt, 2019.							
Keter	ence Books:	-										
1) And	drew Troelsen, "	Pro C# 2010	U and the .NET 4 P	latform, Fift	h edition, A Press, 2010.							
2) Ian	2) Ian Griffiths, Matthew Adams, Jesse Liberty, "Programming C# 4.0", Sixth Edition, O" Reilly, 2010.											
Web l	inks and Video	Lectures (e-Resources):									

- https://ict.iitk.ac.in/courses/introduction-to-c-sharp/
 https://dotnet.microsoft.com/en-us/languages/csharp
- <u>https://www.udemy.com/course/c-net-core-for-</u>

beginnershttps://www.youtube.com/watch?v=SXmVym6L8dw&list=PLAC325451207E3105

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

- Demonstration of visual studio •
- Video demonstration of window application •
- Contents related activities (Activity-based discussions) •
- For active participation of students, instruct the students to work in batches •
- Organizing Group wise discussions on programs •
- Seminars •

PROGRAMMING FOR UI AND UX DESIGN															
Course Code	22IS	E452							CIE I	Marks		50			
L:T:P:S	2:0:1	:0							SEE	Marks		50			
Hrs / Week	2+2								Tota	l Marks		10	0		
Credits	03								Exar	n Hours	;	03			
Course outco At the end of t	omes: the cou	ırse, t	he st	udent	will be	able to	:								
22ISE452.1	Abilit	ty to ι	under	stand	the goa	als of us	ser inte	erface d	esign.						
22ISE452.2	Unde	erstan	ding	the de	sign pr	ocesse	s and d	evelop	ment n	nethodo	logies in	UI.			
22ISE452.3	Abilit	ty to g	gain ŀ	Knowle	dge on	Menus	s, Form	Filling	, Dialo	g boxes.					
22ISE452.4	Understanding how users interact with interfaces and designing intuitive interactions. Conducting tests to evaluate the usability and effectiveness of designs.														
22ISE452.5	Conducting tests to evaluate the usability and effectiveness of designs. Working effectively in multidisciplinary teams and communicating design decisions.														
221SE452.6	Working effectively in multidisciplinary teams and communicating design decisions. ourse Outcomes to Program Outcomes and Program Specific Outcomes:														
Mapping of C	Course Outcomes to Program Outcomes and Program Specific Outcomes:														
	P01	P01 P0 P04 P05 P06 P07 P08 P09 P010 P011 P012 PS01 PS01 2 3 - <t< td=""></t<>													
22ISE452.1	3	<u>2</u> <u>3</u> <u>2</u> <u>3</u> <u>2</u> <u>3</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>2</u>													
22ISE452.2	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
22ISE452.3	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
22ISE452.4	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
22ISE452.5	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
22ISE452.6	3	2	3	2	3	-	-	-	-	2	2	2	3	2	
MODULE-1	USEF	R INT	ERFA	CE DE	SIGN						21ISE5	2.1	H	ours	
Introduction, Action Interfa	Goals ice mo	of us del, T	er in he Ei	terface ght Go	desigi lden ru	n, Moti lles of I	vation	s for h ce desig	uman i gn.	factors i	n design	ı, Object	· 5 F	lours	
Laboratory C1.Orga2.Creat3.Creat	Compo nize th te a des te a pro	nent e step sign s oject i	s to ysten n Fig	get sta n with ma.	rted wi linked	th UI d UI com	esignir Iponen	ng tool ts in Fi	Figma. gma.				3 H	lours	
Text Book			Tex	t Book	1: 1.1,1	1.3,1.4,	2.3,2.5								
MODULE-2	DESI	GN P	ROCI	ESSES							20ISE	52.2	H	ours	
The Three Pil design reviev	lars of v, Expe	desi ert Re	gn, D eview	evelop s, Acce	ment n eptance	nethod e Tests	ologies and C	s, and S ontroll	locial i ed Psy	mpact s chologic	tatement ally Orie	t for earl ented	y 51	Hours	
Experiments.															
Laboratory (1.Creat2.Add (3.Creat	te a pro UX desi te and i	nent oject f ign W previ	: for UI /idget ew in	and U ts. teracti	X desig	n using UX de	g wond sign.	ler shai	e Moc	kitt tool.			31	Hours	
Text Book	Text	Book	1:3.3	3.3.4.3.	8.4.2.4	.5.4.7	0.8								
MODULE-3		ECT	MEN	ANIPU T	ILATIO)N	AND	VII	RTUAL		20ISE	52.3	Н	ours	
Direct Manin			stems	s Snat	tial da	nta ma	anagem	ent I	Visual	Thinkir	o Task	related	1 51	Hours	
organization, Dialog Boxes.	Direct Manipulation systems, Spatial data management, Visual Thinking, Task related 5 Hours organization, Response time and display rate, Fast movement through MENUS, Form Filling, and Dialog Boxes.														
Laboratory (1. Build 2. Desig	'atory Component: Build a navigation menu with components in Figma. 3 Hours Designing and prototyping forms in Figma.														
3. Creat	te a dia	logb	ox in	Figma.											
Text Book	Text	Book	1:6.	1, 6.2.3	,6.4,7.2	2,7.4,7.	5,7.7,7.	8					1		

MODE	MODULE-4 INTERACTION DEVICES 20ISE52.4 Hours												
Keybo	ards and F	unctio	on Keys Poi	nting Devi	ces Sne	ech Recogn	ition Im	age and video displays	5 Hours				
User P	roductivit	v. Nor	an thronon	norphic de	sign. Di	splay Desig	n. Color.	Preparation of printed	5 110015				
manua	als.	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	un un opon	ioi pillo do	01811, 21	oping 20018	, doioi,	roparation of printoa					
Labor	atory Con	npone	ent:										
1.	Create c	onnec	tions and fl	ows in Fig	ma				3 Hours				
2.	impleme	entatio	on of										
3.	interact	ion de	sign and fui	ictional lay	yout.								
4.	 Implementation of Interactive design and functional layout. Create a working UI/UX prototype using prototyping tools. 												
D. Toyt P	5. Create a working UI/UX prototype using prototyping tools. Text Book Text Book 1:9:2:9:3:9:4:9:5:10:4:11:3:11:4:11:5:12:3												
MODI	Text Book Text Book 1:9.2,9.3,9.4,9.5,10.4,11.3,11.4,11.5,12.3 MODULE-5 VISUALIZATION 201SE52.5 201SE52.6 Hours												
Detal		IJUAI		I C		1: A	J	Citerine II	F Harris				
Databa Hyner	Database query and phrase search, Information visualization, Advanced filtering, Hypertext and Hypermedia World wide web												
Labor	atory Con	npone	ent:										
1.	Data Vis	ualiza	tion design	tool for UI	/UX De	signers.			3 Hours				
2.	Add link	ks to te	ext.		,	0							
3.	Web and	d UI de	esign using	Figma and	Webflo)W.							
Text B	ook T	ext Bo	ok 1: 15.2,1	5.4,15.5,1	6.2,16.3	3							
		.	(50.)	1 771									
CIE AS	sessment	t Patte	ern(50 Mar	KS - Theo Iorlya Diat	ry) – ributio		1						
		-	Įv,	Ovelite									
р	PT Lovale	-	Test (s)	Accord	nont	Lah							
	DI Levels	>	1650 (5)	(s)	пепт	Lau							
		ŀ	25	05		20							
L1	Remem	ber	5	-		-							
L2	Underst	and	10	-		5							
L3	Appl	y	5	5		10							
L4	Analyze	-	5	-		5							
L5	Evaluate	e	-	-		-							
L6	Create		-	-		-							
SEE As	ssessment	t Patte	ern(50 Mai	·ks – Theo	ory)								
R	RT Levels	-	Exam M	larks									
			Distribut	ion (50)									
L1	Remem	ber	10)									
	Underst	and	1()									
	Apply		10)									
	Fyaluat	0	10	,									
L5 16	Croato	e	10	,									
Sugge	L6 Create												
Sugge Text F	Sieu Lean Rooks	ning r	lesources.										
1) Des	igning the	user i	nterface str	ategies for	effectiv	ve Human-C	omputer	Interaction. Third Edition	by Ben				
Shneid	lerman.	2001 1			2110001		puter	action, minu Builtion	_, _,				
2) The	2) The Essential Guide to User Interface Design - d Edition: An Introduction to GUI Design Principle s and												
Techn	2) The Essential Guide to User Interface Design - d Edition: An Introduction to GUI Design Principle's and Techniques Paperback – Import, 17 April 2007by WO Galitz.												

Web links and Video Lectures (e-Resources):

- https://onlinecourses.nptel.ac.in/noc21_ar05/preview •
- https://www.udemy.com/course/ui-ux-web-design-using-adobe-xd/ https://www.coursera.org/specializations/user-interface-design •
- •
- https://www.figma.com/

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

- Demonstration of information architecture for digital product
- Design user flows and wire frames
- Demonstration of how users interact with products
- Video demonstration of creating prototypes and testing products on real-users
- Contents related activities(Activity-based discussions)
- ➢ For active participation of students, instruct the students to join with UX designers to ake sure the user journey reflects the UX team's product vision
 - > Organizing Group wise discussions on issues
 - ➤ Seminars

ADVANCED EXCEL FOR DATA ANALYTICS															
Course	22IS	E453							CIE N	Marks		50			
Code															
L:T:P:S	2:0: 2	1:0							SEE	Marks		50			
Hrs / Week	2+2								Tota	l Marks		10	0		
Credits	03								Exar	n Hours		03			
Course outco	mes:														
At the end of t	he cou	urse, t	he st	udent	will be	able to	:								
22ISE453.1	Inti	roduc	ed to	the use	e of Exc	cel spre	eadshe	ets and	variou	ıs basic da	ata func	tions of	Excel.		
22ISE453.2	Edi	t Sele	cted (Columr	ıs & Ro	ws, Ch	anging	Colum	n Widt	h & Row I	Height.				
22ISE453.3	Get	the k	nowl	edge al	oout SF	SS and	l its ope	eration	s, repr	esenting c	lata dia	gramma	tically a	nd	
	gra	graphically using MS-EXCEL and SPSS.													
22ISE453.4	Cor	Compute absolute and relative measures of central tendency and dispersion, correlation and													
	reg	regression analysis using MS-EXCEL and SPSS.													
22ISE453.5	Get	the k	nowl	edge al	out co	ncepts	relate	d to hy	pothes	is, compu	tation o	of large s	ample te	ests	
	usi	ng MS	-EXC	EL and	SPSS.										
221SE453.6	Ide	ntify a	and co	ompute	e small	sampl	e tests,	Chi-sq	uare te	ests using	MS-EX	JEL and	SPSS.		
Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes:															
Mapping of C	ourse	Outo	ome	s to Pr	ogram	Outco	omes a	nd Pro	gram (Specific C)utcom	es:			
Mapping of C	ourse PC	e Outo PO2	ome PO	s to Pr PO4	ogram PO5	Outco PO6	omes a PO7	nd Pro PO8	gram PO9	Specific C PO10	PO1	es: PO12	PSO1	PSO2	
Mapping of C	ourse PO 1	Outc PO2	PO 3	s to Pr PO4	ogram PO5	Outco PO6	omes a PO7	nd Pro PO8	gram S PO9	Specific C PO10	Outcom PO1 1	PO12	PS01	PSO2	
Mapping of C	OURSE PO 1 3	e Outc PO2	PO 3 3	s to Pr PO4	ogram PO5	Outco PO6	PO7 -	nd Pro PO8 -	gram 1 PO9 -	Specific C PO10 -	Outcom PO1 1 -	PO12	PSO1	PSO2	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.2	ourse PC 1 3 3 2	e Outo PO2 3 3 2	eome PO 3 3 3	s to Pr PO4 3 3	ogram P05 2 2 2	Outco PO6 - -	PO7 - -	nd Pro PO8 - -	gram S PO9 - -	Specific C PO10 - -	PO1 1 -	PO12 2 2 2	PSO1 3 3 2	PSO2 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4	PC 1 3 3 3 3	Outo PO2 3 3 3 3	PO 3 3 3 3 3	s to Pr PO4 3 3 3 2	ogram PO5 2 2 2 2	Outco PO6 - - -	90000000000000000000000000000000000000	nd Pro PO8 - - -	gram : PO9 - - -	Specific C PO10 - - -	Outcom PO1 1 - -	PO12 2 2 2 2 2 2	PSO1 3 3 3 2	PSO2 3 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5	PC 1 3 3 3 3 3 3	Outo PO2 3 3 3 3 3 3	PO 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3	ogram PO5 2 2 2 2 2 2 2 2	Outco PO6 - - - -	P07	nd Pro PO8 - - - -	gram : PO9 - - - -	Specific C P010 - - - -	Dutcom PO1 1 - - -	PO12 PO12 2 2 2 2 2 2 2	PSO1 3 3 3 3 3 3	PSO2 3 3 3 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6	PC 1 3 3 3 3 3 3 3 3 3 3 3 3 3	e Outc PO2 3 3 3 3 3 3 3 3 3 3 3	PO 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 3 3 3	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - -	P07	nd Pro PO8 - - - - - -	gram : PO9 - - - - - -	Specific C P010 - - - - - -	Outcom PO1 1 - - - - -	es: P012 2 2 2 2 2 2 2 2 2 2 2	PSO1 3 3 3 3 3 3 3 3 3	PSO2 3 3 3 3 3 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1	ourse PC 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	e Outc PO2 3 3 3 3 3 3 3 3 3	PO 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 3 3 5 5 5 5 5 5	ogram PO5 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - - -	omes a PO7 - - - - - - -	nd Pro PO8 - - - - - - - -	gram 5 PO9 - - - - - - - -	Specific C P010 - - - - - - - 2	P01 1 - - - - 2ISE45	PO12 PO12 2 2 2 2 2 2 3 1	PSO1 3 3 3 3 3 3 3 3	PSO2 3 3 3 3 3 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel	PC 1 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 1	e Outc PO2 3 3 3 3 3 3 3 7 0 0 0 0 0 0 0 0 0 0 0 0	PO 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 5 5 5 5 5 5 5 5 5 5 5 5	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - - -	PMES A PO7 - - - - - - - -	nd Pro PO8 - - - - - - - - -	gram 5 P09 - - - - - - - -	Specific C P010 - - - - - - - - 2 window	Putcom PO1 1 - - - - 21SE45 nane	es: P012 2 2 2 2 3.1 Fitle Bar	PSO1 3 3 3 3 3 3 3 3 4 5 5 Hot	PSO2 3 3 3 3 3 3 3	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel of Menu Bar, Sta	PC 1 3 3 3 3 3 3 3 1 1 1 & Mic andar	e Outc PO2 3 3 3 3 3 3 3 3 7 oduc rosoft d Too	PO 3 3 3 3 3 3 3 5 ction c, Use	s to Pr PO4 3 3 3 3 3 3 3 3 3 5 to Exc Exc Forma	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 8 1 8 8 8 8 8 8 8	Outco PO6 - - - - - - - - - - - - - - - - - - -	PMES A PO7 - - - - - ftware, r. the	nd Pro PO8 - - - - - - - - - - - - - - - - - - -	gram : PO9 - - - - - - dsheet	Specific C PO10 - - - - - - - window Fab and F	Putcom P01 1 - - - - - - - - - - - - -	es: P012 2 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 3 , 5 Hot	PSO2 3 3 3 3 3 3 3 urs	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel a Menu Bar, Sta Formula Bar, Sta	PC 1 3 <	e Outc PO2 3 3 3 3 3 3 3 3 7 0 0 0 0 0 0 0 0 0 0 0	PO 3 3 3 3 3 3 3 3 3 5 Ction <i>C</i> , Use Olbar, <i>W</i> ind	s to Pr PO4 3 3 3 3 3 3 3 3 5 5 5 5 5 7 5 7 5 7 5 7	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - - - - - - - - - - - - - - -	r, the Pane, Y	nd Pro PO8 - - - - - - - - - - - - - - - - - - -	gram 3 PO9 - - - - - dsheet , File 7 500k & 5	Specific C PO10 - - - - - window Fab and F sheets.	Putcom P01 1 - - - - 21SE45 pane, ⁷ Backsta	es: P012 2 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 , 5 Hot	PSO2 3 3 3 3 3 3 urs	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel a Menu Bar, Sta Formula Bar, Sta	PC 1 3 <	e Outc PO2 3 3 3 3 3 3 3 3 7 0 0 0 0 0 0 0 0 0 0 0	PO 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 5 tion 5, Use ollbar, Wind	s to Pr PO4 3 3 3 3 3 3 3 3 3 5 to Exc Forma ow, Sta	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 8 1 8 2 2 2 2	Outco PO6 - - - - - - - - - - - - - - - - - - -	r, the Pane, Y	nd Pro PO8 - - - - - - - - - - - Ribbon Workbo	gram 3 PO9 - - - - - - - dsheet , File 7 pok & s	Specific C PO10 - - - - - - window Fab and F sheets.	P01 1	PO12 PO12 2 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 , 5 Hot	PSO2 3 3 3 3 3 3 urs	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel Menu Bar, Sta Formula Bar, Sta Laboratory C 1 Apply	ourse PC 1 3	e Outc PO2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 7 0 0 0 0	PO 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 3 3 3 3 5 5 5 5 5 7 5 7 5	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - - - - - - - - - - - - - - -	PMES A PO7 - - - - - ftware, r, the Pane,	nd Pro PO8 - - - - - - - - - - - - - - - - - - -	gram 3 PO9 - - - - - dsheet , File 7 pook & s	Specific C PO10 - - - - - - window Fab and F sheets.	Putcom PO1 1 - - - 2ISE45 Backsta	es: PO12 2 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 3 , 5 Hot , 3 Hot	PSO2 3 3 3 3 3 3 urs urs	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel Menu Bar, Sta Formula Bar, Sta Laboratory C 1. Apply	ourse PC 1 3	e Outc PO2 3 3 3 3 3 3 3 3 3 3 3 3 3 7 7 0 4 7 0 5 0 7 0 0 8 3 5 7 0 7 0 7 0 7 0 7 0 7 7 7 7 7 7 7 7 7	PO 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 3 3 3 3 5 5 5 5 5 7 5 7 5	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Outco PO6 - - - - - - - - - - - - - - - - - - -	r, the E	nd Pro PO8 - - - - - - - - - - - - - - - - - - -	gram 3 PO9 - - - - - dsheet , File 7 pook & s	Specific C PO10 - - - - window Fab and F sheets.	Putcom P01 1 - - - - 2ISE45 pane, 5 Backsta	PO12 2 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 , 5 Hot , 3 Hot	PSO2 3 3 3 3 3 3 urs urs	
Mapping of C 22ISE453.1 22ISE453.2 22ISE453.3 22ISE453.4 22ISE453.5 22ISE453.6 MODULE-1 About Excel of Menu Bar, Star Formula Bar, V Laboratory C 1. Apply 2. Apply 2. Apply	PC 1 3 <	e Outc PO2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 7 0 4 7 0 0 0 1 7 0 0 0 1 8 3 5 7 0 1 1 1 1	some PO 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	s to Pr PO4 3 3 3 3 3 3 3 3 3 3 5 5 5 5 5 7 5 7 5 7	ogram PO5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Coutco PO6 - - - - - - - - - - - - - - - - - - -	PMES A PO7 - - - - ftware, r, the Pane, Pane, etic fun	nd Pro PO8 - - - - - - - - - - - - - - - - - - -	gram 3 PO9 - - - - - - - - - - - - - - - - - - -	Specific C PO10 - - - - window Fab and F sheets.	Putcom PO1 1 - - - 21SE45 pane, 5 Backsta	PO12 PO12 2 2 2 3.1 Fitle Bar ge View	PSO1 3 3 3 3 3 3 , 5 Hot 3 Hot	PSO2 3 3 3 3 3 urs urs	

MODULE-2 Columns & Rows 22ISE453.2													
Selecting Columns & Rows, Changing Column Width & Row Height, Auto fitting Columns & Rows,													
Hidin	ig/Un	hiding Columns	& Rows, Inser	ting & Deleting (Columns & Row	rs, Cell, Address of a cell,							
Comp	oner	its of a cell – Fori	nat, value, fori	nula, Use of pas	te and paste sp	ecial							
Labo	rato	ry Component:					3 Hours						
1.	A]	pply the concept	to Change the	Column Width a	& Row Height.								
2.	Aj	pply the concept	to Hide/Unhid	le Columns & Ro	ows.								
3.	Cı	reate a new row a	&Column and o	delete a row &C	olumn.								
MOD	MODULE-3 SPREADSHEET FUNCTIONS TO ORGANIZE DATA 22ISE453.3, 22ISE453.4 22ISE453.4												
Vario	us Ex	cel functions to o	organize and q	uery data. Learı	ners are introdu	iced to the IF, nested IF,	5 Hours						
VLOC)KUP	and the HLOOKU	JP functions of	Excel.Concaten	ate, Match, Cou	ntif, Text, Trim.							
Labo	rato	ry Component: (minimum 3 e	xperiments / p	orograms)		3 Hours						
1.	Aj	pply IF and the n	ested IF function	ons									
2.	Aj	pply VLOOKUP a	nd HLOOKUP.										
3.	Aj	pply The RANDB	ETWEEN func	tion.									
MOD	ULE-	4 INTRODUC AND CHAR	TION TO FILT FS	ERING, PIVOT	TABLES,	22ISE453.5							
Vario	us da	ta filtering capab	ilities of Excel,	filters in data to	selectively acc	ess data, the Pivot Table.	5 Hours						
Creat	ing C	harts, Different	types of chart	, Formatting Cl	nart Objects, Cł	nanging the Chart Type,							
Show	ving a	nd Hiding the Le	gend, Showing	; and Hiding the	Data Table.								
Labo	rato	ry Component: (minimum 3 e	xperiments / p	orograms)		3 Hours						
1.	U	sage of Data filter	ring in Excel.										
2.	U	se of Pivot tables	with categoric	cal as well as nu	merical data.								
3.	Cı	reate the differen	t types of char	·ts.									
MOD	ULE-	5 SPREADSH	EET TOOLS			22ISE453.6							
Movi	ng be	etween Spreadsl	neets, Selectir	g Multiple Spi	eadsheets, Ins	erting and Deleting	5 Hours						
Sprea	adshe	ets Renaming Sp	readsheets, S	olitting the Scre	en, Freezing Pa	nes, Copying and							
Pasti	ng Da	ita between Spre	adsheets, Hidi	ng and Protecti	ng worksheets.								
Labo	rato	ry Component: (minimum 3 e	xperiments / p	orograms)		3 Hours						
1.	М	oving between o	one Spreadshe	et to another a	nd Copying and	d Pasting Data between							
Sprea	adshe	ets.											
2.	A	pply the concept	of Inserting &	Deleting Spread	lsheets and Ren	aming Spreadsheets.							
3.	U	sage of Splitting t	he Screen and	, Freezing Panes	5.								
CIE A	sses	sment Pattern(S	50 Marks – Th	eory) –									
			м	arks Distributi	on								
			Tests(25	Qualitative									
	RB	۲ Levels	Marks)	Assessment	Lab								
			-	(5 Marks)	(20 Marks)								
	L1	Remember	5	-	-								
	L2	Understand	10	-	5								
13 Apply 5 5 10													
	<u>гэ</u> [Д	Analyze	5 5		5								
	LS	Evaluate	-	-	-								
	L6	Create	-	-	-								

SEE Assessment Pattern (50 Marks - Theory)-

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	
L2	Understand	10
L3	Apply	10
L4	Analyze	10
L5	Evaluate	10
L6	Create	10

Suggested Learning Resources:

Text Books:

1. Data Analysis with Microsoft Excel Paperback – Import, 25 March 2003 by K. Berk (Author), Partrick Carey (Author)

2. Excel 2019 Bible, Michael Alexander, 1st edition, John Wiley & Sons Inc, ISBN: 9781119514787,

9781119514787, 1120 pages

Reference Books:

- 1. Richard Levin & David S.Rubin (2012): Statistics for Management,7thEdition,Pearson.
- 2. J K Shrma (2012): Business statistics, Second Edition- Pearson Education.
- 3. Andy field (2013): Discovering statistics using IBM SPSS statistics,4th Edition, SAGE Publications.
- 4. Cunningham, B.J (2012): Using SPSS: An Interactive Hands-on Approach.
- 5. K.V.S. Sarma: Statistics made simple: do it yourself on PC. PHI

Web links and Video Lectures (e-Resources):

- https://www.coursera.org/learn/excel-data-analysis#syllabus
- https://www.udemy.com/course/data-analytics-in-excel/
- Excel Data Analytics Full Course | Essential Skills For Data Analysis In Excel | Simplilearn,
- https://www.youtube.com/watch?v=00WAk2aLEfk
- Beginner to Pro FREE Excel Data Analysis Course,

https://www.youtube.com/watch?v=v2oNWja7M2E&list=PLmejDGrsgFyBCxF37lewZtX6c1kJXyLt3

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

- Conduction of CIE-1 & CIE-2
- Visit to software industry.
- Execution of various functions in Excel.
- Creation of various charts in Excel.
- Contents related activities (Activity-based discussion
 - > For active participation of students, instruct the students to prepare various charts and Handouts
 - > Organizing Group wise discussions on issues
 - ➤ Seminars

FUNDAMENTALS OF OPEN SOURCE SOFTWARE														
Course Code	22ISE4	154						CIE	Marks		50			
L:T:P:S	2:0:1:0)						SEE	Marks		50			
Hrs / Week	2+2							Tota	al Marks		10	0		
Credits	03							Exai	n Hours		03			
Course outco	mes:													
At the end of the	he course	, the s	tudent	will be	able to):								
22ISE454.1	Unders	stand t	he diffe	erence	betwee	en oper	n-sourc	e softv	vare and	comme	rcial soft	ware.		
22ISE454.2	Unders	stand t	he poli	cies, lic	ensing	proce	dures a	nd eth	ics of FO	SS.				
22ISE454.3 Understand the role and future of open-source software in the industry.														
22ISE454.4 Recognize the applications, benefits and features of Open-Source Technologies. 22ISE454.5 Assessment of the second s														
22ISE454.5 Awareness with Open-Source Technologies.														
22ISE454.6 Understand open-source philosophy, methodology and ecosystem.														
Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes:														
PoilPo)1	PSO2
PU1 PU2 PU PU4 PU5 PU6 PU7 P08 P09 P010 P011 P012 PS01 PS 22ISE4541 2 2 2 3 - - - - - 2 2 -														
22ISE454.1 2 2 2 - 3 2 2														2
22ISE454.2	2 2	2	-	3	-	-	-	-	-	-	2	2		2
22ISE454.3	2 2	3	-	3	-	-	-	-	-	-	2	2		2
22ISE454.4	2 -	3	-	3	-	-	-	-	-	-	2	2		2
22ISE454.5	3 -	Z	-	3	-	-	-	-	-	-	2	2		2
22ISE454.6	3 3	-	-	3	-	-	-	•	-	-	Z	2		2
MODULE-1	INTRO	DUCT	IONTO	OPEN	-SOUR	CE				2215	E454 1		F	lours
Introduction -	Why On	en Sou	rce = ()nen So		Princi	ales St	andaro	ls Requi	rements	Succes	- 292	5 H	ours
Free Software	– FOSS –	Intern	et Appl	ication	Projec	cts.	5103, 50	linuar	is negun	emenes	, Succes.	503		Juis
Laboratory Co	ompone	nt:												
1. Learn the fo	llowing o	pen-so	ource o	peratir	ng syste	em: Lin	ux, And	lroid.					3 H	ours
2. Learn the in	stallation	1		•	0 5		,							
3 Identify the	unique fe	atures	ofthe	se OS										
MODILE-2	OPEN-		CEPRIN	ICIPLE	SAND	METH)GY·		2215	F454 2			Hours
Open source -	Initiative	oc Prin	cinles	Metho	dologi	os Phil	osonhu	, Platf	orm Fre	edom 0	SSD Lic	ences -	5 H	ours
Copy right	miniativ	.3, 1 1 11	icipics,	Metho	uologi	c3, 1 III	osopny	, i iati	01111, 110	cuom, o	55D, LIC	c113c3 -	511	0013
Laboratory Co	omnone	nt:											3 н	ours
1. Identify a	ny open-s	ource	softwa	re and	create	report	about i	ts lice	nsing mo	del.			0 11	ourb
2 Hands on	with Lihr	e Offic	e Lear	n it fro	m nrac	tical vi	ew-noi	nt						
2. Hands on	with CIM	D Dhot	o Editi	ng Too	n prac		ew pon							
S. Hallus oli				iig 100	1.				221	SEAEA 2) 221CE	454.4		Jours
Case Studies	Anacha			orillo (Finafor	.) 147:1-	nadia		221	36434.3), 22136	434.4	E II	.iours
Case Studies -	Apacile,	лоυ, п	mux, M	uzilia (FILEIO	(J, WIK	ipeula.						511	ours
Laboratory Co	omponei	ıt:	a .											
1. Contributi	ing to Wil	kipedia	a: Creat	e your	user a	ccount	on wiki	ipedia		_	_		3 H	ours
2. Identify any topic of your choice and contribute the missing information to Wikipedia.														
3. Install any LINUX distribution Eg- Ubuntu, Fedora. Customize the desktop by changing the														
default options, like background, themes etc.														
MODULE-4OPEN-SOURCE PROJECTS221SE454.58 Hours												Hours		
Open-Source p	projects: S	Startin	g and n	naintai	ning ov	wn Ope	en-Sour	ce Pro	ject, Ope	n-Sourc	e Hardw	are, Ope	n-Soı	ırce
Design, Open-s	source l'é	acning	g, Open	-source	e media	d.								

Laboratory Component: Github

1. Create and publish your own open-source project: Write any simple program using your choice of programming language

2. Create a repository on Github and save versions of your project.

Using GitHub to Collaborate: Get practice using GitHub or other remote repositories to share your changes with 3. others and collaborate on multi- developer projects

others and conaborate on multi- developer projects.												
MODU	LE-5 UNDE	RSTANDING OPE	N-SOURCE ECO	SYSTEM	22ISE454.6	Hours						
Unders	standing Open-S	ource Ecosystem:	Open-Source O	perating System	s: GNU/Linux, Android, Open-	5 Hours						
Source	Hardware, Virt	ualization Techno	logies, Containe	rization Techno	logies: Docker.	L						
Laboratory Component:												
1. Virtualization: Create and use virtual machines.												
2. Containerization: Install and configure the containerization technology: docker												
3. Create and use containers using it.												
CIE As	sessment Patte	ern (50 Marks - T	heory and Lab)								
			Marks Distrib	oution								
	DBT I ovole	Tost (s)	Qualitative	Lab								
	KD1 Levels	1651 (5)	Assessment	Lau								
	-	25	05	20								
L1	Remember	5	-	-								
L2	Understand	10	-	5								
L3	Apply	5	5	10								
L4	Analyze	5	-	5								
L5	Evaluate	-	-	-								
L6	Create	-	-	-								
SEE As	sessment Patte	ern (50 Marks – 1	Theory)									
	DBT Lovale	Exam M	Marks									
	NDT Levels	Distribut	ion (50)									
L1 Remember 10												
L2	Understand	20)									
L3	Apply	10)									
L4 Analyze 10												

Suggested Learning Resources:

Evaluate

Create

Text Books:

L5

L6

1. "Open-Source Technology", Kailash Vadera&Bhavyesh Gandhi, University Science Press, Laxmi Publications, 2009

2. "Open-Source Technology and Policy", Fadi P. Deek and James A. M. McHugh, Cambridge University Press, 2008 **Reference Books:**

1. Unix Concepts and Applications by Sumitabha Das, Tata McGraw Hill Education, 2006

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2. The official Ubuntu Book, 8th Edition.

3."Perspectives on Free and Open-Source Software", Clay Shirky and Michael Cusumano, MIT press.

4. "Understanding Open Source and Free Software Licensing", Andrew M. St. Laurent, O"Reilly Media.

Web links and Video Lectures (e-Resources):

- https://www.coursera.org/learn/open-source-software-development-methods •
- Open-Source Initiative: https://opensource.org/5 .
- The Linux Foundation: http://www.linuxfoundation.org/ .
- The Linux Documentation Project: http://www.tldp.org/2 .
- Docker Project Home: http://www.docker.com3. •
- Linux Documentation Project: http://www.tldp.org/6
- https://en.wikipedia.org/7.https://en.wikipedia.org/wiki/Wikipedia:Contributing_to_Wikipedia/8 •
- GitHub: https://help.github.com/9.

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

- Video demonstration of latest trends in FOSS
- Contents related activities (Activity-based discussions)
 - > For active participation of students, instruct the students to prepare PPT and Present in class
 - > Organizing Group wise discussions on issues
 - ➤ Seminars

VISUAL PROGRAMMING TECHNIQUES																
Course Code	221	SE461						0	IE Mark	S		50				
L:T:P:S	0:0	:1:0						S	EE Marl	KS		50				
Hrs / Week	02							T	'otal Ma	rks		100				
Credits	01							E	xam Ho	urs		3 Hoi	ırs			
Course Outcor	nes: A	t the ei	nd of	the Co	ourse,	the Stu	ident v	vill be	able to:							
22ISE461.1	Ana	alyze th	ie obj	ect-ori	ented	paradig	gm and	repres	sent the	problem	using	VB.				
22ISE461.2	An	Analyze the object-oriented concepts and their implementations. Apply the object oriented concepts to design and visualize programs using VB.														
22ISE461.3	App	Apply the object oriented concepts to design and visualize programs using VB. Analyze application using object oriented features.														
22ISE461.4	Ana	Analyze application using object oriented features.														
Mapping of Co	urse O	se Outcomes to Program Outcomes and Program Specific Outcomes:														
CO/PO	P01	01 P02 P0 P04 P05 P06 P07 P08 P09 P010 P011 P012 PS01 PS02														
			3													
22ISE461.1	3	3 3 2 2 3 3 -											2	2		
22ISE461.2	3	3	2	3	3	-	-	-	3	-	3	3	2	2		
22ISE461.3	3	3	2	3	3	-	-	-	3	-	3	3	2	2		
22ISE461.4	3	3	2	3	3	-	-	-	3	-	3	3	2	2		
Dom No																
Pgm. No.					Lis	st of Pr	ogram	S				Hours	C	Os		
]	Prerec	uisite	Exper	iment	s / Pro	grams /	' Demo						
						-						2				
							PART	A				I				
1	Write	e a sim	ple pi	ogram	to con	struct	a simp	le Aritl	nmetic C	alculato	r.		22ISE4	61.1		
2	VB.N	et Prog	ram '	To calc	ulate t	he area	a of cir	cle for	given ra	dius usir	ng					
	conse	ole							0		0					
	appli	cation														
	VB.N	et Prog	gram '	To calc	ulate t	he area	a of cir	cle for	given ra	dius usir	ng	2	22151	5461 1		
	conse	ole										2	22131	5401.1		
	appli	cation														
	Write	e a visi	ial ba	isic pro	ogram	to calc	ulate t	he are	a of a ci	rcle for g	given					
2	radiu	lS.							n alvin a d	+-+	***					
3	write	e simpi rata Fil	e pro	ogram	using I	loops a	na aeo	cision-i	making s	statemer	its to	2	22ISI	E461.1		
1	Write	ate rii	o pro	or ser l	es. using l	loons a	nd do	nicion 1	naking	statomor	te to					
т	Find	the sur	n of N	v numb	ers	loops a	nu uet	.151011-1	making 3	statemer	115 10	2	22ISI	E461.1		
5	Write	e simpl	le pro	ogram	using l	loops a	nd dec	cision-i	making s	statemer	nts to	2	22ISI	E 461.2		
6	Write	ay ule l	aram	to crea	ite a m	ni u idi		Forme				2	22161	5461 2		
0	vviite	. a pr 08	51 a 111	10 11 80	ic a III	chu all	PART-	• R				4	22131	-101.4		
7	Write	e a prog	gram	to crea	ite a sii	mple in	put sci	reen w	ith four l	basic cor	ntrols	2	22IS	E461.2		

	to read input and write it to a file		
8	Write a program to display files in a directory using DriveListBox, DirListBox and FileListBox control and open, edit and save text file using Rich text box control.	2	22ISE461.2
9	Write a program to illustrate Common Dialog Control and to open, edit and save text file	2	22ISE461.3
10	Write a program to develop windows based installation file with Student Registration form and Login form using database access	2	22ISE461.3
11	Develop a program to Insert, update, delete a Record in database using ADO	2	22ISE461.4
12	Write a program to implement Personal Information System using MDI and Standard ADODC controls and reports.	2	22ISE461.4
	PART-C		

Beyond Syllabus Virtual Lab Content

(To be done during Lab but not to be included for CIE or SEE)

1) Write a program to implement animation using timers.

2) Railways Reservation System (Using Tables).

CIE Assessment Pattern	(50 Marks - Lab)
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	DDT Lovala	Test (s)	Weekly Assessment
KDI LEVEIS		20	30
L1	Remember	-	-
L2	Understand	5	10
L3	Apply	10	10
L4	Analyze	5	10
L5	Evaluate	-	-
L6	Create	-	-

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	10
L3	Apply	30
L4	Analyze	10
L5	Evaluate	-
L6	Create	-

Suggested Learning Resources:

Text Book:

1) Programming with Visual Basic 6.0, Mohammed Azam, Vikas Publishing House Pvt. Ltd., Chennai **Reference Book:**

1) Gary Cornell, "Visual Basic 6 from the Ground up", McGraw-Hill Education, 1998

Text Book:

Julia Case Bradley and Anita C.Millspaugh, "Programming in Visual Basic 6.0", Tata McGraw-Hill Edition,
 2011.

				6	GOOGL	E WOI	RKSPA	CE LAB	ORAT	ORY				
Course Code		22ISE 4	162						CIE Marks 50					
L:T:P:S	(0:0:1:()						SEE Marks			50		
Hrs / Week		2							Tota	l Marks		100)	
Credits		01							Exai	n Hours		03		
Course outco	mes													
At the end of	the co	ourse, t	the st	udent	will be	able to):							
22ISE462.1		Demor	istrat	e the a	ccess a	nd set	ting of	google	accour	nt creatio	n and m	anageme	ent	
22ISE462.2		Demonstrate the collaboration tools such as Classroom, Docs, Sheets, Slides, Forms and Drive												
22ISE462.3		Create	a Virt	tual Ma d Host	achine OS usi	using (ng the	Dracle ' PING c	Virtual ommar	Box an	d test th	e commı	unication	1 betwee	n the
22ISE462.4		Build a	n app	olicatio	n in va	rious c	cloud p	latform	s and i	integrate	it with a	a local ID	E to lauı	nch
Manning of ('ourc	that ap	plica	tion	ogram	Outo	maca	nd Dro	arom	Spacific	Outcom			
Mapping of C					DOF		Diffes a		BOO	Specific DO10		DO12	DCO1	DCO2
	PU 1	P02	PU 2	P04	P05	P00	P07	P08	P09	P010	PUII	P012	P301	P302
22ISE462 1	1 2	3	3	3	3	-	-	-	1	1	_	2	3	3
2215E162.1	3	3	3	3	3	-	-	-	1	1	-	2	3	3
22ISE462.3	3	3	3	3	3	-	-	-	1	1	-	2	3	3
22ISE462.4	3	3	3	3	3	-	-	-	1	1	-	2	3	3
Pgm. No.					L	ist of I	Progra	ms				Hours	5	COs
				Prer	equisit	te Exp	erimei	nts / Pr	ogran	ns / Den	10			
					No Pr	erequ	isite re	equire	1			2	2 NA	
							PAR	T-A						
1	a)	C	reate	a Test	domai	in for o	demon	strating	g Sign-	Up, Sign	in and			
	Pro	file Set	ting u	using G	Google	Works	pace.						2210	SE1621
	b)	D	emon	istratir	ng the I	Basic a	nd Adv	ance ca	lenda	r setting	s that's		221.	06402.1
	incl	udes tl	he int	egratir	1g, Sha	ring ar	nd Upda	ating U	sing Go	ogle Cal	endar.			
2	Der	nonstr	ating	the fol	lowing	g featur	e using	g Googl	e Docs					
	a)	G	et sta	rted w	ith Goo	ogle Do	CS							
	b)	0	pen a	nd Cre	ate a n	ew do	C							
	c)	C	ollabo	oration	Docs i	in the (loud							
	d)	d) Version history Google Docs 22ISE							SE462.2					
	e)	e) Simple Editing Options												
	T)	t) Google Docs Addons												
	g)	g) Advanced Editing Option - Word Count Tracker												
2	nj	D	ocum	ient Fo	rmatte	and 1	i ransia	uon As	sistant	l.				
3	Den	nonstr	ating	the fol	lowing	g featur	e using	g Googl	e Shee	ts				
	a)	G	et sta	rted w	ith Goo	ogle Do	CS							
	b)	0	pen a	nd Cre	ate a n	ew She	eet						2219	SE462.2
	c)	В	asic E	Editing	Option	n in Goo	ogle Sh	eets					221.	104.4
	d)	B	asic F	ormul	as in G	oogle S	sheets							
	e)	A	dvano	ced Edi	iting O	ption								

4	 Demonstrating the following feature using Google Slides a) Create Google Slides b) Adding Content to Slides and Insert More Content Options c) Customize Buttons and Options d) Slides Share and collaborate e) Format Options Slides f) Slides View Options and Slide Transitions 		22ISE462.2				
5	 5 Demonstrating the following feature using Google form a) Sections, Previewing, Linear Scale, Multiple Choice Grid, DOB, Moving Questions b) Go to section based on Answer c) Upload Files into a Google Form d) Designs for your Forms e) Adding Images and Videos & Importing Questions f) Getting Responses g) Google Forms Addons 						
6	6 Demonstrating the following feature using Google Site a) Create Update Layout of Page b) Change your Sites Theme and Style c) Add Pages to Sites d) Google Sites Navigation e) Edit and Update f) Announcement banner g) Site Sharing and Collaboration h) Google Sites Launch						
	PART-B						
7	 a) Organise your Google Drive a) Organise your Google Drive b) Managing Workspaces c) Uploading Files and Folders d) Search and Cloud Search e) Google Drive for Desktop f) Collaboration with Google Drive g) Shared Drives 		22ISE462.3				
8	Install Oracle Virtual box and create two VMs on your laptop/Desktop.		22ISE462.3				
9	Use version control systems to create a central repository and local repository.		22ISE462.3				
10	Use version control systems command to clone, commit, push, fetch, pull, checkout, reset, and delete repositories.		22ISE462.3				
11	Develop a Hello World application using Google AppEngine in Eclipse.		22ISE462.4				
12	Create a hello world app and other simple web applications using python / java. Use GAElauncher to launch the web applications.		22ISE462.4				
	PART-C						
1. Insta <u>Oracle V</u> 2. Find https://ca machines If%20you	Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE) Il Oracle Virtual box and create two VMs on yours laptop/ Desktop. <u>M VirtualBox - Downloads Oracle Technology Network Oracle</u> the procedure to transfer the files from one VM to VM. arleton.ca/scs/tech-support/virtual-machines/transferring-files-to-and-fi /#:~:text=Dragging%20and%20Dropping%20Files%20in%20VirtualBox %20only&text=On%20the%20top%20bar%20of,the%20guest%20to%20the	rom-virtua :,- %20host.	al-				
3. Deve	3. Develop a Windows Azure Hello World application						

https://learn.microsoft.com/en-us/azure/developer/java/toolkit-for-eclipse/create-hello-world-web-app

4. Launch GUI application inside Docker Container and access them from the Docker Host system. https://medium.com/nerd-for-tech/running-gui-based-applications-inside-a-docker-container-645399ca2ef0

CIE Assessment Pattern (50 Marks - Lab)

RBT Levels		Test (s)	Weekly Assessment		
		20	30		
L1	Remember	-	-		
L2	Understand	-	5		
L3	Apply	5	10		
L4	Analyze	5	5		
L5	Evaluate				
L6	Create	10	10		

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	-
L3	Apply	10
L4	Analyze	20
L5	Evaluate	-
L6	Create	20

Suggested Learning Resources:

Reference Books:

"Effect of Using Google Workspace in Self-Regulated English Learning of Flipped Classroom." PhD diss.,
 2022.

2) Thuan, P. D. (2022). Employment of Google Tools in English Language Education: A Review. *British Journal of Multidisciplinary and Advanced Studies*, *3*(2), 70-77.

3) Sunyaev, A., & Schneider, S. (2013). Cloud services certification. *Communications of the ACM*, 56(2), 33-

36.

FILE STRUCTURE															
Course Code	22ISE463 CIE Marks									50					
L:T:P:S		0:0:1:0 SEE Marks									50				
Hrs / Week		2 Total Marks								100)				
Credits		01							Exai	n Hours		03			
Course outco At the end of t	me: the c	s: course,	the st	udent	will be	able to	:								
22ISE463.1		Implei	ment	operati	ons re	lated to	o files								
22ISE463.2		Apply	the co	oncepts	s of file	systen	n to pro	oduce t	he give	en applic	ation				
22ISE463.3		Evalua	ate pe	rforma	nce of	variou	s file sy	/stems	on give	en param	eters.				
22ISE463.4		Demo	nstrat	ion on	minim	izing s	eek tin	ne							
Mapping of C	our	se Out	come	s to Pr	ogram	Outco	omes a	nd Pro	gram	Specific	Outcom	es:			
	P() PO2	PO	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2	
22ISE463.1	2	3	2	2	2	1	-	-	-	-	3	2	3	-	
22ISE463.2	2	3	2	2	2	1	-	-	-	-	2	2	3	2	
22ISE463.3	2	3	2	2	2	1	-	-	-	-	2	2	2	2	
22ISE463.4	2	3	2	2	2	1	-	-	-	-	3	2	3	-	
Pgm. No.					I	List of	Progra	ams				Hours	:	COs	
				F	rereq	uisite	Experi	iments	/ Prog	grams /	Demo				
•	•	B	Basic I Tile lo	File ha cation	ndling	opera	tion(e	eg: fope	en, fclo	ose etc)		2		NA	
	•	I	File cı	reatior	n and o	penin	g mod	es							
								PART-A	1						
1	W	rite a p	rogra	m to re	ead ser	ies of	names	, one pe	er line.	from st	andard				
	inp	out and	write	e these O redir	name	s spelle	ed in ro	everse	order	to the sta	andard	2	2	2ISE463.1	
2	W	rite a ni	ng 1/	n to re	ad seri	es of n	ames (ne ner	line u	sing an ir	nut file	2			
2	sp file	ecified e specif	by the	e user i v the us	instead ser inst	l of the ead of	stand the sta	ard inp	ut and	using an	output	-		22ISE463.1	
3	Wi	rite a pi	rograi	n to re	ad and	write :	studen "I" Im	t object	s with	fixed-ler	ngth	2		221CE162 2	
	pa	ck (), u	npacl	()	uemm	teu by	.111	piemen	ι					2213E403.2	
4	Write a program to read and write student objects with fixed-length2records and the fields delimited by " ". Implement2modify () and search () methods.22ISE463.2						22ISE463.2								
5	Write a program to read and write student objects with Variable - Length2														
	records using any suitable record structure. Implement pack (), unpack 22ISE463.2						22ISE463.2								
6	Write a program to read and write student objects with Variable - Length2records using any suitable record structure. Implement modify () and22ISE463.2search () methods2							22ISE463.2							
								PART-E	3						
7	Wi usi rec	rite a pi ing any cord us	rograi suita ing Rl	m to wi ble rec RN.	rite stu ord sti	dent o ructure	bjects e and t	with Va o read f	riable from t	- Length his file a	records student	2		22ISE463.3	
8	Wı stı	rite a pi ident o	rograi bjects	m to in . Imple	npleme ment a	nt sim add (),	ple ind search	ex on p (), del	rimary ete ()	y key for using the	a file of index.	2		22ISE463.3	

9	Write a program to read two lists of names and then match the names in the two lists using Consequential Match based on a single loop. Output the names common to both the lists.	2	22ISE463.3
10	Write a program to read k Lists of names and merge them using k-way merge algorithm with k = 8.	2	22ISE463.4
11	Write a program to store and retrieve student data from file using hashing.	2	22ISE463.4
12	Write a program to store and retrieve student data from file using extended hashing.	2	22ISE463.4

PART-C Beyond Syllabus Virtual Lab Content

- 1. Write a program to implement B-Tree for a given set of integers and its operations insert () and search (). Display the tree.
- 2. Write a program to implement B+ tree for a given set of integers and its operations insert (), and search (). Display the tree.

CIE Assessment Pattern (50 Marks – Lab)

RBT Levels		Test (s)	Weekly Assessment
		20	30
L1	Remember	-	-
L2	Understand	-	10
L3	Apply	5	10
L4	Analyze	10	10
L5	Evaluate	5	-
L6	Create	-	-

SEE Assessment Pattern (50 Marks - Lab)

DBT Lovels		Exam Marks		
	KDI Levels	Distribution (50)		
L1	Remember	-		
L2	Understand	10		
L3	Apply	10		
L4	Analyze	20		
L5	Evaluate	10		
L6	Create	-		

Suggested Learning Resources:

Reference Books:

1) File Structures: An Object-Oriented Approach with C++: United States Editionby Michael J. Folk (Author), Bill Zoellick (Author), Greg Riccardi (Author)

IoT Programming										
Course Code	22ISE464	CIE Marks	50							
L:T:P:S	0:0:1:0	SEE Marks	50							
Hrs / Week	2	Total Marks	100							
Credits	01	Exam Hours	03							
Course outcomes: At the end of the course, the student will be able to:										
22ISE464.1	22ISE464.1 Understand functionalities of various single board embedded platforms fundamentals									
22ISE464.2	2ISE464.2 Understand interfacing of IoT devices with Arduino									

22ISE464.3 Apply Arduino interfacing to create simple applications														
22ISE464.4]	Interfa	ce va	rious s	ensors	and ac	tuators	s to con	nect w	vith exter	rnal mod	ules.		
Mapping of C	Cours	e Outo	come	s to Pr	ogram	Outco	omes a	nd Pro	gram	Specific	Outcom	ies:		
	PO	P02	PO	P04	P05	P06	P07	P08	P09	P010	P011	P012	PSO1	PSO2
221654644	1	1	3		2	1	1		1	1		2	2	2
2215E464.1 221SE464.2	3	1	1	-	3	1	1	-	 1	1	-	3	3	3
2215E464.3	3	3	3	3	3	3	2	_	1	1	-	3	3	3
22ISE464.4	3	3	3	3	3	3	2	-	1	1	-	3	3	3
Pgm. No.					L	ist of I	Progra	ms				Hours	;	Cos
	-			Prere	equisit	e Expe	erimen	its / Pr	ogran	ns / Dem	10		-	
Not Required									-					
							PAR'	Г-А						
1	To i	To interface LED / Buzzer with Arduino/Raspberry Pi and write a							e a	2	22IS	E464.1		
2	To i writ	To interface Digital sensor (IR/LDR) with Arduino/Raspberry Pi and write a program to turn ON LED at sensor detection.								i and	2	2215	E464.1	
3	To i pro	To interface smoke sensor with Arduino/Raspberry Pi and write a program to turn on alarm when smoke is detected.									2	22IS	E464.1	
4	To i pro	nterfa gram t	ce DH o prii	IT11 se nt temp	ensor w peratur	vith Ar e and	duino/ humidi	Raspbe ty read	erry Pi ings.	and writ	te a	2	22IS	E464.2
5	To i and	nterfa displa	ce TC ly the	S3200 same.	Color S	Sensor	with A	rduino	to det	ect the c	olors	2	22IS	E464.2
6	To i to tu Blue	nterfa urn LE etooth	ce Blu D ON	uetootł /OFF v	n with A vhen ''	Arduin 1'/'0' is	o/Rasp s receiv	oberry l ved fror	Pi and n sma	write a p rt phone	orogram using	2	2215	E464.2
	1						PAR'	Г-В						
7	To i pro	nterfa gram t	ce ult o disj	rasoni play th	c senso e dista	or with	Arduir the obs	no/Rasj stacle.	pberry	Pi and v	vrite a	2	22IS	E464.3
8	To i war	nterfa n the o	ce flo overfl	at sens low usi	or to d ng Ard	etect v uino/I	vater le Raspbe	evel in o rry PI v	over h vith ar	ead tank: 1 LED	s and	2	22IS	E464.3
9	To i dete	nterfa ect the	ce AD vario	XL335 ous orie	accele entatio	romet n and o	er with display	Arduii it on se	10/Ras erial m	spberryP Ionitor.	'I to	2	2215	E464.3
10	Crea LED eacl	Create an application that has three LEDs (Red, Green and white). The LEDs should follow the cycle (All Off, Red On, GreenOn, WhiteOn) for each hand movement (use Illtrasonic sensor).							e). The n) for	2	2215	E464.3		
11	To valu	interfa ies usi	ice so ng Ar	il mois duino/	ture se 'Raspb	ensor t erryPI	o displa	ay the c	luality	of soil m	noisture	2	22IS	E464.3
12	Writ humi	e a pro idity da	ogran ata to	n on Ar cloud.	duino/	'Raspb	erry Pi	to uplo	oad ter	nperatui	re and	2	22IS	E464.4
							PART-	C						

Beyond Syllabus Virtual Lab Content (To be done during Lab but not to be included for CIE or SEE)

- 1. Write program to upload the sensor data to the cloud. https://thingsboard.io/
- 2. Write program to download the sensor data uploaded to the cloud. <u>https://thingsboard.io/</u>
- 3. IoT Simulation Lab for simulating the Home Automation https://docs.iotify.io/

CIE Assessment Pattern (50 Marks – Lab)

	DDT Lovela	Test (s)	Weekly Assessment
	RD1 Levels	20	30
L1	Remember	-	-
L2	Understand	5	10
L3	Apply	7.5	10
L4	Analyze	7.5	10
L5	Evaluate		
L6	Create		

SEE Assessment Pattern (50 Marks - Lab)

	RBT Levels	Exam Marks Distribution (50)
L1	Remember	-
L2	Understand	10
L3	Apply	20
L4	Analyze	20
L5	Evaluate	
L6	Create	

Suggested Learning Resources: Reference Books

- 1. Maciej Kranz,"Building the Internet of Things: Implement New Business Models, Disrupt Competitors, Transform Your Industry", 1st Edition,Wiley,2021
- 2. David Hanes , Gonzalo Salgueiro , Patrick Grossetete, Robert Barton (Author), Jerome Henry," IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things "1st Edition,Cisco Press,2021
- 3. Colin Dow, "Internet of Things Programming Projects: Build modern IoT solutions with the Raspberry Pi 3 and Python", 1st edition, Packt Publishing,2018
- David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Robert Barton, Jerome Henry, "IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things", First Edition, Cisco Press, 2017

	BASIC APPLIED MATHEMATICS-II													
Course	Codo	22014	[1 1 1		(Li	JIIIII	on to a	all BI		lesj				50
LITIDIC	code		IA141						CEE M		<u> </u>			50
$\frac{L:1:P:5}{Hrc} / V$	Noolz	0:0:0:	0						JEE N Total	Mar	S bc			
Crodite	veek	2							Fyam	Hou	K5 Irc			50
Course	outcom								Елаш	niou	113			
At the e	nd of the	course,	, the st	udent v	vill be a	ble to:								
22DM	AT41.1	Gain k	knowle	edge of	basic op	eratior	ns of ve	ctors						
22DM	AT41.2	Use cı	url and	diverg	ence of	a vecto	r funct	ion in	three c	limer	nsior	IS		
22DM	AT41.3	Devel	op the	ability	to solve	higher	order	Linear	differ	ential	l equ	lations		
22DM	AT41.4	Know and b	the ba	isic con rv valu	cepts of e proble	Laplac	e trans	sform t lace tra	o solve	e the m me	Peri	odic fund I	ctions and also so	ve initial
Mappi	ng of Coi	irse Oi	itcom	es to F	rogran	n Outc	omes:		11151011	in inc	liiot			
- imppi		P01	P02	P03	P04	P05	P06	PO'	7 PC)8 P	PO9	P010	P011	P012
22DM/	AT41.1	3	3	-	-	-	-	-	-		-	-	-	-
22DM/	AT41.2	3	3	-	-	-	-	-	-		-	-	-	-
22DM/	AT41.3	3	3	-	-	-	-	-	-		-	-	-	-
22DM/	AT41.4	3	3	-	-	-	-	-	-		-	-	-	-
		0												
MOD	ULE-1	VECT	ORS										22DMAT41.1	8 Hours
Definiti	on of scal	ar and v	vector	, Vector	additio	n, Subt	ractior	ı						
and Mu	ltiplicatio	n-Dot p	oroduc	t, Cros	s produc	ct, Scala	ar tripl	e prod	uct. Or	thogo	onal,	Co-plan	ar and Angle betw	veen
vectors	-Problem	s.												
Text Bo	ok	Text E	Book 1	: 3.1, 3.	5, 3.6, 3.	9, Text	Book 2	2: 7.1, 9	9.2, 9.3	8, 9.4.				r
MODU	LE-2	VECT	OR DI	FFERE	NTIATIO	ON							22DMAT41.2	8 Hours
Vector o Problen	differenti ns. Soleno	al opera oidal an	ator-G d irrot	radient tational	of a sca vector	lar fun fields-F	ction, I Probler	Diverge ns.	ence of	a veo	ctor	function	, Curl of a vector f	unction-
Text Bo	ok	Text I	3ook 1	: 8.5, 8	.6, 8.7, 7	Гext Вo	ook 2: 9	9.7, 9.8	3, 9.9.					
MODU	LE-3	LINE	AR I	DIFFEF	RENTIA	L EQ	UATI	ONS	WITH	I C	ONS	TANT	22DMAT41.3	8 Hours
		COEF	FICIE	NTS										
Solution	n of initia	al and b	oounda	ary val	ue prob	lems, I	nverse	e diffei	rential	oper	ratoi	technic	ques for the funct	tions-e ^{ax} ,
sin(ax -	+ b) and	cos(ax	x + b).				_							
Text Bo	ok	Text I	Book 1	: 13.3,	13.4, 13	3.5, 13.	6,						000047444	0.11
MODU	LE-4	LAPL	ACE T	RANSI	ORM		<u> </u>						22DMAT41.4	8 Hours
Definiti	on and L	aplace	transf	orms o	of eleme	ntary	functio	ns-Pro	blems	. Pro	pert	ies of L	aplace transform:	s (Shifting
Toyt Bo	ly-withou	t proof	J, Peric	1000000000000000000000000000000000000	$\frac{100000}{21}$	5 To	it proo	$\frac{1}{2}$	nems.					
MODU	LE-5	INVE	RSE L	APLAC	E TRAN	ISFOR	M	1 2. 0.1	-				22DMAT41.4	8 Hours
Inverse	Lanlace '	Fransfo	rm hv	nartial	fraction	s-Proh	lome S	olutio	n of lin	ear d	liffor	ontial or	ulations using	0 110 110
Lanlace	Transfor	ms-Pro	hlems	partiar	naction	.5-1100	icilis. 5	olutio		car u	mei	ciitiai ct	fuations using	
Text Bo	ok	Text F	Book 1	: 21.12	2. 21.15.	Text E	Book 2	6.4.						
CIE Ass	essment	Patter	n (50	X 2 = 10)0 Mark	s – The	eorv)							
	cosment	i utter		<u> </u>	o nun	M	arks D	istrib	ition				Г	
	RBT Lev		Test (s) Oı	ialitati	ive Ass	essme	ent (s)		Μ	CO's	-		
				25			15					10	1	
L1 Remember				5			5					-	1	
L2	Underst	and		5			5					-	7	
L3	Apply			10			5					10		
L4	Analyze			2.5			-					-		
L5 Evaluate				2.5			-					-		

L6	Create	-	-		-					
Sugge	sted Learning Resou	irces:								
Text E	Books:									
1) B. S.	. Grewal, Higher Engine	eering Math	ematics, Khanna Publishers	, Forty fourt	h Edition,	2022,				
ISB	N: 9788193328491.									
2) Erw	in Kreyszig, Advanced	Engineerin	g Mathematics, Wiley-India	Publishers, '	Tenth Edit	ion, Reprir	nt			
201	6, ISBN: 97881265542	32.								
Refer	ence Books:									
1) Glyn James, Advanced Modern Engineering Mathematics, Pearson Education, Fourth Edition,										
2015, ISBN: 9780273719236.										
2) B. V	2) B. V. Ramana, Higher Engineering Mathematics, McGraw Hill Education (India) Private Limited,									
Fou	Fourth Edition, 2017, ISBN: 9780070634190.									
3) H. K	3) H. K. Dass, Advanced Engineering Mathematics, S. Chand & Company Ltd., Twenty Second Edition, 2018,									
ISB	ISBN: 9789352533831.									
4) N.P.	Bali and Manish Goyal,	A Text Boo	ok of Engineering Mathemati	cs, Laxmi Pu	iblications	(P) Ltd., N	inth			
Edit	ion, 2014, ISBN: 97881	131808320								
web III	nks and Video Lectur	res (e-Res	ources):							
1 Jnttp	os://youtu.be/SaNDP	SKIUVM/SI								
2 Jnttp	DS://youtu.be/HxrLu-	qKJKC/SI=p	KC9XUCIIBX-H4Wp							
3 Jnttp	os://youtu.be/maiQn	1E15H31/SI	I=H003_CJII0S2030S							
4 Jnttp	DS://YOUTU.DE/IKBXE	y91GC4/SI=	=JJZIQVJXdXN816YQ							
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6)IIII	DS://YOULU.DE/III/JHUJ	JIKIZI (SI=U Jm DV2ai=D	oMrhME21 ML4hBCo							
/ Jnup	tps://youtu.be/qFIIORIZ	$\frac{1}{6} \frac{1}{1} \frac{1}$	$=3 \sigma U_2 K \sigma t 5 U 7 \rho 0 L F$							
Activi	ty-Based Learning (Suggostod	Activitios in Class) /Pract	ical Bacad	Loarning					
Activi	ACTIVITY-Based Learning (Suggested ACTIVITIES In Class)/Practical Based Learning:									
•	\searrow For active	norticin	ation of students	instruct	tho c	tudonte	to	proparo		
	✓ FOI active participation of students, instruct the students to prepare Algorithms /Flowsharts /Programming Codes									
	 Organizing Gro 	nin wise di	scussions on related tonics	:						
	 Seminars 	ap wise ui	seasons on related topics	,						
	 Seminars 	Jup mbe ui								

	NATIONAL SERVICE SCHEME (NSS)											
Course Code	22NSS	30, 22]	NSS40, 22	NSS50, 2	22NSS6	0	CIE M (each	arks Semes	ster)	50	50	
L:T:P:S	0:0:0:0)					SEE M	arks				
Hrs / Week	2						Total Marks			50	50 x 4 = 200	
Credits	00						Exam Hours 02					
Course outcomes:												
At the end of	At the end of the course, the student will be able to:											
22NSSX0.1	Understand the importance of his / her responsibilities towards society.											
22NSSX0.2	Analyse the environmental and societal problems/issues and will be able to design solutions for the same.											
22NSSX0.3	Evalua develo	te the e pment.	existing sy Impleme	stem and nt goverr	l to prop Iment oi	ose pra self-dr	ictical so riven pro	olutions ojects e	s for th ffectiv	e same for ely in the f	r sustaina field.	able
22NSSX0.4	Develo and so	p capa cial har	city to me mony in g	et emerg general.	gencies a	and nat	ural dis	asters	& prac	tice natio	nal integ	ration
Mapping of Co	ourse O	utcom	es to Pro	gram O	utcome	s:						
	P01	P02	PO3	P04	P05	P06	P07	P08	P09	P010	P011	P012
22NSSX0.1	-	-	-	-	-	3	-	-	2	-	-	1
22NSSX0.2	-	-	-	-	-	3	3	-	2	-	-	1
22NSSX0.3	-	-	-	-	-	3	3	-	2	-	-	1
22NSSX0.4	-	-	-	-	-	3	3	-	2	-	-	1

Semester/ Course Code	CONTENT	COs	HOURS				
3 RD 22NSS30	 Organic farming, Indian Agriculture (Past, Present and Future) Connectivity for marketing Waste management–Public, Private and Governorganization, 5R's. Setting of the information imparting club for women leading to contribution in social and economic issues. 						
4 ^{тн} 22NSS40	22NSS40.1, 22NSS40.2, 22NSS40.3, 22NSS40.4	30 HRS					
5 ^{тн} 22NSS50	 Developing Sustainable Water management system for rural areas and implementationapproaches. Contribution to any national level initiative of Government of India. Foreg. Digital India, Skill India, Swachh Bharat, Atmanirbhar Bharath, Make in India, Mudra scheme, Skill developmentprograms etc. Spreading public awareness under rural outreach programs. (minimum 5 programs). 	22NSS50.1, 22NSS50.2, 22NSS50.3, 22NSS50.4	30 HRS				
6 ^{тн} 22NSS60	22NSS60.1, 22NSS60.2, 22NSS60.3, 22NSS60.4	30 HRS					
CIE Assessme	ent Pattern (50 Marks – Activity based) –						
CIE c	component for every semester Marks						

Presentation - 1	10]
Selection of topic, PHASE - 1		

Commencement of activity and its progress - PHASE - 2	10
Case study-based Assessment Individual performance	10
Sector wise study and its consolidation	10
Video based seminar for 10 minutes by each student at the end of semester with Report.	10
Total marks for the course in each semester	50

- Implementation strategies of the project (NSS work).
- The last report should be signed by NSS Officer, the HOD and principal.
- At last report should be evaluated by the NSSofficer of the institute.
- Finally, the consolidated marks sheet should be sent to the university and also to be made available at LIC visit.

Suggested Learning Resources:

Reference Books:

- 1. NSS Course Manual, Published by NSS Cell, VTU Belagavi.
- 2. Government of Karnataka, NSS cell, activities reports and its manual.
- 3. Government of India, NSS cell, Activities reports and its manual.

Pre-requisites to take this Course:

- 1. Students should have a service-oriented mindset and social concern.
- 2. Students should have dedication to work at any remote place, anytime with available resources and proper time management for the other works.
- 3. Students should be ready to sacrifice some of the time and wishes to achieve service-oriented targets on time.

Pedagogy:

- In every semester from 3rd semester to 6th semester, each student should do activities according to the scheme and syllabus.
- At the end of every semester student performance has to be evaluated by the NSS officer for the assigned activity progress and its completion.
- At last, in 6th semester consolidated report of all activities from 3rd to 6th semester, compiled report should be submitted as per the instructions.
- State the need for NSS activities and its present relevance in the society and provide real-life examples.
- Support and guide the students for self-planned activities.
- NSS coordinator will also be responsible for assigning homework, grading assignments and quizzes, and documenting students' progress in real activities in the field.
- Encourage the students for group work to improve their creative and analytical skills.

Plan of Action:

- Student/s in individual or in a group Should select any one activity in the beginning of each semester till end of that respective semester for successful completion as per the instructions of NSS officer with the consent of HOD of the department.
- At the end of every semester, activity report should be submitted for evaluation.
- Practice Session Description:
 - Lecture session by NSS Officer
 - Students Presentation on Topics
 - Presentation 1, Selection of topic, PHASE 1
 - Commencement of activity and its progress PHASE 2
 - Execution of Activity
 - Case study-based Assessment, Individual performance
 - Sector/ Team wise study and its consolidation
 - \circ ~ Video based seminar for 10 minutes by each student at the end of semester with Report.

	SI	Торіс	Groupsize	Location	Activity execution	Reporting	Evaluation of
	No						the Topic
_	1	Orașe și a farmină	Mau ha	Former one	Cita calastian	Dement	Eveluation of
	1.	Organic farming,		Farmers	Site selection	Report	Evaluation as
		Indian Agriculture	individual or	land/Villages/	/proper	should be	per the rubrics
		(Past, Present and	team	roadside	consultation/	submitted by	of scheme and
		Future)		/ Community	Continu ous	individual to	syllabus by NSS
		Connectivity for		area /	monitoring/	the	officer
		marketing.		College campus	Information board	concerned	
						evaluation	
						authority	
	2.	Waste	May be	Villages/ City	Site selection	Report	Evaluation as
		management-	individual or	Areas /	/proper	should be	per the rubrics
		Public, Private and	team	Grama	consultation/Cont	submitted by	of scheme and
		Govtorganization, 5		panchayat/	inu ous	individual to	syllabus by NSS
		R's.		public	monitoring/	the	officer
				associations/	Information board	concerned	
				Government		evaluation	
				Schemes		authority	
				officers/			
				campus			
-	3.	Setting of the	May be	Women	Group	Report	Evaluation as
		information	, individual or	empowermen	selection/pro per	should be	per the rubrics
		imparting club for	team	t groups/	consultation/	submitted by	of scheme and
		women leading to		Consulting	Continuous	individual to	syllabus by NSS
		contribution in		NGOs & Govt	monitoring/	the	officer
		social		Teams /	Information board	concerned	omeen
		and oconomic		College		evaluation	
		issues		compus		authority	
_	4		N. La		site as leasting (Descert	Fuel untit and the
	4.	water	iviay be	Villages/ City	site selection /	Report	Evaluation as
		conservation	individual or	Areas /	proper	should be	per the rubrics
		techniques – Kole	team	Grama	consultation/	submitted by	or scheme and
		of different		panchayat/	Continuous	individual to	syllabus by NSS
		stakeholders–		public	monitoring/	the	officer
		Implementation.		associations/	Information board	concerned	
				Government		evaluation	

			Schemes		authority	
			officers/			
			campus			
	Dresering	Mau ha		Crawa	Dement	Eveluation of
5.	Preparing an	ividy be		Group	Report	
	actionable business	individual or	Areas /	selection/pro per	snould be	per the rubrics
	proposal for	team	Grama	consultation/	submitted by	of scheme and
	enhancing the		panchayat/	Continuous	individual to	syllabus by NSS
	village income and		public	monitoring/	the	officer
	approach for		associations/	Information board	concerned	
	implementation.		Government		evaluation	
			Schemes		authority	
			officers/			
			campus			
6.	Helping local	May be	Local	School	Report	Evaluation as
	schools to achieve	individual or	government /	selection/proper	should be	per the rubrics
	good results and	team	private/ aided	consultation/	submitted	of scheme and
	enhance their		schools/Govern	Continuous	by individual	syllabus by NSS
	enrolment in		ment Schemes	monitoring/	to the	officer
	Higher/		officers	Information	concerned	
	technical/			board	evaluation	
	vocational				authority	
	education.					
7.	Developing	May be	Villages/	site	Report	Evaluation as
	Sustainable Water	individual or	City Areas /	selection/proper	should be	per the rubrics
	management	team	Grama	consultation/	submitted	of scheme and
	system for rural		panchayat/	Continuous	by individual	syllabus by NSS
	areas and		public	monitoring/	to the	officer
	implementation		associations/	Information	concerned	
	approaches.		Government	board	evaluation	
			Schemes		authority	
			officers/			
			campus			

8.	Contribution to	May be	Villages/	Group	Report	Evaluation as
	any national level	individual or	City Areas /	selection/pro per	should be	per the rubrics
	initiative of	team	Grama	consultation/	submitted	of scheme and
	Government of		panchayat/	Continuous	by individual	syllabus by NSS
	India. For eg.		public	monitoring /	to the	officer
	Digital India, Skill		associations/	Information	concerned	
	India, Swachh		Government	board	evaluation	
	Bharat,		Schemes		authority	
	Atmanirbhar		officers/			
	Bharath, Make in		campus			
	India, Mudra					
	scheme, Skill					
	development					
	programs etc.					
9.	Spreading public	May be	Villages/	Group	Report	Evaluation as
	awareness under	individual or	City Areas /	selection/pro per	should be	per the rubrics
	rural outreach	team	Grama	consultation/	submitted	of scheme and
	programs.		panchayat/	Continuous	by individual	syllabus by NSS
	(minimum5		public	monitoring /	to the	officer
	programs)		associations/	Information	concerned	
			Government	board	evaluation	
			Schemes		authority	
			officers/			
			campus			
10.	Organize	May be	Villages/	Place	Report	Evaluation as
	National	individual or	City Areas /	selection/proper	should be	per the rubrics
	integration and	team	Grama	consultation/	submitted	of scheme and
	social harmony		panchayat/	Continuous	by individual	syllabus by NSS
	events		public	monitoring /	to the	officer
	/ workshops		associations/	Information	concerned	
	/ seminars.		Government	board	evaluation	
	(Minimum 02		Schemes		authority	
	programs).		officers/			
			campus			

11.	Govt.	school	May	be	Villages/	Place	Report	Evaluation as
	Rejuvena	ation and	individua	al or	City Areas /	selection/proper	should be	per the rubrics
	helping	them to	team		Grama	consultation/	submitted	of scheme and
	achieve	good			panchayat/	Continuous	by individual	syllabus by NSS
	infrastru	cture.			public	monitoring /	to the	officer
					associations/	Information	concerned	
					Government	board	evaluation	
					Schemes		authority	
					officers/			
					campus			

	PH	YSICA	L EDU	CATION	I (PE)	(SPOR	TS AN	D ATI	HLETI	CS)		
Course Code	22PED	30, 22P	ED40				CIE Marks (each semester)			50	50	
L:T:P:S	0:0:0:0)					SEE M	arks				
Hrs / Week	2						Total	Marks		50	x 2= 100)
Credits	00						Exam	Hours		02		
Course outcomes: At the end of the course, the student will be able to:												
22PEDX0.1	Unders Fitness	Understand the fundamental concepts and skills of Physical Education, Health, Nutrition and Fitness										
22PEDX0.2	Create mainta	Create consciousness among the students on Health, Fitness and Wellness in developing and maintaining a healthy lifestyle										
22PEDX0.3	Perform compe	n in the : tition at	selected regional	sports o /state / 1	r athletio national	cs of stu / interr	ıdent's c 1ational	hoice a levels.	nd parti	cipate in	the	
22PEDX0.4	Unders games	tand the	e roles ar	id respoi	nsibilitie	s of org	anizatio	on and a	administ	ration of	f sports a	ind
Mapping of Co	ourse O	utcome	s to Pro	gram O	utcome	s:						
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
22PEDX0.1	-	-	-	-	-	2	-	3	3	-	-	2
22PEDX0.2	-	-	-	-	-	2	-	3	3	-	-	2
22PEDX0.3	-	-	-	-	-	2	-	3	3	-	-	2
22PEDX0.4	-	-	-	-	-	2	-	3	3	-	-	2

Semester	CONTENT	COs	HOURS
	Module 1: Orientation		
	A. Lifestyle,		
	B. Fitness	22PED30.1,	E UDC
	C. Food & Nutrition	22PED30.2	5 ПК5
	D. Health & Wellness		
3rd	E. Pre-Fitness test.		
22PED30	Module 2: General Fitness & Components of Fitness		
	A. Warming up (Free Hand exercises)		
	B. Strength – Push-up / Pull-ups	22PED30.2,	
	C. Speed – 30 Mtr Dash	22PED30.3	15 ПК5
	D. Agility – Shuttle Run		
	E. Flexibility – Sit and Reach		

	F. Cardiovascular Endurance – Harvard step Test		
	Module 3: Recreational Activities		
	 A. Postural deformities. B. Stress management. C. Aerobics. D. Traditional Games 	22PED30.3, 22PED30.4	10 HRS
	Module 1: Ethics and Moral Values		
	A. Ethics in SportsB. Moral Values in Sports and Games	22PED40.1, 22PED40.2	5 HRS
	Module 2: Specific Games (Anyone to be selected by the		
4 ^{тн} 22PED40	 student) A. Volleyball – Attack, Block, Service, Upper Hand Pass and Lower hand Pass. B. Throwball – Service, Receive, Spin attack, Net Drop & Jump throw. C. Kabaddi – Hand touch, Toe Touch, Thigh Hold, Ankle hold and Bonus. D. Kho-Kho – Giving Kho, Single Chain, Pole dive, Pole turning, 3- 6 Up. E. Table Tennis – Service (Fore Hand & Back Hand), Receive (Fore Hand & Back Hand), Smash. F. Athletics (Track / Field Events) – Any event as per availability of Ground. 	22PED40.3	20 HRS
	Module 3: Role of Organization and administration	22PED40.4	5 HRS
			-
CIE Accocco			

CIE Assessment Pattern (50 Marks - Practical) -

CIE to be evaluated every semester end based on practical demonstration of Sports and Athletics activities learnt in the semester.

CIE	Marks
Participation of student in all the modules	10
Quizzes – 2, each of 7.5 marks	15
Final presentation / exhibition / Participation in competitions/ practical on specific tasks assigned to the students	25
Total	50

Suggested Learning Resources:

Reference Books:

- 1. Saha, A.K. Sarir Siksher Ritiniti, Rana Publishing House, Kalyani.
- 2. Bandopadhyay, K. Sarir Siksha Parichay, Classic Publishers, Kolkata.
- 3. Petipus, et.al., Athlete's Guide to Career Planning, Human Kinetics.
- 4. Dharma, P.N. Fundamentals of Track and Field, Khel Sahitya Kendra, New Delhi.
- 5. Jain, R. Play and Learn Cricket, Khel Sahitya Kendra, New Delhi.
- 6. Vivek Thani, Coaching Cricket, Khel Sahitya Kendra, New Delhi.
- 7. Saha, A.K. Sarir Siksher Ritiniti, Rana Publishing House, Kalyani.
- 8. Bandopadhyay, K. Sarir Siksha Parichay, Classic Publishers, Kolkata
- 9. Naveen Jain, Play and Learn Basketball, Khel Sahitya Kendra, New Delhi.
- 10. Dubey H.C., Basketball, Discovery Publishing House, New Delhi.
- 11. Rachana Jain, Teach Yourself Basketball, Sports Publication.
- 12. Jack Nagle, Power Pattern Offences for Winning basketball, Parker Publishing Co., New York.
- 13. Renu Jain, Play and Learn Basketball, Khel Sahitya Kendra, New Delhi.
- 14. SallyKus, Coaching Volleyball Successfully, Human Kinetics.

					VOC	A								
Course Code	22Y00	30, 22Y	OG40, 2	2YOG50), 22YO	G60	CIE Marks (each Semester)			50	50			
L:T:P:S	0:0:0:0)					SEE M	larks						
Hrs / Week	2						Total	Marks		50 x 4 = 200				
Credits	00						Exam	Hours		02				
Course outcom At the end of t	nes: the cours	se, the st	udent w	ill be able	e to:									
22YOGX0.1	Use Yo	se Yogasana practices in an effective manner												
22YOGX0.2	Becom	Become familiar with an authentic foundation of Yogic practices												
22YOGX0.3	Practic Kriyas	e differe	nt Yogic	method	s such as	s Surya	namaska	ara, Pra	nayama	and som	e of the	Shat		
22YOGX0.4	Use the	e teachin	gs of Pat	anjali in	daily life	e .								
Mapping of Co	ourse O	utcome	s to Pro	gram O	utcome	es:								
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012		
22YOGX0.1	-	-	-	-	-	3	-	-	-	-	-	1		
22YOGX0.2	-	-	-	-	-	3	-	-	-	-	-	1		
22YOGX0.3	-	-	-	-	-	3	-	-	-	-	-	1		
22YOGX0.4	-	-	-	-	-	3	-	-	-	-	-	1		
Semester /				CON	ГЕНТ					COs	Н	OURS		

Semester / Course Code	CONTENT	COs	HOURS
3 rd 22Y0G30	 Introduction of Yoga: Aim and Objectives of yoga, Prayer: Yoga, its origin, history and development. Yoga, its meaning, definitions. Different schools of yoga, importance of prayer Brief introduction of yogic practices for common man: Yogic practices for common man to promote positive health Rules and regulations: Rules to be followed during yogic practices by practitioner Misconceptions of yoga: Yoga its misconceptions, Difference between yogic and non-yogic practices. Suryanamaskara: 1. Suryanamaskar prayer and its meaning, Need, importance a benefits of Suryanamaskar. 2. Suryanamaskar 12 count,2rounds Different types of Asanas: 1. Sitting: Padmasana, Vajrasana, Sukhasana 2. Standing: Vrikshana, Trikonasana, Ardhakati Chakrasana 3. Prone line: Bhujangasana, Shalabhasana 4. Supineline: Utthitadvipadasana, Ardhahalasana, Halasana 	22YOG30.1, 22YOG30.2, 22YOG30.3, 22YOG30.4	Total 32 Hrs/ Semester 2 Hrs/week

	Suryanamaskara: Suryanamaskar 12 count,4rounds			
4 ^{тн} 22Y0G40	 Brief introduction and importance of: Kapalabhati: Revision of Kapalabhati -40strokes/min3 Different types of Asanas: Sitting: Paschimottanasana, Ardha Ushtrasana, Vakrasana, Aakarna Dhanurasana Standing: Parshva Chakrasana, Urdhva Hastothan, Hastapadasana Prone line: Dhanurasana Supine line: Karna Peedasana, Sarvangasana, Chal Patanjali's Ashtanga Yoga: Asana, Pranayama 	rounds 2 2 2 2 asana, kraasana hedana	22YOG40.1, 22YOG40.2, 22YOG40.3, 22YOG40.4	Total 32 Hrs/ Semester 2 Hrs/week
5 ^{тн} 22YOG50	 Kapalabhati: Revision of Kapalabhati - 60strokes/min3 Brief introduction and importance of: Different types of Asanas: Sitting: Yogamudra in Padmasana, Vibhakta Paschimottanasana, Yogamudra in Vajrasana Standing: Parivritta Trikonasana, Utkatasana, Parshvakonasana Prone line: Padangushtha Dhanurasana, Poorna Bhujangasana / Rajakapotasana Supine line: Navasana/Noukasana, Paranayama: Ujjayi, Sheetali, Sheektari 	Brounds 22 22 22 22 22 22 22	2YOG50.1, 2YOG50.2, 2YOG50.3, 2YOG50.4	Total 32 Hrs/ Semester 2 Hrs/weel
б ^{тн} 22Y0G60	 Kapalabhati: Revision of Kapalabhati – 80 strokes/min Brief introduction and importance of: Different types of Asanas: Sitting: Bakasana, Hanumanasana, Ekapada Rajakapotasana Standing: Parivritta Trikonasana, Utkatasana, Parshvakonasana Supine line: Setubandhasana, Shavasanaa (Relaxa) Balancing: Sheershasana Patanjali's AshtangaYoga: Dhyana (Meditation), Sama Pranayama: Bhastrika, Bhramari, Ujjai Shat Kriyas: Jalaneti and sutraneti, Sheetkarma Kapalal 	3rounds 22 22 22 22 22 22 21 dhi dhi bhati	2YOG60.1, 2YOG60.2, 2YOG60.3, 2YOG60.4	Total 32 Hrs/ Semester 2 Hrs/weel
CIE Assessmen CIE to be ex semester an	nt Pattern (50 Marks – Practical) – valuated every semester based on practical demonstration nd internal tests (objective type) CIE M	n of Yogasana arks	learnt in the	

CIE	Marks
Avg of Test 1 and Test 2	25
Demonstration of Yogasana	25
Total	50

Suggested Learning Resources:

Reference Books:

- 4. Swami Kuvulyananda: Asma (Kavalyadhama, Lonavala)
- 5. Tiwari, O P: Asana Why and How
- 6. Ajitkumar: Yoga Pravesha (Kannada)
- 7. Swami Satyananda Saraswati: Asana Pranayama, Mudra, Bandha (Bihar School of yoga, Munger)
- 8. Swami Satyananda Saraswati: Surya Namaskar (Bihar School of yoga, Munger)
- 9. Nagendra H R: The art and science of Pranayama
- 10. Tiruka: Shatkriyegalu (Kannada)
- 11. Iyengar B K S: Yoga Pradipika (Kannada)
- 12. Iyengar B K S: Light on Yoga (English)

Web links and Video Lectures (e-Resources):

- <u>https://youtu.be/KB-TYlgd1wE</u>
- <u>https://youtu.be/aa-TG0Wg1Ls</u>

	SOCIAL CONNECT AND RESPONSIBILITY											
Course Code	22SCK	37/225	CK47					CIE	Marks	50		
L:T:P:S	0:0:1:0)						SEE	Marks			
Hrs / Week	02							Tot	al Mark	s 50		
Credits	01							Exa	m Hour	s 02		
Course outcomes:												
At the end of the course, the student will be able to:												
22SCK47.1	Comm	unicate a	nd con	nect to t	he surro	unding						
22SCK47.2	Unders	Understand the needs and problems of the community and involve them in problem –solving										
22SCK47.3	Develo in findi	Develop among themselves a sense of social & civic responsibility and utilize their knowledge in finding practical solutions to individual and community problems										
22SCK47.4	Develo	p compe	tence r	equired	for grou	p-living	and shar	ing of 1	esponsi	bilities &	gain ski	ills
	in mob	ilizing co	ommun	ity parti	cipation	to acqui	re leader	ship q	ualities a	and demo	ocratic a	ttitudes
Mapping of (Course O	utcome	s to Pr	ogram	Outcom	es and I	Progran	n Spec	ific Out	comes:		
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
22SCK47.1	-	-	-	-	-	3	2	-	2	3	-	1
22SCK472	-	-	-	-	-	3	2	-	2	3	-	1
22SCK47.3	-	-	-	-	-	3	2	-	2	3	-	1
22SCK47.4	-	-	-	-	-	3	2	-	2	3	-	1
MODULE-1	PLANT	CATION .	AND A	DOPTIO	N OF A 1	FREE			22S 22S	CK47.1, CK47.2	31	Hours
Plantation o	f a tree th	at will b	e adop	ted for th	nree yea	rs by a g	roup of I	3. Tech	student	s. (ONE \$	STUDEN'	T ONE
TREE) They	will also i	make an	excerp	ot either	as a doc	umentar	y or a ph	oto blo	og descr	ibing the	plant's	origin,
its usage in c	laily life, it	ts appear	ance in	i folklore	and lite	rature	· Objectiv	ves, Vis	it, case s	tudy, rep	ort, outc	omes.
MODULE-2	HERIT	AGE WA	ALK A	ND CRA	FTS COI	RNER			225 225	SCK47.2 SCK47.3	, 3	Hours
Heritage tou	r, knowin	g the his	tory ar	nd cultur	e of the o	city, conr	necting to	o peopl	e aroun	d throug	h their <mark>h</mark>	istory,
knowing the	e city and	its crafts	sman, p	photo blo	og and d	ocument	ary on e	evolutio	on and p	ractice o	f variou	s craft
forms- Objee	ctives, Visi	it, case s	tudy, re	eport, ou	tcomes.							
MODULE-3	ORGAN	NIC FAR	MING A	AND WA	STE MA	NAGEMI	ENT		22S	CK47.4,	3	Hours
									22S	CK47.5		
Usefulness o	f organic	farming	, wet w	vaste ma	inageme	nt in nei	ghboring	g villag	es, and	impleme	ntation	in the
campus – Ob	jectives, V	isit, case	e study	, report,	outcome	S.					-	
MODULE-4	WATE	R CONSI	RVAT	ION					225	5CK47.5	, 3	Hours

			22SCK47.6	
Knowing the	present practices in the surrounding	villages and im	plementation in the campus, do	ocumentary
or photoblog	presenting the current practices – Ob	ectives, Visit, ca	ase study, report, outcomes.	-
MODULE-5	FOOD WALK		22SCK47.1, 22SCK47.3	3 Hours
City's culinary	v practices, food lore, and indigenous	materials of the	region used in cooking – Objec	tives, Visit,
case study, re	port, outcomes.			
CIE Assessm	ent Pattern (50 Marks – Activity	based) –		
• Each 1	nodule is evaluated as given below a	nd 100 marks i	in scaled down to 50 as final n	narks.
CIE c	omponent for each module	Marks		
Field Visit, Pl	an, Discussion	10		
Commenceme	ent of activities and its progress	20		
Case study-ba	ised Assessment Individual	20		
performance	with report	25		
Video based s	study & its consolidation $5^{+}5 = 25$	25		
each student	at the end of semester with	23		
Report. Activi	ties 1 to 5. $5*5 = 25$			
	Total	100		
Platfe C C C Share Fubi	orm to connect to others and share the Jamming session Open mic Poetry the experience of Social Connect.	e stories with of	thers:	
• EXIII Pedagogy:	on the talent like playing list unents	, singing, one-ac	ct play, al t-painting, and line al	ι.
• The stude	ents will be divided into groups. Each	group will be ha	andled by faculty mentor.	
• A total of	40 - 50 hrs engagement in the semest	er		
• Faculty m	entor will design the activities (partic	cularly Jamming	sessions, open mic and poetry)
• The course connect v	se is mainly activity-based that will c vith fellow human beings, nature, soci	offer a set of act ety, and the wo	ivities for the student that ena rld at large.	bles them to
• The cours semester	se will engage students for interactive -longactivities conducted by faculty m	sessions, open r ientors.	nic, reading group, storytelling	sessions, and
• Students in the fiel	should present the progress of the act d.	vities as per the	e schedule in the prescribed pra	ctical session
• There sho	ould be positive progress in the vertica	l order for the b	enefit of society in general throu	ugh activities.

Plan of Action:

- Each student should do activities according to the scheme and syllabus.
- At the end of semester student performance has to be evaluated by the faculty mentor for the assigned activity progress and its completion.
- At last consolidated report of all activities from 1st to 5th, compiled report should be submitted as per the instructions and scheme.
- Practice Session Description:
 - Lecture session in field to start activities
 - Students Presentation on Ideas
 - Commencement of activity and its progress
 - Execution of Activity
 - Case study-based Assessment, Individual performance
 - Sector/ Team wise study and its consolidation
 - Video based seminar for 10 minutes by each student at the end of semester with Report.

SI	Topic	Group size	Location Activity execut		Reporting	Evaluation of	
No						the Topic	
1.	Plantation and adoption of a tree	May be individual or team (3-5)	Farmers land/ parks / Villages / roadside/ community area / College campus	Site selection / Proper consultation/ Continuous monitoring/ Information board	Report should be submitted byindividual to the concerned evaluation Authority	Evaluation as per the rubrics of scheme and syllabus	
2.	Heritage walk and crafts corner	May be individual or team (3-5)	Temples / monumental places / Villages/ City Areas / Grama panchayat/ public associations /Government Schemes officers/ campus	Site selection /Proper consultation/ Continuous monitoring/ Information board	Report should be submitted byindividual to the concerned evaluation authority	Evaluation as per the rubrics of scheme and syllabus	
3.	Organic farming and waste management	May be individual or team (3-5)	Farmers land / parks /Villages visits / roadside/ communityarea / College campus	Group selection / proper consultation / Continuous monitoring / Information board	Report should be submitted byindividual to the concerned evaluation authority	Evaluation as per the rubrics of scheme and syllabus	
4.	Water conservation: Conservation techniques	May be individual or team (3-5)	Villages/ City Areas /Grama panchayat/ public associations/ Government Schemes officers / campus	site selection / proper consultation/ Continuous monitoring/ Information board	Report should be submitted byindividual to the concerned evaluation	Evaluation as per the rubrics of scheme and syllabus	

					authority	
5.	Food walk: Practices in society	May be individual or team (3-5)	Villages/ City Areas /Grama panchayat/ public associations/ Government Schemes officers/ campus	Group selection / proper consultation / Continuous monitoring / Information board	Report should be submitted byindividual to the concerned evaluation authority	Evaluation as per the rubrics of scheme and syllabus

MINI PROJECT												
Course Code	22ISE48						CIE	CIE Marks		50		
L:T:P:S	0:0:1:0							SEE	Marks	50	50	
Hrs / Week	2							Tota	al Mark	s 100	100	
Credits	01						Exa	m Hour	s 03	03		
Course outcor	nes:											
At the end of the course, the student will be able to:												
22ISE48.1	Analyze the Real-world problem through survey of existing problems											
22ISE48.2	Design	Design the modules for solving the problems identified										
22ISE48.3	Implement the design modules with suitable programming language											
22ISE48.4	Test the working modules at different levels											
Mapping of Course Outcomes to Program Outcomes and Program Specific Outcomes:												
	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
22ISE48.1	3	3	3	2	3	-	1	1	3	1	3	2
22ISE48.2	3	3	3	2	3	-	1	1	3	1	3	2
22ISE48.3	3	3	3	2	3	-	1	1	3	1	3	2
22ISE48.4	3	3	3	2	3	-	2	1	3	1	3	2

Mapping of Course Outcomes to Program Specific Outcomes:

CO/PSO	PSO1	PSO2
C01	2	2
CO2	2	2
CO3	2	2
CO4	2	2

Use C,C++,Java, C#, PHP, Python, or any other similar front-end tool. All applications must be demonstrated on desktop/laptop as a stand-alone or web based application.

Note :

• Every student should do mini project in a team consists of maximum 2 members in the areas suggested by the department expert committee

- Minimum 2 reviews will be conducted by the department expert committee to know the progress of the mini project work
- In each review student should give presentation on the work carried out and show the relevant models/output
- A mini project report should be submitted to the department at the end of the mini project work
- Plagiarism check for the report : Similarity index of the report should not exceed more than 30%.

CIE - Continuous Internal Evaluation (50 Marks)

Bloom's Category	Tests (50 Marks)		
Remember	-		
Understand	-		
Apply	-		
Analyze	-		
Evaluate	25		
Create	25		

SEE – Semester End Examination (50 Marks)

Bloom's Taxonomy	Marks
Remember	-
Understand	-
Apply	-
Analyze	-
Evaluate	25
Create	25
APPENDIX A

Assessment Pattern

1. Assignment

- 2. Group Discussions
- 3. Case Studies
- 4. Practical Orientation on Design Thinking , Creativity & Innovation
- 5. Participatory & Industry-Integrated Learning
- 6. Practical activities/Problem Solving exercises
- 7. Class Presentations
- 8. Analysis of Industry/Technical/Business Reports
- 9. Reports on Industrial Visits
- 10. Industrial/Social/Rural Projects
- 11. Participation in external Seminars/Workshop
- 12. Online/Offline Quizes

APPENDIX B

Outcome Based Education

Outcome-based education (OBE) is an educational theory that bases each part of an educational system around goals (outcomes). By the end of the educational experience each student should have achieved the goal. There is no specified style of teaching or assessment in OBE; instead classes, opportunities, and assessments should all help students achieve the specified outcomes.

There are three educational Outcomes as defined by the National Board of Accreditation:

Program Educational Objectives: The Educational objectives of an engineering degree program are the statements that describe the expected achievements of graduate in their career and also in particular what the graduates are expected to perform and achieve during the first few years after graduation. [nbaindia.org]

Program Outcomes: What the student would demonstrate upon graduation. Graduate attributes are separately listed in Appendix C

Course Outcome: The specific outcome/s of each course/subject that is a part of the program curriculum. Each subject/course is expected to have a set of Course Outcomes

Mapping of Outcomes



APPENDIX C

The Graduate Attributes of NBA

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: The problems that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions that require consideration of appropriate constraints/requirements not explicitly given in the problem statement (like: cost, power requirement, durability, product life, etc.) which need to be defined (modeled) within appropriate mathematical framework that often require use of modern computational concepts and tools.

Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal, and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage

projects and in multidisciplinary environments.

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

APPENDIX D

BLOOM'S TAXONOMY

Bloom's taxonomy is a classification system used to define and distinguish different levels of human cognition—i.e., thinking, learning, and understanding. Educators have typically used Bloom's taxonomy to inform or guide the development of assessments (tests and other evaluations of student learning), curriculum (units, lessons, projects, and other learning activities), and instructional methods such as questioning strategies.

