B. Tech

in INFORMATION TECHNOLOGY



Scheme of Instruction and Syllabus

w.e.f. 2017-18

Department of Information Technology

(B. Tech. IT Programme Accredited by NBA)

VELAGAPUDI RAMAKRISHNA SIDDHARTHA ENGINEERING COLLEGE

(An Autonomous, ISO 9001:2015 Certified Institution) (Approved by AICTE, Accredited by NAAC with 'A' Grade, Affiliated to JNTUK, Kakinada) (Sponsored by Siddhartha Academy of General & Technical Education) Kanuru, Vijayawada Andhra Pradesh - 520007, INDIA. www.vrsiddhartha.ac.in

VELAGAPUDI RAMAKRISHNASIDDHARTHA ENGINEERING COLLEGE DEPARTMENT OF INFORMATION TECHNOLOGY SCHEME OF INSTRUCTIONS FOR FOUR YEAR UG PROGRAMME [B.TECH VR17] GROUP A <u>(CSE, ECE, EIE, IT)</u>

SEMESTER I CONTACT HOURS: 26										
S.No	Course Code	Title of the	L	Р	Т	C	CE	SE	Т	
		Course								
1	17MA1101	Matrices And Differential	3	1	0	4	30	70	100	
2	17PH1102B	Applied Physics	3	0	0	3	30	70	100	
3	17CS1103	Problem Solving Methods	2	1	0	3	30	70	100	
4	17EE1104	Basics of Electrical	3	0	0	3	30	70	100	
		Engineering								
5	17HS1105	Technical English and Communication Skills	2	0	2	3	30	70	100	
6	17PH1151	Applied Physics Laboratory	0	0	3	1.5	30	70	100	
7	17CS1152	Computing and Peripherals	0	0	2	1	30	70	100	
8	17ME1153	Basic Workshop	0	0	3	1.5	30	70	100	
		Total	13	2	10	20	240	560	800	
9	17MC1106A	Technology and Society	1	0	0		100	0	100	
10	17MC1107	Induction Program					-	-	-	
		-								
SEME	STER II	-			CO	NTAC	Г HOUF	RS: 27		
SEME S.N	STER II Course Code	Title of the Course	L	Τ	CO P	NTAC C	Г HOUF СЕ	RS: 27	Т	
SEME S.N 0	STER II Course Code	Title of the Course	L	Τ	CO P	NTAC C	T HOUR CE	SE	T	
SEME S.N 0 1	STER II Course Code 17MA1201	Title of the Course Laplace Transforms And Integral Calculus	L 3	T 1	CO P 0	NTAC C	Г НОИБ СЕ 30	S: 27 SE 70	T 100	
SEME S.N 0 1 2	STER II Course Code 17MA1201 17CH1202	Title of the CourseLaplace Transforms AndIntegral CalculusEngineering Chemistry	L 3 3	T 1 0	CO P 0 0	NTAC C 4 3	F HOUR CE 30 30	SE SE 70 70	T 100	
SEME S.N 0 1 2 3	STER II Course Code 17MA1201 17CH1202 17CS1203	Title of the CourseLaplace Transforms And Integral CalculusEngineering Chemistry Programming in C	L 3 3 3	T 1 0 0	CO P 0 0	C 4 3 3	T HOUR CE 30 30 30	SE SE 70 70 70 70	T 100 100 100	
SEME S.N 0 1 2 3 4	STER II Course Code 17MA1201 17CH1202 17CS1203 17EC1204A	Title of the CourseLaplace Transforms And Integral CalculusEngineering ChemistryProgramming in CBasic Electronic Engineering	L 3 3 3 3	T 1 0 0 0	CO P 0 0 0	C 4 3 3	T HOUR CE 30 30 30 30 30 30	SE SE 70 70 70 70 70 70	T 100 100 100 100	
SEME S.N 0 1 2 3 4 5	STER II Course Code 17MA1201 17CH1202 17CS1203 17EC1204A 17ME1205	Title of the CourseLaplace Transforms And Integral CalculusEngineering ChemistryProgramming in CBasic Electronic EngineeringEngineeringEngineering Graphics	L 3 3 3 3 2	T 1 0 0 0 0 0 0 0 0 0 0	CO P 0 0 0 0 4	NTAC C 4 3 3 4	T HOUR CE 30 30 30 30 30 30 30 30 30 30 30	SE 70 70 70 70 70 70 70 70	T 100 100 100 100 100 100 100	
SEMIE S.N 0 1 2 3 4 5 6	STER II Course Code 17MA1201 17CH1202 17CS1203 17EC1204A 17ME1205 17CH1251	Title of the CourseLaplace Transforms And Integral CalculusEngineering ChemistryProgramming in CBasic Electronic EngineeringEngineeringEngineering GraphicsEngineering Chemistry Laboratory	L 3 3 3 3 2 0	T 1 0 0 0 0 0 0 0 0 0 0 0 0 0	CO P 0 0 0 0 4 3	NTAC C 4 3 3 4 1.5	F HOUR CE 30 30 30 30 30 30 30 30 30 30 30 30 30 30	S: 27 SE 70 70 70 70 70 70 70 70 70 70 70 70	T 100 100 100 100 100 100 100 100 100 100	
SEMIE S.N 0 1 2 3 4 5 6 7	STER II Course Code 17MA1201 17CH1202 17CS1203 17EC1204A 17ME1205 17CH1251 17CS1252	Title of the CourseLaplace Transforms AndIntegral CalculusEngineering ChemistryProgramming in CBasic ElectronicEngineeringEngineering GraphicsEngineering ChemistryLaboratoryComputer ProgrammingLaboratory	L 3 3 3 3 2 0 0	T 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CO P 0 0 0 0 4 3 3	NTAC C 4 3 3 4 1.5	F HOUR CE 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30	S: 27 SE 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70	T 100 100 100 100 100 100 100 100 100 100 100 100	
SEMIE S.N 0 1 2 3 4 5 6 7	STER II Course Code 17MA1201 17CH1202 17CS1203 17EC1204A 17ME1205 17CH1251 17CS1252	Title of the CourseLaplace Transforms And Integral CalculusEngineering ChemistryProgramming in CBasic Electronic EngineeringEngineering GraphicsEngineering Chemistry LaboratoryComputer Programming LaboratoryTotal	L 3 3 3 3 2 0 0 14	T 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1	CO P 0 0 0 0 4 3 3 10	NTAC C 4 3 3 4 1.5 20	F HOUR 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 210	S: 27 SE 70 70 70 70 70 70 70 70 70 70 70 70 70 70 70 490	T 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100 100	

 Human Values
 Image: Image

DEPARTMENT OF INFORMATION TECHNOLOGY SCHEME OF INSTRUCTIONS FOR FOUR YEAR UG PROGRAMME [B.TECH VR17] SEMESTER III CONTACT HOURS: 27

				-	01111				
S.No	Course Code	Title of the Course	L	Τ	Р	С	CE	SE	Т
1	17MA1301	Complex Analysis and	3	1	0	4	30	70	100
		Numerical Methods							
2	17IT3302	Discrete Mathematical	2	1	0	3	30	70	100
		Structures For Information							
		Technology							
3	17IT3303	Data Structures	3	1	0	4	30	70	100
4	17IT3304	Computer Organization	2	1	0	3	30	70	100
5	17HS2305	Humanities Elective	1	0	0	1	100	0	100
6	17TP1306	Logic and Reasoning	0	0	2	1	100	0	100
7	17IT3308	Object Oriented Programming	1	0	2	2	30	70	100
8	17IT3351	Data Structures Lab	0	0	3	1.5	30	70	100
9	17HS1352	Communication Skills	0	0	2	1	30	70	100
		Laboratory							
		Total	12	4	9	20.5	410	490	900
10	17MC1307A	Environmental Studies	2	0	0	-	100	0	100

List of Humanities Electives

Α	Yoga & Meditation	F	Visual Communication
В	Music	G	Film Appreciation
С	Human Rights and Legislative Procedures	Н	Sanskrit Bhasha
D	Philosophy	Ι	Foreign Languages (German/French)
Е	Development of societies		

SEME	ESTER IV	АСТ НО	DURS	31					
S.No	Course Code	Title of the Course	L	Τ	Р	С	CE	SE	Т
1	17IT3401	Statistics with R	2	0	2	3	30	70	100
2	17IT3402	Data Base Management	2	1	0	3	30	70	100
		Systems							
3	17IT3403	Design & Analysis of	2	1	0	3	30	70	100
		Algorithms							
4	17IT3404	Python Programming	3	0	0	3	30	70	100
5	17TP1405	English For Professionals	0	0	2	1	100	0	100
6	17IT3406	Operating Systems	3	0	2	4	30	70	100
7	17IT3451	Data Base Management	0	0	3	1.5	30	70	100
		Systems Lab							
8	17IT3452	Python Programming Lab	0	0	3	1.5	30	70	100
9	17IT3453	Web Programming Lab	0	0	3	1.5	30	70	100
		Total	12	2	15	21.5	340	560	900
10	17MC1407B	Indian Constitution	2	0	0	-	100	0	100

L-Lecture, T-Tutorial, P-Practical, C-Credits, CE-Continuous Evaluation, SE-Semester End, T-Total Marks

SEMESTER V Contact Hours: 29									9
S.No	Course Code	Title of the Course	L	Τ	Р	Credits	CE	SE	Т
1	17IT3501	Software Engineering	3	0	0	3	30	70	100
2	17IT3502	Data Mining	3	0	2	4	30	70	100
3	17IT3503	Computer Networks	2	0	2	3	30	70	100
4	17IT2504 Open Elective -I (TO ALL THE DEPTS)	A. AI Tools, Techniques and ApplicationsB. LINUX ProgrammingC. Mobile ApplicationDevelopment	3	0	0	3	30	70	100
5	17IT2505 Open Elective –II (Inter Disciplinary Elective)	A. DBMS B. OOPS C. Python Programming	3	0	0	3	30	70	100
6	17IT2506 Open Elective –III (Self Learning Elective Course)*	 A. Data Science for Engineers B. Scalable Data Science C. Business Analytics and Text Mining Modeling using Python D. Innovation, Business models and Entrepreneurship E. Human Computer Interaction 	0	0	0	2	-	100	100
7	17TP1507	Personality Development	0	0	2	1	100	-	100
8	17IT3509	Java Programming	2	1	0	3	30	70	100
9	17IT3551	Java Programming Lab	0	0	2	1	30	70	100
10	17IT3552	Advanced Programming Lab-I	0	0	2	1	30	70	100
11	17MC1508A Mandatory Learning	2	0	0	-	100	-	100	
		18		10	24	440	660	1100	

L-Lecture, T-Tutorial, P-Practical, C-Credits, CE-Continuous Evaluation, SE-Semester End, T-Total Marks

*Students can opt any one of the self-learning courses prescribed by the Department. Students register and cleared the opted course in MOOCS/ NPTEL on or before the Last Instruction Day of <u>V Semester</u>. They have to submit the certificate before the Last Instruction Day of <u>V Semester</u>.

SEN	1ESTER VI				(Contac	t Hou	rs: 28	
S.No	Course	Title of the Course	L	Τ	P	Cre	CE	SE	Т
	Code					dits			
1	17IT3601	Machine Learning	3	0	2	4	30	70	100
2	17IT3602	Web Programming and	3	0	0	3	30	70	100
		Development							
3	17IT4603	A. Fundamentals of Data Science	3	0	0	3	30	70	100
	Programme	B. Network Security							
	Elective -I	C. Automata and Compiler Design							
		D. Agile Software Development							
		E. Industry Need Based Elective							
4		A. Big Data	3	0	0	3	30	70	100
	17IT4604	B. Internet of Things							
	Programme	C. Dot Net Technologies							
	Elective -II	D. Software Testing							
		Methodologies							
		_							
5	17IT2605	A. Cyber Security	3	0	0	3	30	70	100
	Open	B. Data Visualization							
	Elective IV	C. M Commerce							
6	17TP1606	Quantitative Aptitude	0	0	2	1	100	-	100
	Soft skills								
	IV								
7	17IT4651	A. Big Data Lab	0	0	2	1	30	70	100
		B. Internet of Things Lab							
		C. Dot Net Technologies Lab							
		D. Software Testing							
		Methodologies Lab							
8	17IT3652	Web Programming and	0	0	2	1	30	70	100
		Development Lab							
9	17IT3654	Advanced Programming Lab -II	0	0	2	1	30	70	100
10	17IT5653	Engineering Project for	0	1	2	2	30	70	100
	Project	Community Services*							
	work								
		Total	15	1	12	22	370	630	1000

L-Lecture, T-Tutorial, P-Practical, C-Credits, CE-Continuous Evaluation, SE-Semester End, T-Total Marks

* Students will go to the society (Villages/ Hospitals / Towns etc,.) to identify the problem and survey the literature for a feasible solution. The work will be carried out during summer vacation after <u>IV Semester</u>. The student is encouraged to take up real life problems leading to innovative model building

*Could be done in a group of students, involves working under a faculty member and carrying out a detailed feasibility study, literature survey and preparing a work plan for major project.

SEMESTER VII

Contact Hours: 25

S.No	Course	Title of the Course	L	Τ	P	Credits	CE	SE	Т
	Code								
1	17IT3701	Cloud Computing	3	1	0	4	30	70	100
2	17IT4702	A. Data Analytics							
	Programme	B. Computer Vision							
	Elective -	C. Routing and Switching	3	0	0	3	30	70	100
	III	Essentials	5	Ŭ	Ū	5	50	/0	100
		D. Industry Need Based							
		Elective							
3	17IT4703	A. Deep Learning							
	Programme	B. Block Chain Technologies	3	0	0	3	30	70	100
	Elective –	C. Information Retrieval	-	-	÷	-		, •	
	1V	System							
4	1/114/04	A. Natural Language							
	Programme	Processing	2	0	0	2	20	70	100
	Elective - V	B. Cloud based CRM	3	0	0	3	30	/0	100
		C DevOng Eggentials							
5	171101705	C. DevOps Essentials							
3	1/HS1/05	Eigenee	2	0	0	2	30	70	100
6	171T3751	Cloud Computing Lab	0	0	3	15	30	70	100
7	17IT4752	A Deep Learning Lab	0	0	5	1.5	50	70	100
/	1/114/52	B Block Chain Technologies							
		Lab	0	0	3	15	30	70	100
		C Information Retrieval	Ŭ	Ŭ	2	1.0	50	, 0	100
		System Lab							
8	17IT5753	Mini Project*							
	Design		0	0	4	2	30	70	100
	Project 1								
9	17IT6754	A. Internship							
		B. Industry Offered Course				2	_	100	100
		C. Global Professional				2	-	100	100
		certification							
		Total	14	1	10	22	240	660	900

L-Lecture, T-Tutorial, P-Practical, C-Credits, CE-Continuous Evaluation, SE-Semester End, T-Total Marks

SEMESTER VIII

Contact Hours: 19

S.No	Course Code	Title of the Course	L	Т	Р	Credits	CE	SE	Т
1	17IT4801 Programme Elective -VI	 A. Business Intelligence B. Mobile Computing C. Service Oriented Architecture D. Software Metrics and Quality Assurance 	3	0	0	3	30	70	100
2	17IT2802 Open Elective –V*	NPTEL / SWAYAM courses (approved by BOS members)	3	0	0	3	-	100	100
3	17IT5851 Project work	Major Project**	0	5	8	9	30	70	100
Total			6	5	8	15	60	240	300

L-Lecture, T-Tutorial, P-Practical, C-Credits, CE-Continuous Evaluation, SE-Semester End, T-Total Marks

*Open Elective- V may also opt as self-learning course. Students register and complete the opted course in approved MOOCS platform on or before Last Instruction Day of VIII Semester. They have to submit the certificate before the last Instruction Day of VIII Semester. Students who have not opted as a self-learning are required to attend for the class work and internal assessment as per the regular theory course.

**Major project involves continuation of Mini Project. The objective is to complete the work as per the prepared work plan and prepare a detailed project report.

SEMESTER – I

17MA1101 - MATRICES AND DIFFERENTIAL CALCULUS

Course Category:	Institutional Core	Credits:	4
Course Type:	Theory	Lecture -Tutorial-Practice:	3 - 1 - 0
Prerequisites:	Fundamentals of Matrices,	Continuous Evaluation:	30
_	Fundamentals of Calculus,	Semester end Evaluation:	70
	Integration, Differentiation.	Total Marks:	100
	_		

COU	COURSE OUTCOMES													
Upon successful completion of the course, the student will be able to:														
CO1	Dete	Determine Eigen values, Eigen vectors of a matrix.												
CO2	Estimate Maxima and Minima of Multi Variable Functions.													
CO3	Solve	Solve the Linear differential equations with constant coefficients.												
CO4	Solve the Linear differential equations with variable coefficients.													
Contr Media	Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M- Medium, H-High													
	РО	РО	PO	РО	РО	PO	РО	РО	РО	PO	РО	РО	PSO	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3								2		1			
CO2	3								2		1			
CO3	3								2		1			
CO4	3								2		1			

COURSE CONTENT

UNIT I

Matrices: Rank of a Matrix, Elementary transformations, Inverse of a Matrix (Gauss Jordan Method), Consistency of Linear System of Equations, Linear Transformations, Vectors, Eigen values, Properties of Eigen values, Finding Inverse and Powers of a Matrix by Cayley-Hamilton Theorem. Reduction to Diagonal form, Reduction of Quadratic form to Canonical form, Nature of a Quadratic form, Complex matrices.

UNIT II

Differential Calculus: Rolle's Theorem, Lagrange's Mean Value Theorem, Cauchy's Mean Value

Theorem, Taylor's Theorem, Maclaurin's Series.

Application: Curvature, Radius of Curvature.

Functions of two or more Variables: Partial Derivatives, Change of Variables, Jacobians, Taylor's Theorem for Function of two Variables, Maxima and Minima of Functions of two Variables, Lagrange's Method of Undetermined Multipliers.

UNIT III

Differential Equations of First Order: Formation of a Differential Equation, Solution of a Differential Equation, Linear Equations, Bernoulli's Equation, Exact Differential Equations, Equations Reducible to Exact Equations.

Applications: Orthogonal Trajectories, Newton's Law of Cooling.

Linear Differential Equations of Higher Order: Definitions, Operator D, Rules for Finding the Complementary Function, Inverse Operator, Rules for finding Particular Integral, Working Procedure to Solve the Equation.

UNIT IV

Linear Dependence of Solutions, Method of Variation of Parameters, Method of Undetermined Coefficients, Equations Reducible to Linear Equations with Constant Coefficients: Cauchy's Homogeneous Linear Equation, Legendre's Linear Equation, Simultaneous Linear Differential Equations with Constant Coefficients.

Applications: L-C-R Circuits.

TEXT BOOKS

[1] B.S.Grewal, "Higher Engineering Mathematics", Khanna Publishers, 43rd Edition, 2014.

REFERENCE BOOKS

[1] Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, 10th Edition,2015
 [2] B.V.Ramana, "Higher Engineering Mathematics", Tata MC Graw Hill, 1st Edition,2007

[3] N.P.Bali, Dr.Manish Goyal, "A Text Book of Engineering Mathematics", Laxmi Publications, 9th Edition.2014

E-RESOURCES AND OTHER DIGITAL MATERIAL

[1] www.nptel videos.com/mathematics/ (Math Lectures from MIT, Stanford, IIT'S)

- [2] nptel.ac.in/courses/122104017
- [3] nptel.ac.in/courses/111105035

[4] Engineering Mathematics Open Learning Project.

www.3.ul.ie/~mlc/support/Loughborough%20website/

17PH1102B - APPLIED PHYSICS

Course Category:	Institutional Core	Credits:	3
Course Type:	Theory	Lecture -Tutorial-Practice:	3 - 0 - 0
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

COURSE OUTCOMES														
Upon successful completion of the course, the student will be able to:														
CO1	Understand the importance of quantum mechanics.													
CO2	Analyse and understand various types of lasers and their applications.													
CO3	Elaborate different types of optical fibers and understand holography.													
CO 4	4 Understand the fabrication of nanomaterials and carbon Nanotubes.													
Contribution of Course Outcomes towards achievement of Program Outcomes (1– Low, M- Medium, H-High														
	РО 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2
CO1	H													
CO2	Н													
CO3	Н								Μ					
CO4	Η								Μ					

COURSE CONTENT

UNIT-I

Quantum Mechanics: Dual nature of light, Matter waves and Debroglie's hypothesis, G. P. Thomson experiment, Heisenberg's uncertainty principle and its applications (Nonexistence of electron in nucleus, Finite width of spectral lines), One dimensional time independent Schrödinger's wave equation, physical significance of wave function, Particle in a box (One dimension).

UNIT-II

Lasers: Introduction, Characteristics of laser, absorption, spontaneous emission, stimulated emission, pumping, population inversion, cavity resonance, Einstein's coefficients, different types of lasers: solid-state lasers (Ruby, Neodymium), gas lasers (He-Ne, CO₂), dye lasers, applications of

lasers in science, engineering and medicine.

UNIT-III

Fibre Optics: Introduction, Fundamental of optic fibre, Propagation of light through optical fiber, Types of optical fibers, Numerical aperture, Fractional Refractive Index change, V- number and cut-off Parameters of fibres, Fibre attenuation (losses), Fiber optics in communication and its advantages.

Holography: Basic Principle of Holography, construction of the hologram, reconstruction of the image, applications of holography.

UNIT-IV

Nanotechnology: Basic concepts of Nanotechnology, Nano scale, Introduction to nano materials, Surface to volume ratio, General properties of Nano materials, Fabrication of nano materials: Plasma Arcing, Chemical vapour deposition, Characterization of nano materials: AFM, SEM, TEM, STM, Carbon nano tubes: SWNT, MWNT, Formation of carbon nanotubes: Arc discharge, Laser ablation, Properties of carbon nano tubes, Applications of CNT's & Nanotechnology.

TEXT BOOKS

 M.N. Avadhanulu & P.G. Kshirsagar, Engineering Physics, S. Chand publications, Revised Edition, 2014

[2] P.K. Palanisamy, "Applied Physics", Scitech Publications(INDIA) Pvt. Ltd., Fifth Print, 2008.

REFERENCE BOOKS

[1] B. K. Pandey and S. Chaturvedi, 'Engineering Physics' Cengage Learning', Delhi, 2012.

[2] O. Svelto, Principles of Lasers, 5th Edition, Springer, London, 2010

[3] M.R. Srinivasan, "Engineering Physics", New age international publishers, First Edition, 2011.

E-RESOURCES AND OTHER DIGITAL MATERIAL

[1] https://ocw.mit.edu/courses/physics/8-04-quantum-physics-i-spring-2013/lecture-videos/

[2] https://ocw.mit.edu/resources/res-6-005-understanding-lasers-and-fiberoptics-spring-2008/laser-fundamentals-i/

[3] http://nptel.ac.in/courses/112106198/19

[4] https://www.peterindia.net/NanoTechnologyResources.html

17CS1103 - PROBLEM SOLVING METHODS

Course Category:	Institutional Core	Credits:	3
Course Type:	Theory	Lecture -Tutorial-Practice:	2 -1- 0
Prerequisites:		Continuous Evaluation:	30
_		Semester end Evaluation:	70
		Total Marks:	100

COUI	RSE (OUTC	OMES											
Upon	succe	ssful c	omple	tion of	the co	ourse, 1	the stu	dent w	ill be a	able to	:			
CO1	Und algo	erstand rithms	d the	Comp	uter p	oroblem	n solv	ing ap	proach	nes, ef	ficienc	ey and	analy	sis of
CO2	Apply the factoring methods to solve the given problem													
CO3	Apply the array techniques to find the solution for the given problem													
CO4	Solv	ve the p	oroblen	ns usin	g MAT	ΓLAB								
Contr Mediu	ibutic um, H	on of C -High	Course	Outco	mes to	owards	achiev	vemen	t of Pr	ogram	Outco	omes (I	L-Low,	М-
	PO 1	PO 2	PO 2	PO	PO 5	PO	PO 7	PO	PO	PO	PO	PO	PSO 1	PSO
COL	і П		3	4	5	U	/	0	9	10	11	12		2
COI	н	IVI												
CO2	CO2 L H													
CO3	L		Η											
CO4	L	L							Н					

COURSE CONTENT

UNIT - I

Introduction to Computer Problem Solving: Programs and Algorithms, characteristics of an algorithm, Requirements for solving problems by computer; Flowchart, pseudo-code **The Problem – Solving Aspect**: Problem definition phase, Getting started on a problem, Similarities among problems, Working backwards from the solution, General problem-solving strategies; **Top-Down design**: Breaking a problem into sub-problems, Construction of loops, Establishing initial conditions for loops, Finding the iterative construct, Termination of loops;

The Efficiency of Algorithms: Redundant Computations, Referencing array elements, Inefficiency due to late termination, Early detection of desired output conditions, Trading storage

for efficiency gains;

Analysis of Algorithms: Computational complexity, The order notation, Worst and average case behavior.

UNIT - II

Fundamental Algorithms: Problem, Algorithm Development, Algorithm Description - Exchanging values of two variables, Counting, Summation of a set of numbers, Factorial computation, Generation of Fibonacci sequence, Reversing the digits of an Integer. Using pseudo-codes and flowcharts to represent fundamental algorithms.

Factoring Methods: Finding the Square Root of a number: Smallest Divisor of an Integer, GCD of two Integers, Generating Prime numbers, Computing the Prime Factors of an Integer, Raising a Number to a Large Power, Pseudo random number generation, Computing nth Fibonacci number. **UNIT – III**

Array Techniques: Introduction, Array Order Reversal, Array counting, Finding the maximum number in a set, Removal of duplicates from an ordered array, Partitioning an array, Finding The K^{th} Smallest Element.

Merging, Sorting and Searching: Sorting By Selection, Sorting By Exchange, Linear Search, Binary search;

UNIT – IV

MATLAB Environment: User Interface, Syntax and Semantics Operators, Variables and constants: Simple arithmetic calculations. Data types, Control Structures: if...then, loops, Functions, Matrices and Vectors: Matrix manipulations and operations

MATLAB Programming: Reading and writing data, file handling, MATLAB Graphic functions.

TEXT BOOKS

- [1] R.G. Dromey, "How to Solve it By Computer", Prentice-Hall International Series in Computer Science, 1982.
- [2] Bansal.R.K, Goel.A.K, Sharma.M.K, "MATLAB and its Applications in Engineering", Pearson Education, 2012.

REFERENCE BOOKS BOOKS

- [1] Michael Schneider, Steven W. Weingart, David M. Perlman, "An Introduction to Programming and Problem Solving With Pascal", John Wiley and Sons Inc ,1984.
- [2] David Gries, "The Science of Programming", Springer Verlag, 1981.
- [3] ReemaThareja, "Computer Fundamentals and C Programming", Oxford, 2012

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] MATLAB Getting Started Guide <u>http://www.mathworks.com/help/pdf_doc/</u> matlab/getstart.pdf
- [2] <u>http://cs103.net/video-lectures/</u>
- [3] MATLAB Programming, <u>https://www.youtube.com/watch?v=zJm8VHg4TbQ</u>
- [4] https://www.edx.org/learn/matlab

17EE1104 - BASICS OF ELECTRICAL ENGINEERING

Course Category:	Engineering Sciences	Credits:	3
Course Type:	Theory	Lecture -Tutorial-Practice:	3 - 0 - 0
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

COUR	COURSE OUTCOMES													
Upon successful completion of the course, the student will be able to:														
CO1	Anal	Analyze Electric Circuit fundamentals.												
CO2	Und	Understand the basic concepts of Alternating Quantities and Magnetic Circuits												
CO3	Anal	lyze the	e basic	conce	pts of l	Electri	e Mach	ines						
CO4	CO4 Understand Measuring Instruments & Solar Photo Voltaic System concepts													
Contri Mediu	butior m, H-]	ı of Co High	ourse C	Outcon	nes tov	vards	achiev	ement	of Pro	ogram	Outco	mes (l	L-Low,	М-
	РО 1	PO 2	PO 3	РО 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	Н	L			Μ									
CO2	2 H L													
CO3	Μ				Μ									
CO4	Μ													

COURSE CONTENT

UNIT I

Introduction to Electrical Engineering: Electric Current, Electromotive force, Electric power and energy, Basic circuit components- Resistors-Inductors-Capacitors. Electromagnetic Phenomenon and Related Laws, Kirchhoff's laws.

Network Analysis: Network sources-Ideal independent voltage source, Ideal independent current source, Dependent sources, Practical voltage and current sources, Source conversion, Voltage and Current division rule, series and parallel connection of R, L and C, Star-Delta or, Delta-Star transformation. Mesh and Nodal Analysis (with independent sources only).

UNIT II

Alternating Quantities: Introduction; Generation of a.c. voltages, Waveforms and Basic Definitions, Relationship between frequency, speed and number of poles, Root Mean Square and

Average values of alternating current and voltages, Form Factor and Peak Factor, Phasor representation of alternating quantities.

Magnetic Circuits: Introduction, Magnetic Circuits, Magnetic Field Strength (H), Magneto motive Force, Permeability, Reluctance, Analogy between Electric and Magnetic Circuits, Magnetic potential drop, Magnetic circuit computations, Self and Mutual Inductance, Energy in Linear Magnetic Systems.

UNIT III

DC Machines: Introduction, Construction of dc machines, Armature Windings, Generation of dc voltage and torque production in a dc machine, Torque production in a dc Machine, Operation of a dc machine as a generator, Operation of dc machine as a motor.

Induction Motors: Introduction, Constructional features of three-phase induction motors, Principle of operation of three-phase induction motor- Slip and rotor frequency, Voltage and current equations and equivalent circuit of an induction motor.

UNIT IV

Measuring Instruments: Introduction, Classification of instruments, Operating Principles, Essential features of measuring instruments, Ammeters and Voltmeters, Measurement of power.

Solar photovoltaic Systems: Solar cell fundamentals, characteristics, classification, module, panel and array construction, Maximizing the solar PV output and load matching, Maximum Power Point Tracker(MPPT), Balance of system components, solar PV systems and solar PV applications.

TEXT BOOKS

[1] T.K. Nagasarkar and M.S. Sukhja, "*Basic Electric Engineering*", 2nd ed., Oxford University press 2011.

REFERENCE BOOKS

- [1] B.H.Khan, "Non Conventional Energy Resources", 2nd ed., Mc.Graw Hill Education Pvt Ltd., New Delhi, 2013.
- [2] Ashfaq Husain, Haroon Ashfaq, "Fundamentals of Electrical Engineering", 4th ed., Dhanpat Rai & Co, 2014.
- [3] I.J.Nagrath and Kothari , "Theory and problems of Basic Electrical Engineering", 2nd ed., Prentice-Hall of India Pvt.Ltd., 2016.

E-RESOURCES AND OTHER DIGITAL MATERIAL

[1] http://nptel.ac.in/courses/108108076/

Course Category:	Institutional Core	Credits:	3
Course Type:	Theory	Lecture -Tutorial-Practice:	2 - 0 - 2
Prerequisites:	Basic understanding of the	Continuous Evaluation:	30
	language skills ,viz Listening,	Semester end Evaluation:	70
	Speaking, Reading and	Total Marks:	100
	Writing, including Sentence		
	construction abilities		

17HS1105 - TECHNICAL ENGLISH & COMMUNICATION SKILLS

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1	Develop administrative and professional compilations including web related(On-line) communication with felicity of expression
CO2	Demonstrate Proficiency in Interpersonal Communication, in addition to standard patterns of Pronunciation
CO3	Apply the elements of functional English with sustained understanding for authentic use of language in any given academic and/or professional environment
CO4	Execute tasks in Technical communication with competence

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	· ·	0												
	PO 1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2
CO1				М	Н	Н	Н	Н		Μ				
CO2				Н	Н	Н	H	Н		Μ				
CO3	М			Н	Н	Н	Н	Н		Μ				
CO4	L	L	Μ	H	2	Н	H	H		Μ				

COURSE CONTENT

UNIT I

Professional Writing Skills

- Professional Letter- Business, Complaint and Transmittal
- Essay Writing- Descriptive and Analytical
- Administrative and On-line drafting skills –Minutes and Web notes including e-mail

UNIT II

Interpersonal Communication Skills

- Communicative Facet- Speech acts- Extending Invitation, Reciprocation, Acceptance, Concurrence, Disagreeing without being disagreeable
- Articulation-oriented Facet- Transcription using International Phonetic Alphabet, Primary Stress

UNIT III

Vocabulary and Functional English

- ➤ A basic List of 500 words Overview
- > Verbal analogies, Confusables, Idiomatic expressions and Phrasal Collocations
- Exposure through Reading Comprehension- Skimming, Scanning and Understanding the textual patterns for tackling different kinds of questions
- Functional Grammar with special reference to Concord, Prepositions, use of Gerund an Parallelism

UNIT IV

Technical Communication skills:

- Technical Proposal writing
- > Technical Vocabulary- a representative collection will be handled
- Introduction to Executive Summary
- > Technical Report writing(Informational Reports and Feasibility Report

TEXT BOOKS

[1] Martin Cutts, "Oxford guide to Plain English", Oxford University Press, 7th Impression 2011.

[2] TM Farhathullah, "Communication skills for Technical Students", Orient Longman, I Edition 2002

[3] John Langan, "College Writing Skills", McGraw Hill, IX Edition, 2014. "Eclectric Learning materials offered by the Department"

REFERENCE BOOKS

- [1] Randolph Quirk, "Use of English", Longman, I Edition (1968) Reprinted 2004.
- [2] Thomson A.J & A.V, Martinet, "Practical English Grammar", Oxford University Press, III Edition 2001
- [3] V.Sethi and P.V. Dhamija, "A Course in Phonetics and Spoken English", PHI, II Edition 2006

E-RESOURCES AND OTHER DIGITAL MATERIAL

[1] https://www.britishcouncil.org/english Accessed on 15th June 2017
 www.natcorp.ox.ac.uk/Wkshops/Materials/specialising.xml?ID=online Accessed on 15th June 2017

[2]https://www.unimarburg.de/sprachenzentrum/selbstlernzentrum/.../apps_for_esl.pdf Accessed on 15th June 2017

Course Category:	Institutional Core	Credits:	1.5
Course Type:	Laboratory	Lecture - Tutorial-Practice:	0 - 0 - 3
Prerequisites:		Continuous Evaluation:	30
_		Semester end Evaluation:	70
		Total Marks:	100

17PH1151 - APPLIED PHYSICS LABORATORY

COU	RSE C	OUTCO	OMES											
Upon	succes	ssful c	omple	tion of	the co	ourse,	the stu	ıdent v	will be	able t	0:			
CO1	Use	functio	n gene	erator, s	spectro	ometer	and tra	avellin	g micr	oscope	in var	ious ex	perimen	lts
CO2	Test optical components using principles of interference and diffraction of light													
CO3	Determine the V-I characteristics of solar cell and photo cell and appreciate the accuracy in measurements													
Contr Media	ributio um, H	n of C -High	ourse	Outco	mes to	owards	s achie	evemer	nt of P	rograi	n Outo	comes ((L-Low	, M-
	PO	РО	PO	PO	PO	PO	РО	PO	PO	PO	PO	РО	PSO	PSO
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	H M M													
CO2	H													
CO3	H													

COURSE CONTENT

- 1. Photo cell-Study of V-I Characteristics, determination of work function
- 2. Newton's Rings-Radius of curvature of plano convex lens.
- 3. Compound pendulum-Measurement of 'g'
- 4. LCR circuit- Study Resonance
- 5. AC Sonometer Verification of vibrating laws
- 6. Solar cell–Determination of Fill Factor
- 7. Diffraction grating-Wavelength of laser light
- 8. Optical fiber- Study of attenuation and propagation characteristics
- 9. Diffraction grating-Measurement of wavelength of mercury source
- 10. Hall effect -Hall coefficient measurement
- 11. Figure of merit of a galvanometer
- 12. Variation of magnetic field along the axis of current-carrying circular coil

TEXT BOOKS

- [1] Madhusudhan Rao, "Engineering Physics Lab Manual", Ist ed., Scitech Publications, 2015
- [2] Ramarao Sri, Choudary Nityanand and Prasad Daruka, "Lab Manual of Engineering Physics"., Vth ed., Excell Books, 2010

E-RESOURCES

- [1] http://plato.stanford.edu/entries/physics-experiment
- [2] http://www.physicsclassroom.com/The-Laboratory
- [3] http://facstaff.cbu.edu/~jvarrian/physlabs.html

VIRTUAL LAB REFERENCES

- [1] http://vlab.amrita.edu/?sub=1&brch=201&sim=366&cnt=1
- [2] http://vlab.amrita.edu/?sub=1&brch=195&sim=840&cnt=1
- [3] http://vlab.amrita.edu/?sub=1&brch=282&sim=879&cnt=1

1.001101	eenin ermeening		
Course Category:	Institutional Core	Credits:	1
Course Type:	Laboratory	Lecture - Tutorial-Practice:	0 - 0 - 2
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

17CS1152 - COMPUTING AND PERIPHERALS LABORATORY

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Understand and Apply MS Office tools

CO2 Configure the components on the motherboard and install different operating systems

CO3 Understand and configure different storage media

CO4 | Perform Networking, troubleshooting and system administration tasks

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	РО 1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2
CO1	L								Н					
CO2		Н	L											
CO3	Н		L											
CO4			Н						L					

COURSE CONTENT

CYCLE - I:Word Processing, Presentations and Spread Sheets

1. Word Processing:

- a) Create personal letter using MS Word.
- b) Create a resume using MS Word.
- c) Creating project abstract: Features to be covered:- Table of Content, List of Tables, Formatting Styles, Inserting table, Bullets and Numbering, Changing Text Direction, Cell alignment, Footnote, Hyperlink, Symbols, Spell Check, Track Changes.
- d) Creating a Newsletter: Features to be covered:- Table of Content, List of figures, Newspaper columns, Images from files and clipart, Drawing toolbar and Word Art, Formatting Images, Textboxes, Paragraphsand Mail Merge in word.

2. Spread Sheets:

- a) Create a worksheet containing pay details of the employees.
- b) Creating a Scheduler: Features to be covered:- Gridlines, Format Cells, Summation, auto

fill,Formatting Text

- c) Create a worksheet which contains student results: .Features to be covered:- Cell Referencing, Formulae in excel average, Charts, Renaming and Inserting worksheets, Hyper linking, Count function, LOOKUP/VLOOKUP, Sorting, Conditional formatting
- d) Create a worksheet importing data from database and calculate sum of all the columns.

3. Presentations:

- a) Create a presentation using themes.
- b) Save, edit, print and import images/videos to a presentation.
- c) Create a power Point presentation on business by using master layouts, adding animation to a presentation and see the presentation in different views.

4. MS Access:

- a) Create simple table in MS Access for results processing.
- b) Create a query table for the results processing table.
- c) Create a form to update/modify the results processing table.
- d) Create a report to print the result sheet and marks card for the result.

CYCLE - II: Hardware Experiments

- 1. Identification of System Layout: Front panel indicators & switches and Front side & rear side connectors. Familiarize the computer system Layout: Marking positions of SMPS, Motherboard, FDD,HDD, CD, DVD and add on cards. Install Hard Disk. Configure CMOS-Setup. Partition and Format Hard Disk.
- 2. Install and Configure a DVD Writer or a Blu-ray Disc writer.
- 3. Install windows operating system and check if all the device (graphics, sound, network etc.) drivers are installed.
- 4. Install Linux operating system and check the working of all devices (graphics, sound, network etc.) in the computer.
- 5. Assemble a Pentium IV or Pentium Dual Core Pentium Core2 Duo system with necessary peripherals and check the working condition of the PC.
- 6. PC system layout: Draw a Computer system layout and Mark the positions of SMPS, Mother Board, FDD, HDD, and CD-Drive/DVDDrive add on cards in table top / tower model systems.
- 7. Mother Board Layout: Draw the layout of Pentium IV or Pentium Dual core or Pentium Core2 DUO mother board and mark Processor, Chip set ICs. RAM, Cache, cooling fan, I/O slots and I/O ports and various jumper settings.
- 8. Configure BIOS setup program to change standard and advanced settings to troubleshoot typical problems.
- 9. Install and configure Printer/Scanner/Web cam/Cell phone/bio-metric device with system. Troubleshoot the problems

CYCLE – III : Networking

- 1. Prepare an Ethernet/UTP cable to connect a computer to network switch. Crimp the 4 pair cable with RJ45 connector and with appropriate color code.
- 2. Manually configure TCP/IP parameters (Host IP, Subnet Mask andDefault Gateway) for a computer and verify them using IPCONFIG command. Test connectivity to a server system using PING command.
- 3. Creating a shared folder in the computer and connecting to that folder using Universal Naming Convention (UNC) format. (Ex: compute name share name)

- 4. Connects computers together via Switch/ Hub
- 5. Connect different devices via Switch/Hub
- 6. Statically configure IP address and subnet mask for each computer
- 7. Examine non-existent IP address and subnet conflicts
- 8. Configure a computer to connect to internet (using college internetsettings) and troubleshoot the problems using PING, TRACERT and NETSTAT commands.
- 9. Using scan disk, disk cleanup, disk Defragmenter, Virus Detectionand Rectifying Software to troubleshoot typical computer problems.
- 10. Configure DNS to establish interconnection between systems and describe how a name is mapped to IP Address.
- 11. Remote desktop connections and file sharing.
- 12. Installation Antivirus and configure the antivirus.
- 13. Introducing Ethereal, a packet capture tool.

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] Numerical Methods and Programing by Prof.P.B.Sunil Kumar,Department of Physics, IIT Madras https://www.youtube.com/ watch?v=zjyR9e-#1D4&list=PLC5DC6AD60D798FB7
- [2] Introduction to Coding ConceptsInstructor: Mitchell Peabody View the complete course: http://ocw.mit.edu/6-00SCS11

	1.1.11100 2.		
Course Category:	Engineering Sciences	Credits:	1.5
Course Type:	Laboratory	Lecture -Tutorial-Practice:	0 - 0 - 3
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

17ME1153 - BASIC WORKSHOP

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Model and develop various basic prototypes in the Carpentry trade.

CO2 Develop various basic prototypes in the trade of Welding.

CO3 Model and develop various basic prototypes in the trade of Tin Smithy.

CO4 Familiarize with various fundamental aspects of house wiring.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	РО 1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	Н			L										
CO2	Μ			L										
CO3	Μ			L										
CO4	L			L										

COURSE CONTENT

UNIT I

Carpentry:

- a. Study of tools & operations and various carpentry joints.
- b. Practice of open bridle joint, Cross half lap joint, Half LapT Joint, and Dove tail joint
- c. Simple group exercise like preparation of single widow frame.

UNIT II

Welding:

- a. Study of tools and operations of Gas welding and arc welding.
- b. Practice of various joints like weld layer practice, V- Butt Joint, Double parallel fillet joint, T-Joint, and Corner Joint.

UNIT III

Tin Smithy:

- a. Study of tools & operations
- b. Practice of various joints like Saw Edge, Wired Edge, Lap Seam, and Grooved Seam.
- c. Simple exercise like Fabrication of square tray.

UNIT IV

House Wiring:

- a. To connect one lamp with one switch.
- b. To connect two lamps with one switch.
- c. To connect a fluorescent Tube.
- d. Stair case wiring.
- e. Godown wiring.
- f. Study of single phase wiring for a office room.
- g. Nomenclature & measurement of wire gauges and cables.
- h. Estimation of cost of indoor wiring for a wiring diagram (plan of a building).
- i. Test procedure for continuity of wiring in a electric installation.
- j. Measurement of electric energy by using meter.

TEXT BOOKS

- [1] Kannaiah P. & Narayana K. C., "Manual on Workshop Practice", Scitech Publications, Chennai, 1999.
- [2] Venkatachalapathy, V. S., "First year Engineering Workshop Practice", Ramalinga Publications, Madurai, 1999.

REFERENCE BOOKS

[1] Gopal, T.V., Kumar, T., and Murali, G., "A first course on workshop practice – Theory, Practice and Work Book", Suma Publications, Chennai, 2005.

Course Category:	Institutional Core	Credits:	1
Course Type:	Theory	Lecture - Tutorial-Practice:	1 - 0 - 0
Prerequisites:		Continuous Evaluation:	100
		Semester end Evaluation:	0
		Total Marks:	100

17MC1106A - TECHNOLOGY AND SOCIETY

Upon successful completion of the course, the student will be able to: Understand the origins of technology and its role in the history of human progress. **CO1** Know the Industrial Revolution and its impact on Society **CO2** Interpret the developments in various fields of technology till Twentieth Century. **CO3** Distinguish the impacts of Technology on the Environemnt and achievements of great **CO4** scientists. Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High PO PO PO PO PO PO PO PO PO PSO PSO PO PO PO 1 2 3 4 5 6 7 8 9 10 11 12 2 1 Н L **CO1** CO2 Н L Μ CO3 Η L **CO4** Н М L

COURSE CONTENT

COURSE OUTCOMES

UNIT – I

Introduction: Origins of technology, The Agriculture revolution, Technological contributions of ancient civilizations- Mesopotamian, Egyptians, Greeks, Romans, Indians and Chinese. **UNIT - II**

Industrial revolution: The social and political background, The technical background, Steam: The power behind the Indistrial Revolution, The revolution in Textile Indistry, The Imapact of Indutrial Revolution on Society.

UNIT - III

The Flowering of modern technology: Manufacturing Technologies, Prime Movers, Internal Combustion engines, Production of Metals and Allyos, The Birth of Electrical Technology, Twentieth Century: The Flowering of modern technology

UNIT - IV

Technology, Science and Society: Impact of technology on society, The Impacts of Technology on the environment, Sustainable development.

Achievements of famous scientists:

(World): Einestein, Newton, Faraday, Graham Bell, Edison, S.Hawking.

(India): CV Raman, S.Chandrasekhar, Aryabhatta, Homi J Bhabha, Vikram Sarabhai, APJ Abdulkalam, S.Ramanujan, M.Visweswarayya.

TEXT BOOKS

[1] Dr. R.V.G Menon, "Technology and Society", Pearson Education, 2011

REFERENCE BOOKS

[1] Quan-Haase, A., "Technology and Society: Inequality, Power, and Social Networks", Oxford University Press, 2013.

SEMESTER - II

17MA1201 - LAPLACE TRANSFORMS AND INTEGRAL CALCULUS

Course Category:	Institutional Core	Credits:	4
Course Type:	Theory	Lecture -Tutorial-Practice:	3 - 1 - 0
Prerequisites:	Vectors,	Continuous Evaluation:	30
	Curve Tracing.	Semester end Evaluation:	70
		Total Marks:	100

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Solve Linear Differential Equations using Laplace Transforms.

CO2 Examine the nature of the Infinite series.

CO3 Evaluate areas and volumes using Double, Triple Integrals.

CO4 Convert Line Integrals to Area Integrals and Surface Integrals to Volume Integrals.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	РО 1	PO 2	PO 3	PO 4	PO 5	PO 6	РО 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	Н	L												
CO2	Н	L												
CO3	Н	L												
CO4	Н	L												

COURSE CONTENT

UNIT I

Laplace Transforms: Introduction, Definition, Conditions for Existence, Transforms of Elementary functions, Properties of Laplace Transforms, Transforms of Periodic functions, Transforms of Derivatives, Transforms of Integrals, Multiplication by tⁿ, Division by 't', Inverse Transforms, Method of partial fractions, Other methods of finding Inverse Transform, Convolution Theorem, Unit Step and Unit Impulse functions.

Applications: Evaluation of Improper Integrals, Solving Differential equations by Laplace Transform.

UNIT II

Partial Differential Equations: Introduction, Formation of Partial Differential Equations, Solutions of a Partial Differential Equations, Equations Solvable by Direct Integration, Linear Equations of

First Order. Sequence and Series: Convergence of series, Comparison test, Integral test, D'Alembert's Ratio test, Cauchy's Root Test, Alternating series test, Absolute and Conditional convergence.

UNIT III

Integral Calculus: Double Integrals, Change of Order of Integration, Double Integrals in Polar Coordinates, Triple Integrals, Change of Variables. **Applications:** Area enclosed by Plane Curves, Volumes of Solids.

Special Functions: Beta Function, Gamma Function, Relation between Beta and Gamma Function, Error Function.

UNIT IV

Vector Calculus: Scalar and Vector point functions, Del applied to Scalar point functions, Del applied to Vector point functions, Physical interpretation of Divergence, Del applied twice to point functions, Del applied to products of point functions. Integration of Vectors, Line Integral, Surface Integral, Green's Theorem in a plane, Stokes's Theorem, Volume Integral, Gauss Divergence Theorem, Irrotational Fields.

TEXT BOOKS

[1] B.S.Grewal, "Higher Engineering Mathematics, Khanna Publishers", 43rd Edition, 2014.

REFERENCE BOOKS

 [1] Erwin Kreyszig, "Advanced Engineering Mathematics", John Wiley & Sons, 10th Edition, 2015

[2] B.V.Ramana, "Higher Engineering Mathematics", Tata MC Graw Hill, 1st Edition, 2007

[3] N.P.Bali, Dr.Manish Goyal, "A Text Book of Engineering Mathematics", Laxmi Publications, 9th Edition, 2014

E-RESOURCES AND OTHER DIGITAL MATERIAL

[1] <u>www.nptel</u> videos.com/mathematics/ (Math Lectures from MIT,Stanford,IIT'S)

- [2] nptel.ac.in/courses/122104017
- [3] nptel.ac.in/courses/111105035
- [4] Engineering Mathematics Open Learning Project.

www.3.ul.ie/~mlc/support/Loughborough%20website/

17CH1202A - ENGINEEERING CHEMISTRY

Course Category:	Institutional Core	Credits:	3
Course Type:	Theory	Lecture-Tutorial-Practice:	3-0-0
Prerequisites:	Knowledge of chemistry at	Continuous Evaluation:	30
	Intermediate level	Semester end Evaluation:	70
		Total Marks:	100

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Analyze various water treatment methods and boiler troubles	
---	--

CO2	Apply the principles of spectroscopic techniques to analyse different materials	and
	apply the knowledge of conventional fuels for their effective utilisation.	

CO3	Apply the knowledge of working principles of conducting polymers, electrodes an	nd
	batteries for their application in various technological fields.	

CO4 Evaluate corrosion processes as well as protection methods.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, 2-Medium, 3- High)

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1		Н												
CO2	Μ													
CO3														
CO4			Μ						H					

COURSE CONTENT

UNIT I

Water technology-I: WHO standards - Water treatment for drinking purpose - sedimentation, coagulation, filtration, disinfection by chlorination, breakpoint chlorination and its significance - Desalination of brackish water - principle and process of electrodialysis and reverse osmosis, advantages and disadvantages.

Water technology-II: Boiler troubles - scales-formation, disadvantages and internal conditioning methods - phosphate conditioning, calgon conditioning and sodium aluminate, caustic embrittlement- reasons, mechanism and its control, and boiler corrosion – causes and control. UNIT II

Spectroscopic Techniques and Applications: Interaction of electromagnetic radiation with matter - Ultraviolet-visible spectroscopy: Frank-Condon principle, types of electronic transitions, Lambert-Beer's law – definition and numerical problems, problems on interpretation of UV-visible spectra of simple molecules of arenes, aldehydes and ketones. Infrared (IR) spectroscopy: Principle, types of vibrations, problems on interpretation of IR spectra of simple molecules of amines, alcohols, aldehydes and ketones.

Fuel Technology: Fuel-definition, calorific value- lower and higher calorific values, analysis of coal – proximate analysis and ultimate analysis, refining of petroleum, flue gas analysis by Orsat's

apparatus, numericals based on calculation of air required for combustion **UNIT III**

Conducting polymers: Definition, examples, classification-intrinsically conducting polymers and extrinsically conducting polymers- mechanism of conduction of undoped polyacetylene, doping of conducting polymers- mechanism of conduction of p-doped and n-doped polyacetylenes – applications of conducting polymers.

Electrochemistry: Construction and working of Calomel electrode, silver-silver chloride electrode and principle, construction and working of glass electrode, determination of pH using glass electrode - Chemistry of modern batteries - Li/SOCl_2 battery and $\text{Li}_x\text{C/LiCoO}_2$ battery - construction, working and advantages, Chemistry of H₂-O₂ fuel cell-advantages. **UNIT IV**

Corrosion principles: Introduction, definition, reason for corrosion, examples – electrochemical theory of corrosion, types of electrochemical corrosion - hydrogen evolution and oxygen absorption – corrosion due to dissimilar metals, galvanic series – differential aeration corrosion – pitting corrosion and concept of passivity.

Corrosion control methods: Cathodic protection- principle and types - impressed current method and sacrificial anode method, anodic protection-principle and method, corrosion inhibitors – types and mechanism of inhibition – principle, process and advantages of electroplating and electroless plating.

TEXT BOOKS

[1] Shikha Agarwal, "Engineering Chemistry – Fundamentals and Applications", Cambridge University Press, New Delhi, 1st edition (2015).

REFERENCE BOOKS:

- [1] Sunita Rattan, "A Textbook of Engineering Chemistry", S.K. Kataria & Sons, New Delhi, First edition 2012.
- [2] P.C. Jain , "Engineering Chemistry", Dhanpat Rai Publishing Company (P) Limited, New Delhi, 15th edition.
- [3] B.S. Bahl, G. D. Tuli and Arun Bahl, "Essentials of Physical Chemistry", S. Chand and Company Limited, New Delhi.
- [4] O. G. Palanna, " Engineering Chemistry", Tata McGraw Hill Education Pvt. Ltd., New Delhi.
- [5] Y.Anjaneyulu, K. Chandrasekhar and Valli Manickam, Text book of Analytical Chemistry, , Pharma Book Syndicate, Hyderabad.
- [6] H. Kaur, Spectroscopy, I Edition, 2001, Pragati Prakashan, Meerut.

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] http://www.cip.ukcentre.com/steam.htm
- [2] http://corrosion-doctors.org/Modi;es/mod-basics.htm
- [3] http://nopr.niscair.res.in/bitstream/123456789/5475/1/JSIR%2063%289%29%20715-728.pdf
- [4] https://chem.libretexts.org/Core/Analytical_Chemistry/Electrochemistry/Basics_of_Electroc hemistry
- [5] http://www.filtronics.com/blog/tertiary-treatment/stages-in-typical-municipal-watertreatment/
- [6] https://www.khanacademy.org/test-prep/mcat/physical-processes/infrared-and-ultraviolet-visible-spectroscopy/e/infrared-and-ultraviolet-visible-spectroscopy-questions

- [7] NPTEL online course, "Analytical Chemistry", offered by MHRD and instructed by Prof. Debashis Ray of IIT Kharagpur.
- [8] NPTEL online course, "Corrosion Part-I" offered by MHRD and instructed by Prof. Kallol Mondal of IIT Kanpur

Course Category:	Institutional Core	Credits:	3
Course Type:	Theory	Lecture - Tutorial-Practice:	3 - 0 - 0
Prerequisites:	Problem Solving Methods.	Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

17CS1203 - PROGRAMMING IN C

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Understand the fundamentals and structure of a C programming language

CO2	Apply the loops arrays	functions and string concents in ([¬] to solve the given problem
	Apply the loops, allays,	rune nons and sumg concepts in c	solve the given problem.

CO3 Apply the pointers and text input output files concept to find the solution for the given applications.

CO4 Use the Enumerated, Data types, Structures and Unions.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	H													
CO2		L	Н											
CO3		L	Н											
CO4	H	L												

COURSE CONTENT

UNIT - I

Introduction to the C Language : Background, C Programs, Identifiers, Types, Variables, Constants, Input/Output, Programming Examples.

Structure of a C Program: Expressions, Precedence and Associatively, Evaluating Expressions, Type Conversion, Statements, Sample Programs.

Selection: Storage Class, Logical Data and Operators, Two -Way Selection, Multiway Selection, More Standard Functions

UNIT - II

Repetition: Concept of a Loop Loops In C, Loop Examples, Recursion, The Calculator Program. **Arrays:** Concepts, Using Array in C, Inter-Function Communication, Array Applications, Two Dimensional Arrays, Multidimensional Arrays.

Functions: Functions in C, User Defined Functions, Inter Function Communication, Standard

Functions, Scope.

Strings: String Concepts, C Strings, String Input / Output Functions, Arrays of Strings, String Manipulation Functions, String- Data Conversion.

UNIT - III

Pointers: Introduction, Pointers For Inter Function Communications, Pointers to Pointers, Compatibility, Lvalue and Rvlaue.

Pointer Applications: Arrays and Pointers, Pointer Arithmetic and Arrays, Passing an Array to a Function, Memory Allocations Functions, Array of Pointers.

Text Input/output: Files, Streams, Standard Library Input/Output Functions, Formatting Input/output Functions and Character Input/Output Functions, Command-Line Arguments. **UNIT - IV**

Enumerations: The Type Definition(Typedef), Enumerated Types: Declaring an Enumerated Type, Operations on Enumerated Types, Enumeration Type Conversion, Initializing Enumerated Constants, Anonymous Enumeration: Constants, Input/Output Operators.

Structures: Structure Type Declaration, Initialization, Accessing Structures, Operations on Structures, Complex Structures, Structures and Functions, Sending the Whole Structure, Passing Structures through Pointers.

Unions: Referencing Unions, Initializers, Unions and Structures, Internet Address, Programming Applications.

TEXT BOOKS

[1] Behrouz A. Forouzan & Richard F. Gilberg, "Computer Science A Structured Programming Approach using C", CENGAGE Learning, Third Edition.

REFERENCE BOOKS

- [1] Kernighan and Ritchie, "The C programming language", The (Ansi C Version), PHI, second edition.
- [2] Yashwant Kanetkar, "Let us C", BPB Publications, 2nd Edition 2001.
- [3] Paul J. Dietel and Dr. Harvey M. Deitel, "C: How to Program", Prentice Hall, 7th edition (March 4th, 2012).
- [4] Herbert Schildt, "C:The Complete reference", McGraw Hill, 4th Edition, 2002.

[5] K.R.Venugopal, Sundeep R Prasad, "Mastering C", McGraw Hill, 2nd Edition, 2015

Tree 1204M - DASIC ELECTRONIC ENON EERING										
Course Category:	Institutional Core	Credits:	3							
Course Type:	Theory	Lecture -Tutorial-Practice:	3-0-0							
Prerequisites:		Continuous Evaluation:	30							
		Semester end Evaluation:	70							
		Total Marks:	100							

17EC1204A - BASIC ELECTRONIC ENGINEERING

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Fundamentals of electronic components, devices, transducers

CO2 Principles of digital electronics

CO3 Principles of various communication systems.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	PO 1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	H	Н			Μ									
CO2	H	Н												
CO3	M				Μ									

COURSE CONTENT

UNIT I

Electronic Components: Passive components - resistors, capacitors &inductors (properties, common types, I-V relationship and uses). Semiconductor Devices: Semiconductor Devices - Overview of Semiconductors - basic principle, operation and characteristics of PN diode, Zener diode, BJT, JFET, optoelectronic devices (LDR, photodiode, phototransistor,solar cell, photo couplers).

UNIT II

Transducers: Transducers - Instrumentation - general aspects, classification of transducers, basic requirements of transducers, passive transducers - strain gauge, thermistor, Hall-Effect transducer, LVDT, and active transducers - piezoelectric and thermocouple.

UNIT III

Digital Electronics: Number systems - binary codes - logic gatesBoolean algebra, laws & theorems - simplification of Boolean expression - Implementation of Boolean expressions using logic gates – standard forms of Boolean expression.
UNIT IV

Communication Systems: Block diagram of a basic communication system - frequency spectrum - need for modulation - methods of modulation - principles of AM, FM, pulse, analog and pulse digital modulation - AM / FM transmitters & receivers (block diagram description only).

TEXT BOOKS

- [1] Thyagarajan.T, SendurChelvi.K.P, Rangaswamy, "Engineering Basics: Electrical, Electronics and computer Engineering", T.R, New Age International, Third Edition, 2007.
- [2] Somanathan Nair.B, Deepa.S.R, "Basic Electronics", I.K. International Pvt. Ltd., 2009.

REFERENCE BOOKS

- [1] Thomas L. Floyd, "Electronic Devices", Pearson Education, 9th Edition, 2011.
- [2] Rajput.R.K, "Basic Electrical and Electronics Engineering", Laxmi Publications, First Edition, 2007.

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] http://www.nptel.ac.in/courses/Webcourse-contents/IIT-ROORKEE/ BASIC-ELECTRONICS/ home page.html
- [2] http://nptel.ac.in/video.php?subjectId=117102059

17ME1205 - ENGINEERING GRAPHICS

Course Category:	Institutional Core	Credits:	4
Course Type:	Theory & Practice	Lecture -Tutorial-Practice:	2-0-4
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

COURSE OUTCOMES:

Upon successful completion of the course, the student will be able to:

CO1 Understand the Scales, conics and Cycloidal curves.

CO2	Draw Orthographic projections of points, Lines, Planes and Solids
-----	---

CO3	Understand Sectional views of Solids, Development of surfaces and their representation
CO4	Construct isometric scale, isometric projections ,isometric views and convert pictorial

views to orthographic projections

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	Н			Н							L			
CO2	М			Н							М			
CO3	М			М							М			
CO4	L			Н							М			

COURSE CONTENT

UNIT -I

Introduction to Engineering Drawing: Principles of Engineering Graphics and their Significance **Scales**: Construction of plain and diagonal Scales

Conic Sections: Construction of ellipse, parabola and hyperbola (Treatment is limited to Eccentricity or General method only)

Engineering Curves: Cycloidal curves - Cycloid, Epicycloid and Hypocycloid UNIT-II

Orthographic Projections: Principles of Orthographic Projections –Projections of Points, Lines (Treatment is limited to First Angle Projection) and Projections of Plane regular geometric figures (Up to Plane Inclined to both of the Reference planes)

UNIT – III

Projections of Solids: Projections of simple solids such as Cubes, Prisms, Pyramids, Cylinders and Cones with varying positions (Limited to Solid Inclined to one of the Reference planes) **Sections of Solids**: Sections of solids such as Cubes, Prisms, Pyramids, Cylinders and Cones. True shapes of sections(Limited to the solids perpendicular to one of the Principal Planes) **UNIT – IV**

Development of Surfaces: Lateral development of cut sections of Cubes, Prisms, Pyramids, Cylinders and Cones

Isometric Projections: Isometric Projection and conversion of isometric views into Orthographic

Projections (Treatment is limited to simple objects only)

Conventions Auto CAD: Basic principles only (Internal assessment only)

Text Books

- [1] N.D. Bhatt & V.M. Panchal, "Elementary Engineering Drawing", Charotar Publishing House, Anand. 49th Edition – 2006
- [2] Basanth Agrawal & C M Agrawal," Engineering Drawing", McGraw Hill Education Private Limited, New Delhi

Reference Books

- K. L. Narayana & P. Kannaiah, "Text Book on Engineering Drawing", Scitech publications (India) Pvt. Ltd., Chennai, 2nd Edition - fifth reprint 2006
- [2] K. Venugopal, "Engineering Drawing and Graphics + Auto CAD", New Age International, New Delhi
- [3] D M Kulkarni, AP Rastogi, AK Sarkar, "Engineering Graphics with Auto CAD", PHI Learning Private Limited, Delhi Edition – 2013

E-Resources and other digital material

[1] http://www.youtube.com/watch?v=XCWJ XrkWco, Accessed On 01-06-2017.

- [2]http://www.me.umn.edu/courses/me2011/handouts/drawing/blanco-tutorial.html is so drawing, Accessed On 01-06-2017.
- [3] http://www.slideshare.net, Accessed On 01-06-2017.
- [4] http://edpstuff.blogspot.in, Accessed On 01-06-2017.

Course Category:	Institutional Core	Credits:	1.5
Course Type:	Laboratory	Lecture -Tutorial-Practice:	0 - 0 - 3
Prerequisites:	Knowledge of chemistry	Continuous Evaluation:	30
_	practicals at intermediate	Semester end Evaluation:	70
	level	Total Marks:	100

17CH1251 - ENGINEERING CHEMISTRY LABORATORY

COURSE OUTCOMES

Upon successful completion of the course, the student will be able to:

CO1 Analyze quality parameters of water samples from different sources

CO2 Perform quantitative analysis using instrumental methods.

CO3 Apply the knowledge of mechanism of corrosion inhibition, metallic coatings and photochemical reactions.

Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H-High

	PO 1	PO 2	PO 3	РО 4	РО 5	PO 6	РО 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1			H											
CO2									М					
CO3		Μ												

COURSE CONTENT

List of Experiments:

- 1. Determination of total alkalinity of water sample
- 2. Determination of chlorides in water sample
- 3. Determination of hardness of water sample
- 4. Determination of available chlorine in bleaching powder
- 5. Determination of copper in a given sample
- 6. Determination of Mohr's salt Dichrometry
- 7. Determination of Mohr's salt Permanganometry
- 8. Determination of purity of boric acid sample
- 9. Conductometric determination of a strong acid using a strong base
- 10. pH metric titration of a strong acid vs. a strong base
- 11. Determination of corrosion inhibition efficiency of an inhibitor for mild steel
- 12. Chemistry of Blue Printings
- 13. Preparation of Urea-Formaldehyde resin

REFERENCE BOOKS

- [1] S.K. Bhasin and Sudha Rani, "Laboratory Manual on Engineering Chemistry", Dhanpat Rai Publishing Company, New Delhi, 2nd edition.
- [2] Sunitha Rattan, "Experiments in Applied Chemistry", S.K. Kataria & Sons, New Delhi, 2nd edition.

Course Category:	Institutional Core	Credits:	1.5
Course Type:	Laboratory	Lecture -Tutorial-Practice:	0 - 0 - 3
Prerequisites:		Continuous Evaluation:	30
		Semester end Evaluation:	70
		Total Marks:	100

17CS1252 - COMPUTER PROGRAMMING LABORATORY

Upon	succes	sful co	omplet	ion of	the co	urse, t	he stu	dent w	ill be a	able to	:			
CO1	Imple langu	Implement the use of programming constructs in a structured oriented programming language												
CO2	Anal	yze an	d imple	ement u	user de	fined f	unction	ns to sc	olve rea	al time	proble	ms		
CO3	Imple	ement	the usa	ge of p	pointer	s and f	ile ope	rations	on da	ta				
CO4	Imple	ement	the use	r defin	ed data	a types	via st	ructure	s and u	unions	to solv	e real l	ife prob	olems
Contr (L-Lo	ibutio w, M-1	n of C Mediu	ourse m, H-	Outcor High	mes to	wards	achiev	vemen	t of Pr	ogram	Outco	omes		
	PO 1	PO 2	PO 3	РО 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	L		Н											
CO2		L	Н											
CO3		L	Н											
CO4			Н								L			

COURSE CONTENT

COURSE OUTCOMES

CYCLE – I : PROGRAMMING CONSTRUCTS AND CONTROL STRUCTURES

- 1. Introduction to C Pogramming:
 - a) Use of Turbo C IDE
 - b) The Structure of C Program with Sample program
- 2. Data Types and Variables:
 - a) Programs to usage of keywords and identifiers in c
 - b) Programs on declaration of variables, rules for naming a variable, constants and different type of constants, data types
 - c) Programs to perform on various operators in C
- 3. Branching and Selection:
 - a) To specify the conditions under which a statement or group of statements should be executed.

- b) To choose exactly one out of two statements (possibly compound statements) to be executed; specifies the conditions under which the first statement is to be executed and provides an alternative statement to execute if these conditions are not met.
- c) To choose one statement (possibly compound) to be executed from among a group of statements (possibly compound); specifies the conditions under which each statement may be executed and may contain a default statement (in an else clause at the end) to be executed if none of these conditions are met. Note that in the absence of a final else clause, it may be the case that none of the statements are executed.
- 4. Unconditional control Transfer statements in C:
 - a) Design and develop programs that use of goto Statement
 - b) Design and develop programs that the use of Break Statement
 - c) Design and develop programs that use of Continue Statement
- 5. Looping constructs:
 - Design and develop programs based on
 - a) Iterative loops using While, Do While, For, Nested For
 - b) Selection Statement using the switch-case Statement
 - c) Multiple way selections that will branch into different code segments based on the value of a variable or expression
- 6. Arrays
 - a) Design and develop programs which illustrates the implementation of single-dimensional arrays and Multi dimensional arrays
- 7. Strings
 - a) Create programs to initialize strings and usage of them for various input, output operations.
 - b) Design and develop programs to handle String functions

CYCLE - II: ADVANCED PROGRAMMING CONSTRUCTS

1.Concept of user defined functions

- a) Design and develop programs depending on functions both user defined and standard library functions in C with different approaches.
- 2. File handling operations
 - a) FILE structure
 - b) Opening and closing a file, file open modes
 - c) Reading and writing operations performed on a file
 - d) File Pointers: stdin, stdout and stderr
 - e) FILE handling functions: fgetc(), fputc(), fgets() and fputs() Functions
- 3. Pointers:
 - a) Programs on declaration of pointers and their usage in C
 - b) Programs to relate between arrays and pointers and use them efficiently in a program
 - c) To pass pointers as an argument to a function, and use it efficiently in program
- 4. Command Line Arguments
 - a) Design and develop programs that accept arguments from command line to perform different kinds of operations
- 5. Structures and Unions
 - a) Programs to define, declare and access structure and union variables
 - b) Design and develop programs to work with pointers to access data within a structure

Programs to pass structure as an argument to a function

TEXT BOOKS

[1] Ashok N Kamthane, "C And Data Structures", Pearson Education; First edition, 2008

REFERENCE BOOKS

- [1] Brain W Kernighan and Dennis Ritchie, "The C Programming language", Pearson Education India,2015
- [2] David Griffiths and Dawn Griffiths, "Head First C":A Brain Friendly Guide, O:Reilly media, 2012

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] Introduction to Programming C: http://nptel.ac.in/courses/106104128/ C-Programming - IIT Kharagpur lectures
- [2]https://www.youtube.com/watch?v=S47aSEqm_0I&list=PLeCxvb23g7hrw27XlekHtfygUTQ0T mFfP
- [3] Numerical Methods and Programing by Prof.P.B.Sunil Kumar, Department of Physics, IIT Madras https://www.youtube.com/watch?v=zjyR9e-N1D4& list=PLC5DC6AD60D798FB7

Course Category:	Mandatory Learning	Credits:	-
Course Type:	Theory	Lecture -Tutorial-Practice:	2 - 0 - 0
Prerequisites:		Continuous Evaluation:	100
		Semester end Evaluation:	0
		Total Marks:	100

17MC1206B - PROFESSIONAL ETHICS & HUMAN VALUES

COUR	SE OUT	ГСОМ	ES											
Upon s	uccessfi	ıl comj	pletion	of the	cours	e, the	stude	nt will	be ab	ole to:				
CO1	Know	the mo	oral aut	onomy	and u	ses of	ethica	l theor	ries.					
CO2	Under	stand n	norals,	Hones	ty and	charao	cter.							
CO3	Under	stand a	bout sa	ıfety, ri	isk and	l profe	ssiona	l right	s.					
CO4	Know weapo	the eth	iics reg velopm	arding ent.	Globa	l issue	es relat	ed to l	Enviro	nment	, Com	puters	and	
Contril Mediur	bution o m, H-Hi	of Cour igh	se Out	comes	towa	rds ac	hiever	nent o	of Prog	gram	Outco	mes (l	L -Low ,	М-
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2
CO1	M													
CO2								Μ						
CO3					Н									

COURSE CONTENT

UNIT I

CO4

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issues- types of inquiry - moral dilemmas - moral autonomy - Kohlberg's theory -Gilligan's theory - consensus and controversy - Models of Professional Roles -theories about right action - Self-interest - customs and religion- uses of ethical theories.

UNIT II

Human Values:Morals, Values and Ethics - Integrity- Work Ethic – Service Learning - Civic Virtue - Respect for Others - Living Peacefully - caring – Sharing - Honesty - Courage - Valuing Time - Co-operation - Commitment –Empathy - Self-Confidence - Character - Spirituality . UNIT III

Engineering as Social Experimentation: Engineering as experimentation – engineers as

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

Μ

responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study, Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk – the three mile island and chernobyl case studies. Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination. **UNIT IV**

Global Issues: Multinational corporations- Environmental ethics- computer ethics - weapons development - engineers as managers-consulting engineers-engineers as expert witnesses and advisors -moral leadership-sample code of Ethics (Specific to a particular Engineering Discipline).

TEXT BOOKS

- [1] Mike Martin and Roland Schinzinger, "Ethics in engineering", McGraw Hill, New York (1996).
- [2] Govindarajan M, Natarajan S, Senthil Kumar V. S., "Engineering Ethics", Prentice Hall of India, New Delhi(2004).

REFERENCE BOOKS

- [1] Baum, R.J. and Flores, A., "Ethical Problems in Engineering, Center for the studyof the Human Dimensions of Science and Technology", Rensellae Polytechnic Institute, Troy, New York, 335 pp. eds. (1978)
- [2] Beabout, G.R., Wennemann, D.J., "Applied Professional Ethics: A Developmental Approach for Use with Case Studies", University Press of America Lanham, MD, 175 pp (1994).

E-RESOURCES AND OTHER DIGITAL MATERIAL

- [1] R.S Naagarazan, https://soaneemrana.org/onewebmedia/Professional%20Ethics%20and%20Human%20Value s%20by%20R.S%20NAAGARAZAN.pdf
- [2] https://www.youtube.com/watch?v=vS31O3XfH_0
- [3] https://www.youtube.com/watch?v=krGRP-Iq2SM
- [4] https://www.voutube.com/watch?v=WUlwtUHxREw

SEMESTER - III

Course Categ	gory:	Math	emati	cs III					Crea	lits:					4
Course Type:		Theory								ure-7	Futor	ial-P	ractio	e:	3-1-0
Prerequisites	:	17M	A120	1 - La	place	rran	sform	s	Cont	tinuo	us Ev	alua	tion:		30
		And	Integr	al Ca	lculu	S									
									Som	•	70				
									Tota	l Ma	rlze.	uv aiu			100
Course	Unon	SUCCE	eefiil a	comn	letior	ofth	e cour	se f	he stu	dent :	will h	e able	e to:		100
Outcomes	CO1	Det	ermin	e ana	lytic	non-	analyti	$\frac{30, t}{c fin}$	nction	s and	evalı	iate c	ompl	ex int	eorals
outcomes	CO^2	Ana	lvze	Tavle	nr La	urent	serie	s and	d eval	luate	real	defini	ite int	teoral	s ilsing
	002	resi	due th	leorei	n, Et n	i ui ein		5 un	u evu	iuute	Tour	aeriin		.051ui	5 using
	CO3	Soly	ve A	lgehr		trans	cender	ntal	syste	em o	of ec	matio	ns a	nd e	estimate
	000	func	inctions using polynomial interpolation												
	CO4	Solv	olve initial and boundary value problems numerically												
Contribution		Р	Р	Р	Р	Р	PO	P	Р	Р	Р	P	Р	PSC) PS
of Course		0	0	0	0	0	6	0	0	0	0	0	0	1	O 2
Outcomes		1	2	3	4	5		7	8	9	10	11	12		
towards	CO1	Н	М												
achievement	CO2	Н	М												
Outcomes	CO3	Н	М		Μ	Μ								L	L
(L-Low, M-	CO4	Н	М		Μ	Μ								L	L
Medium, H-															
High)															
Course	UNII			•т	4 1	<i>.</i> .		•,	C	1 .	л .				1.
Content	Com	plex A	nalys	sis: In	itrodu	iction	, conti	nuit	y, Cau	ichy-	Kiema	ann e	quatio	ons. A	Analytic
	integr	olls, n	arino		http://www.	ntear	al form	mai	systen	lis, C	ompie		egrati	on, c	aucity s
	IINIT		леш,	Cauc	11y 5 1	ntegr		iuia							
	Taylo	r's se	ries	Laur	ent's	serie	es Ze	eros	and	sing	ulariti	es 1	Resid	ue tł	ieorem
	calcul	lation	of res	idues	. eval	uatio	n of re	al de	efinite	integ	grals (by an	plvin	g the	residue
	theore	em).			,						, (- J - I	гJ	0	
	Stand	ard tra	nsfor	matic	ons: T	ransl	ation -	Mag	gnifica	ation	and F	Rotati	on – I	nvert	ion and
	reflec	tion - I	Biline	ear tra	nsfor	matic	on.								
	UNIT	TIII:													
	Num	erical	Met	hods:	Sol	ution	of A	lgeb	oraic	and	Trans	cende	ental	Equa	tions :
	Introc	luction	ı, Nev	vton ·	- Rap	hson	metho	d, So	olution	n of s	imult	aneou	is line	ear eq	luations
	– Gau	ISS Elli	minat	10n N	letho	d - Ga	uss - S	Seide	el itera	ative	metho	od.	. 1	1	$C \rightarrow 1$
	Diffe	polatio	on: 1	ntrod	UCTIOI	1, F11 tiona	Diffe	niner	rences	- r	orwa	ra, E		ara,	Central
	for in	tornol	, Sym otion	Con	trol c	uons, liffor		atorr	es of	a por	ynom	a_{1}	newlo		orling's
	Resse	Pagal'a formulae Interpolation with unaqual intervala. Lagrange's and Newton's													
	Interr	olation	n forn	nulae	rpoia		viui ui	icqu		21 v a15		Brang	se s a		SW 1011 S
	UNIT	TIV:			-										
	Num	erical	Diffe	erenti	iation	An	d Inte	grat	tion :	Fine	ling	first	and s	secon	d order
	differ	entials	using	g Nev	vton's	form	ulae.	Trap	ezoid	al rul	e and	Sim	osons	1/3 R	lule

17MA1301 - COMPLEX ANALYSIS AND NUMERICAL METHODS

		Numerical Solutions of Differential Equations: Taylor's series method Picard's
		method. Euler's method, Runge - Kutta method of 4th order, Boundary value
		problems, Solution of Laplace's and Poisson's equations by iteration.
Text	books	Text Book(s):
and		[1].B.S.Grewal, "Higher Engineering Mathematics",
Refere	ence	43 rd Edition,KhannaPublishers, 2014
books		
		Reference Book(s):
		[1].Krezig, "Advanced Engineering Mathematics", 8 th Edition, JohnWiley&
		Sons.2007,
		[2].R.K.Jain and S.R.K.Iyengar, "Advanced Engineering Mathematics",
		3 rd Edition, Narosa Publishers.
		[3].N.P.Bali, Manish Goyal, "A Text book of Engineering Mathematics",
		1 st Edition, Lakshmi Publications (P) Limited, 2011
		[4].H.K.Das, Er. RajnishVerma, "Higher Engineering Mathematics",
		1 st Edition, S.Chand& Co., 2011.
		[5]. S. S. Sastry, "Introductory Methods of Numerical Analysis", PHI, 2005.
E-reso	urces	[1]. faculty.gvsu.edu/fishbacp/complex/complex.html.
and	other	[2]. nptelvideolectures/iitm.ac.in
digital		[3]. https://nptel.ac.in/courses/111/107/111107056/
materi	ial	[4]. Prof R.Usha, IIT Madras, Numerical Analysis, 2017
		https://nptel.ac.in/courses/111/106/111106101/

Course	Р	rogrami	ne Co	ore				C	Credit	s:				3	
Category:															
Course Type	e: T	heory						L	lectur	e-Tu	torial	-Pra	ctice:	2-1	-0
Prerequisite	s: E	Basic cor	ncept	s of S	et The	eory		C	Contin	uous	Eval	uatio	n:	30	
								S	Semest	er er	nd Ev	aluat	ion:	70	
								Т	Fotal N	Aark	s:			100)
Course	Upor	n succes	sful c	ompl	etion	of the	e cour	se, th	ne stud	ent v	vill be	able	to:		
Outcomes	CO1	Und	lersta	nd the	e logio	cal in	ferenc	e and	d cou	nting	techn	iques	5		
	CO2	Clas	sify t	functi	ons, r	elatic	ons an	d con	ncepts	of ge	enerat	ing fu	inctio	ns.	
	CO3	Solv	ve rec	urren	ce rel	ation	s and	unde	rstand	the c	concep	pts of	Grou	ps and	their
		prop	bertie	S.											
	CO4	Clas	sify (Group	os and	Grap	oh iso	norp	hism.		1	1	r		
Contributio		Р	Р	Р	Р	Р	Р	PO	Р	Р	Р	Р	Р	PSO	PS
n of Course		0	0	0	0	0	0	7	0	0	0	0	0	1	O 2
towards	~ ~ .	1 2 3 4 5 6 8 9 10 11 12 D1 H <th>_</th>													_
achievement	CO1	D1 H H H D2 H H H													L
of Program	CO2	D2 H H H D2 H H H													L
Outcomes	CO3	D3 H H L L													L
(L-Low, M-	CO4	D4 H L I L <thl< th=""> L <thl< th=""> <thl< th=""></thl<></thl<></thl<>													
Medium, H-															
High)															
Course	UNI			• •	. .	C 4		G (/ 1	1			<i>.</i> .		
Content	Mat	nematic	al Lo Jatia	gic: I	Basic	Stru		S: Set	ts and	SUDS	ets, se	t ope	ration	S)	4 1
	I ne	Found	Dro	ns: licata	Logi		la P	r001	S-Prop	infor	onal	L0g Intro	lC, f	roposi	tional
	Court	ating B	, PIE		s and	Quar σ Dic	lumer:	s, Ku sle ni	rincin		ence, rmuta	tions	and c	ombin	ations
	UNI	T II.	asics	0100	unun	g, 1 1 <u>8</u>	çconn	ne pi	meip	c, pc	muta			UIIIUIII	ations
	Rela	1 11. tions an	d Fu	nctio	ns• R	elatio	ons an	d the	ir Pro	nerti	es fu	nction	ns- on	e to or	ne and
	onto	functio	ns e	aniva	lence	rela	tion	nartiz	al ord	ler re	elation	ns P	OSET	and	Hasse
	diagr	ams.	, u	quira		1014	,	purti				, 1	0021	unu	110550
	Gene	erating	Func	tions	: Intr	oduc	tion.	defin	ition	and e	examr	oles.	useful	facts	about
	powe	er series.	cour	nting	oroble	ems a	nd ge	nerat	ing fu	nctio	ns.	,			
	UNI	T III:					U								
	Adva	anced C	ount	ing T	echni	iques	: Reci	ırren	ice Re	latior	ns- So	lving	Linea	ar recu	rrence
	relati	ons-Sol	ving	home	ogene	ous	recuri	ence	e relat	ions	with	cons	stant	coeffic	eients-
	Solvi	ing Non	home	ogene	ous r	ecurre	ence r	elatic	ons wi	th co	nstant	t coef	ficien	t.	
	Grou	ip Theo	ry: C	Group	s- def	initio	n of a	grou	up, exa	ample	es and	l elen	nentar	y prop	erties,
	sub g	groups,	grou	p hon	nomo	rphisi	n								
	UNI	T IV:													
	Grou	ip Theo	ory: (Cosets	s and	Lagr	ange'	s The	eorem	, Nor	mal s	ubgro	oups a	and Qu	otient
	Grou	ps, Pern	nutati	on G	roups				-						_
	Grap	oh Theo	ry: [Defini	tion o	f graj	oh and	l exai	mples	edge	sequ	ence,	walk	s paths	and
	circu	its, dire	cted g	graphs	s, sub	grapl	ns and	oper	rations	s on g	graphs	s, isor	norph	ısm of	
	graph	15.													

17IT3302 - DISCRETE MATHEMATICS FOR INFORAMTION TECHNOLOGY

Text books	Text Book(s):
and	[1].Kenneth H Rosen, Discrete Mathematics and Applications, 6 th edition,
Reference	McGrahill
books	[2]. N.ChandraShekharan and M.Umaparvathi, Discrete Mathematics, PHI 2010
	Reference Book(s):
	[1].J.L Mott and A.Kandel, Discrete Mathematics for Computer scientists and
	Mathematicians, 2 nd edition, PHI
	[2]. Ralph P. Grimaldi, Discrete and Combinatorial Mathematics, 4 th Edition
	(2003), Pearson Education.
Е-	[1]. Kamala Krithivasan, IIT Madras (25-06-2018). Discrete Mathematical
resources	Structures [NPTEL].Available:
and other	http://nptel.ac.in/syllabus/syllabus.php?subjectId=106106094
digital	[2]. DominikScheduer, Assistant Professor, Department of CSE, Shanghai Jiao
material	Tong University (25-06-2018). Discrete Mathematics [COURSERA].
	Available: https://www.coursera.org/learn/discrete-mathematics.
	[3]. <u>https://nptel.ac.in/courses/106/106/106106094/</u>
	[4]. Dr. Kamala Krithivasan, IIT Madras, Discrete Mathematical Structures,
	http://www.infocobuild.com/education/audio-video-courses/computer-
	science/DiscreteMathematicalStructures-IIT-Madras/lecture-16.html

Course Categ	ory:	Prog	ramm	e Cor	e			Credits:						4		
Course Type:		Theo	ry					Lec	ture-'	Tuto	rial-P	racti	ce:	3-1-0		
Prerequisites	•	17CS	51103	- Pro	oblem	n Sol	ving	Cor	ntinua	ous E	valua	tion:		30		
-		Meth	ods				•									
		17CS	51203	- Pro	gramı	ning	in C									
								Sen	nester	· end	Evalu	uatio	n:	70		
								Tot	al Ma	arks:				100		
Course	Upon	succes	ssful (compl	letion	of th	e cou	rse, tł	ne stu	dent	will b	e able	e to:			
Outcomes	CO1	Δna	Analyze operations on linear data structures like stack, queue and linked													
	COI	list	ist Develop algorithms to solve a given problem using appropriate data													
	CO2	Dev	Develop algorithms to solve a given problem using appropriate data													
		stru	tructure													
	CO3	Den	Demonstrate the algorithms for operations on binary, binary search, AVI and B-trees													
		and	ind B-trees													
	CO4	Imp	mplement searching& sorting techniques and assess its performance.													
Contribution		Р	P P P P P P PO P P P P P PO PS PS													
of Course		0	P P P P P P P P P P PO PS 0 0 0 0 6 0 0 0 0 12 0													
Outcomes		1	2	3	4	5		7	8	9	10	11			2	
towards	CO1	Н	Μ	Μ	L		L					Μ		Μ	L	
achievement of Program	CO2	Μ	М	Μ	М		L					Μ		L	М	
Outcomes	CO3	Μ	М	Μ	Н		L					Μ		Н	М	
(L-Low, M-	CO4	Η	М	Μ	L		L					Μ		Н	L	
Medium, H-																
High)																
Course	UNIT	Ί					•				•					
Content	Basic	Cone	cepts:	Ove	erviev	v: Sy	stem	life	cycle	. Alg	gorith	m Sp	pecific	cation,	Data	
	Abstra	action,	Per	forma	nce .	Analy	/sis-	Space	e con	nplex	ity, 🛛	Гime	comp	olexity,	The	
	Abstra	ict Da	ta Tyj	pe.												
	Searc	hing:	Line	ar Se	arch	and	Binar	y Sea	arch	Fechr	niques	and	their	comp	lexity	
	analys	SIS.	1 (1 1		1			Б	1	, .	c		т	с ,	
	Stack	s: Sta	cks, S	Stacks	s usin	g dy	namic	arra	ys, E	valua	tion c	of exp	oressi	ons: In	fix to	
	Postii	x, Eva	luatir	ig pos	stiix e	xpres	ssions	•								
	UNIT	TT														
		11 66• Å	DT c	1110110	Tur		f Ou		Simn		Ielle	Circ	ılar ()110110	using	
	Dura	us. A nic A	Tave	lacae	, тур	U S U	ı Que	Jue.	Simbl	ic Ql	icue,	Chu		Zueue	using	
	Linke	d Lie	ts: S	ingle	linke	d lie	t and	Chai	ns R	enres	entin	g chs	ains ir	ιCΙ	inked	
	Stacks	s and (Duene	es. Do	ubly	Linke	ed Lis	t	, N	epies	Suttill	5 0110	, III S II	. С, L	mixeu	
	Polvn	omial	s: P	olvno	mial	repr	esenta	tion.	add	ing	polvn	omia	ls, C	ircular	List	
	repres	entatio	on of	polyn	omia	ls		,		8	<i>j</i> 11		-, -			
	Ť															

17IT3303 - DATA STRUCTURES

	UNIT III
	Introduction to Binary Trees: Basic Tree Terminologies, Properties of binary
	trees, binary tree representations. Binary Tree Traversals: In order, Preorder, Post
	order, level order traversal.
	Binary Search Trees: Definition, searching a Binary Search Trees (BST),
	Insertion into a binary search tree, Deletion from a binary search tree.
	Efficient Binary Search Trees: AVL trees- definition, rotations, insertion.
	Efficient Multi Search Trees: Introduction to m-way Search Trees, B Trees-
	insertion in to a B tree, deletion from a B tree.
	UNIT IV
	Heaps: Priority queues, Definition of max heap, insertion into a max heap, deletion
	from a max heap.
	Graphs: The graph abstract data type: Introduction, definitions, Graph
	Representations: Adjacency Matrix, Adjacency List.
	Sorting: Objective and properties of different sorting algorithms: Selection Sort,
	Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort, Performance and
	Comparison among all the methods.
	Hashing: General idea, Hash Functions, separate chaining, open addressing,
	rehashing, extendable hashing.
Text books	Text Book(s):
and	[1]. Horowitz Sahni and Anderson-Freed, "Fundamentals of Data Structures in
Reference	C", 2nd edition, Universities Press, 2011.
books	[2].Mark Allen Weiss, "Data structure and Algorithm Analysis in C", 2nd
	edition, Addison Wesley Publication, 2010.
	Reference Books:
	[1]. YedidyahLangsam, Moshe J. Augenstein and Aaron M. Tenenbaum, "Data
	Structures using C and C++*, 2nd edition, Pearson Education, 1999.
	[2] Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data
Б	Structures with Applications", 2nd edition, McGraw Hill, 2008.
E-resources	[1]. Sudarshanlyengar: III Ropar (12, August, 2018). Data Structures and
and other	Algorithms[NPTEL]. Available: http://nptel.ac.in/
digital	[2]. Erik Demaine, (12, may, 2018). Advanced Data Structures [MII-
material	OpenCourse ware J. Available: <u>http://ocw.mit.edu/</u> [2] http://www.woutube.com/ploulist9/ist=DL-veSerO-TECM_Ev(10:-W-WLLL-
	[3]. <u>https://www.youtube.com/playlist/list=PLyqSpQz1E6M_Fu6l8lrVWXKUy</u>
	$\frac{U9UW(I0)}{100}$
	[4].nups.//npiei.ac.in/courses/100/102/100102004/

Course Cates	gory:	Pro	gram	me C	ore			C	redits	5:					3	
Course Type	:	The	eory					Le	ectur	e-Tut	torial	-Prac	ctice:		2-1	-0
Prerequisites	:	170	CS11()3- Pi	obler	n Sol	ving	C	ontin	uous	Eval	uatio	n:		30	
		Me	thods													
								Se	mest	er Ei	nd Ev	aluat	ion:		70	
								To	otal N	Aark	s:				100)
	T T		0.1	1	1	0	1		.1	. 1	11	1 1	1 .			
Course	Upon	succe	esstul	com	pletic	$\frac{n \text{ of } 1}{1 \text{ of } 1}$	the co	urse,	the s	tuden	t will	be at	ole to:		•.1	
Outcomes	COI	Des	ign c	ombi	natio	nal &	z sequ	uentia	l cire	cuits,	digita	l con	npone	ents,	arit	hmetic
	CO2	Ano	<u>c and</u>	tho 1		orgoi	aizoti	on of	0.000	nutor		arant	instr	natio	n f	armata
	002	Alla	addru	essino		orgai lec	IIZati	011 01	COIII	iputei	, am	erent	msu	uctio	1 10	ormats
	CO3	Apr	Apply computer algorithms for performing arithmetic operations on binary number system. Analyze components of memory organization and modes of data transfer between CPU and I/O devices P SO O O O 1 2 2 1 2 3 4 5 6 8 9 10 11 12 1													
	005	nun														
	CO4	Ana														
		betv														
Contributio		P														
n of Course																
towards	<u>CO1</u>	I M														
achievement	$\frac{CO1}{CO2}$	IVI		M											/	
of Program	CO_2	L Ц		IVI											/	
Outcomes	005	- 11 - T	<u> </u>	Ŧ											<i>'</i>	
M-Medium.	CO4	L		L								L			,	L
H- High)																
Course	UNIT	' I:														
Content	Digita	al Lo	ogic	Circ	uits:	Logi	c Ga	ites,	Bool	ean .	Algeb	ora, N	Лар	Simp	olifi	cation,
	Comb	inatio	onal (Circui	its, Fl	1p-Flo	ops, S	equei	ntial (ts.	· 1	т	. .		01.0
	Digita	ll CO tora 1	mpoi Dinor	nents	: Inte	grate	a Cir	cuits,	Deco	oders.	, Mui	tiplex	ers, I	kegis	ters	, Shift
	LINIT	<u>1015, 1</u> 111.	Dinar	y Col	inters	s, we	nory	UIIIt.								
	Regis	11. ter T	'rans	fer a	nd N	licro-	Onei	ation	s: R	egiste	er Tra	nsfer	Lang	mage	R	egister
	Trans	fer, E	Bus a	nd m	emor	y Tra	nsfer	s, Ari	ithme	tic M	licro-	opera	tions.	Log	gic]	Micro-
	operat	tions,	Shift	Mic	ro-op	eratio	ns, A	rithm	etic I	Logic	Shift	Unit.				
	Basic	Co	mput	ter (Orga	nizati	on a	and	Desig	gn:	Instru	ction	cod	les,	Cor	nputer
	Regist	ters,	Comŗ	outer	Instru	uction	is, Tii	ming	and (Contr	ol, In	struct	ion c	ycle,	Me	emory-
	Refere	ence	Instru	iction	, Inpi	ut-Ou	tput a	nd In	terruj	ot Ins	tructi	ons.				
		'III:				. 1	C	4 1	1.4		A 11		7		1	. <i>т</i> .
	Micr() Pro	ogran	nmec	1 Co	ntrol	: C01		Men	iory,	Addi	ress	Seque	encing	g,]	Micro-
	Contr	ann ex	roco	le, De	sign Uni	01 C0	noral	Dill.	istor	Oras	nizati	ion (Stack	Oro	oni	zation
	Instru	ction	Forn	nats	Addr	essino		les T)ata T	Franst	fer an	d Ma	ninul	ation	Pr	ogram
	Contr	ol.	1 9111					, L			wii		P 41		,	- 0- 111

17IT3304 - COMPUTER ORGANIZATION

	UNIT IV:
	Computer Arithmetic: Addition and Subtraction, Multiplication Algorithms,
	Division Algorithms, Floating-point Arithmetic operations.
	Memory Organization: Memory Hierarchy, Associative Memory, Cache Memory.
	Input-Output Organization: Peripheral Devices, Input-output Interface,
	Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory
	Access (DMA).
Text books	Text Book(s):
and	[1] M. Morris. Mano, "Computer Systems Architecture", 3rdedition, Prentice
Reference	Hall India, 2007.
books	
	Reference Books:
	[1]. V.Carl Hamachar, "Computer Organization", Fifth edition, McGraw Hill
	Edition, 2011
	[2]. J.P.Hayes, "Computer Architecture and Organization" TMH, International
	Second Revised Edition, 1998
	[3]. William Stallings, "Computer Organization and Architecture", Ninth
	Edition, Pearson/PHI, 2013
	[4]. Andrew S. Tanenbaum, "Structured Computer Organization", Fifth Edition,
	PHI/Pearson, 2009
E-resources	[1]. Video lectures by Prof. S. Raman, IIT Madras:
and other	http://www.myopencourses.com/subject/computer-organization-1
digital	[2]. P. S. Raman. Lecture Series on Computer Organization:
material	https://www.youtube.com/playlist?list=PL1A5A6AE8AFC187B7
	[3]. Video lectures by Prof. Kamakoti, IIT, Chennai, May 2017
	https://www.youtube.com/watch?v=MIWTxHbPBA0
	[4]. https://freevideolectures.com/course/2274/computer-architecture

17HS2305A - YOGA& MEDITATION

Course Cates	gory:	H	Iuma	nities	s Elec	tive		Credits:							1	
Course Type	:	P	raction	cal				Lec	ture-	Tuto	rial-	Pract	tice:		1-0-	
															0	
Prerequisites		-						Cor	ıtinu	ous F	Evalu	ation	1:		100	
								Sen	neste	r end	Eva	luati	on:		-	
								Tot	al M	arks:					100	
Course	Upon	succe	essful	com	pletio	on of	the course	, the	stude	nt wi	ll be a	able t	:0			
Outcomes	CO1	Equ	ip be	tter a	ttitud	le and	l behaviou	r.								
	CO2	Imb	ibe so	et of	value	s ena	bling a bal	lance	d life	focu	sed of	n an e	ethica	ıl mat	erial	
		life.														
	CO3	Dev	elop	level	s of c	once	ntration th	rougł	n med	liatio	n					
	CO4	App	ly co	nscie	ence f	or the	e missions	of lif	fe							
Contributio		Р	P P													
n of Course		0	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$													
Outcomes		1	2 3 4 5 7 8 9 10 11 12													
iowards achievement	CO1						М		Н	Μ			Μ	L	L	
of Program	CO2						М		Н	Μ			Μ	L	L	
Outcomes	CO3						Н			Μ			Н	L	L	
(L-Low,	CO4									Μ			Μ	L	L	
M- Medium,																
H- High)																
Course	UNIT	I :						•	•			•		•		
Content	Under	rstan	ding	Yog	a : C	rient	ation, Intro	oduct	ion to) Val	ues,	The p	positi	ve im	pact of	
	yoga,	App	licati	on of	Valu	ies in	real life,	Univ	ersal	value	s					
	(Lec-o	lemo) patt	ern v	with i	illust	rations rej	prese	enting	g Yog	gic Po	ostur	es an	d valı	ıe	
	system	n rel	ated	picto	rial i	s foll	owed)									
	UNIT	II:														
	Yogic	e Pra	ctice	s: Yo	oga, S	elf ar	nd Ultimat	e goa	l of y	oga,	Intro	duction	on to	vario	is type	
	of yog	a, In	tegrat	tion c	of val	ues ir	n Yoga									
	(Activ	rity b	ased	proc	esses	s with	Assasana	as an	d Pra	naya	ama a	are in	npler	nente	d)	
			c		• , ,•			1.0			01	<i>.</i> .		T /		
	Pract	ice	01 	Med	itatio	on:	Art of	Med	litatic	n,	Obsei	rvatio	on,	Intros	pection	
	Conte	mpia	tion,	Nied	litatio	n and	a Concent		n(Act	ivity	Dase	ea pi	oces	ses in	volvin	
			Sessi	ons i	IOHOV	veu D	y demons	iraii	SHS a	ire m	npien	liente	:u)			
		IV: rda	nrof	ossio	nal	ovool	longo th	امىرمە	h V	0.00	and	mod	litati	on.	Strong	
	Manad	i us Teme	nt C	boice		make	Evcellen	ce an	d Int	oga orati	ion	met	man	011.	511055	
		lemo	nn, Cl natt	ern i	s we s fall	owed), Execution		u mu	egrau						
Text books	Text I	Rook	• pau		5 1011	uncu	· /									
and	[1	l Cor	• nmor	ı Yos	va nro	otocol	Ministry	of A	vush	Gov	t of Iı	ndia				
Reference	[2]	. Jou	rnev	of the	e Sou]- Mi	chael New	ton 2	2003	Llev	vellvr)				
books	Refer	ence	Bool	ζ:				,	,	,						
	[1	l. Lec	tures	fre	m (Colon	nbo to	Almo	ora,	Swai	ni V	√ivek	akan	ada,	2010	
	L .	Rar	<u>nakr</u> i	<u>shna</u>	<u>Mis</u> s	ion			,					,		

	[2]. Essays of Ralph Waldo Emerson, 1982, Eastern press
	[3]. Eclectic materials Offered by English Dept.
E-resources	[1]. www.heartfulness.org accessed on 27th April 2018
and other	[2]. <u>www. ayush.gov.in accessed on 27th April 2018</u>
digital	[3]. www. belurmath.org accessed on 27th April 2018
material	[4]. https://freevideolectures.com/course/4847/nptel-globalization-culture/27

17HS2305D - PHILOSOPHY

Course Categ	ory:	Hun	naniti	es Ele	ective			Cre	1	1						
Course Type:		Theo	ory					Lec	ture-'	Tuto	rial-P	Practi	ce:	1-(1-0-0	
Prerequisites	:	-						Con	tinuc	ous E	valua	tion:		10	0	
								Sem	lester	end	Eval	uatio	n:	-		
								Tota	al Ma	rks:				10	0	
Course	Upon s	succes	ssful	comp	letion	ofth	e cou	rse, tł	ne stu	dent v	will b	e able	e to:			
Outcomes	CO1	Und	ersta	nd ma	ijor p	hiloso	ophica	ıl issu	ies.							
	CO2	App	recia	te the	philo	soph	ical d	octrir	es of	west	ern th	inker	S.			
	CO3	Und	ersta	nd the	e emii	nence	of In	dian	classi	cal th	ough	t.				
	CO4	App	recia	te rela	ation	betwe	een sc	ience	and	value	S.	r —	r			
Contribution		P	P	P	Р	Р	P	P	Р	Р	P	P	P	PSO	PS	
of Course		0	0	$\left \begin{array}{c} 0 \\ 2 \end{array} \right $	O 1	0 C	0	O 7	0	0	0	0	0	1	02	
towards	CO1	1	2	3	4	3	6 M	/	<u>8</u> т	9 T	10	11	12	т	т	
achievement	CO1						M		L	L	М		L	L T		
of Program	CO_2															
Outcomes	CO4		M L M L													
(L-L0W, M- Medium	001															
H- High)																
Course	UNIT															
Content	What's	UNIT I: What's Philosophy : Definition, Nature, Scope and Branches														
		what's rimosophy. Definition, Nature, Scope and Branches														
	UNIT	II:														
	Introd	uction	n to V	Veste	rn phi	losop	hy :A	ncier	nt Gre	ek an	d Mo	dern	philos	sophy		
	UNIT	III:														
	Introdu	uction	to In	Idian	Thoug	ght: S	bix sys	stems	– Mo	odern	philo	sophe	ers			
		TX 7														
		- 1 V :	af ani		Таа	hnala		Turne	m r r a l		ad mar	faari	ama1 T	Tthing		
Text books	Tevt B	spily Rook•		encec	x 100		igy . I	Tuttia	II val	uts al	iu pro	10881	ullal I	Junes		
and	[1] " T	he st	orv of	fphild	osonh	v " W	/ill D	urant	Sime	on &	Schu	ster 1	926			
Reference	[1] ¹ A	n Int	roduc	tion t	o phi	losop	hv ".(D.O.F	letch	er. W	ord P	ublic	Libra	arv.201	0	
books	Refere	ence l	Book	s:	F	· I	<i>J</i> ,			- ,				<i>,</i> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		
	[1] " S	ix sys	stems	of In	dian I	Philos	sophy	", D	H Du	tta ,						
	[2] " T	he pl	easur	es of	philos	sophy	, Wil	l Dur	an, Si	mon	& Sc	huste	r,1929)		
	5475					14.5.5	14.6.5.			,						
E-resources	$\begin{bmatrix} 1 \end{bmatrix} \frac{htt}{2}$	<u>os://n</u>	otel.a	<u>c.ın/c</u>	ourse	<u>s/109</u>	/106/	<u>1091(</u>	<u>)6051</u>	<u>/</u> :			.			
and other	[2]. Dr.	. Saty	a Sur	ndar S	ethy,	Depa	rtmen	t of H	uman		and So	ocial	Scienc	ces, II l		
uigitai		s. <u>IIII</u> of Do	<u>18.//W</u>	<u>ww.y</u> Khor	<u>outub</u> Jani I	IT Ma	u/ wat drae	<u>UN / V=</u>	<u>-aajg</u> luctio	<u>ogz r</u> to P	<u>EUð</u> hiloso	nhy				
	https://			ube c	$\frac{1}{0}$ om/w	atch?	v=n	naRF	0-97V	T	most	'P'''y				
	[4]. htt	p://w	ww.d	igima	it.in/n	ptel/c	course	s/vid	eo/10	- 91060	052/L	.03.ht	ml			

17HS2305I - FOREIGN LANGUAGE - GERMAN

Course Category:	Humanities elective	Credits:	1
Course Type:	Theory	Lecture - Tutorial - Practice:	1-0-0
Prerequisites:		Continuous Evaluation:	100M
		Semester End Evaluation:	-
		Total Marks	100

Course outcomes	Upon	succ	essf	ùl cc	ompl	etion	of the	e cours	se, the	stude	nt will	l be ab	ole to:				
outcomes	CO1	Lea	ırn b	asics	s of C	Germ	an Lai	nguago	e.								
	CO2	Wr	ite G	ierm	an W	/ritin	g										
	CO3	Un	derst	and	Gerr	nan l	Hearin	g									
	CO4	For	m se	enten	ce ir	n Pre	sent , j	oast ar	nd futu	ire ten	se						
Contribution of Course Outcomes towards		Р О 1	P O 2	P O 3	Р О 4	Р О 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2		
achievement	CO1									L	Н		L	L	L		
Outcomes	CO2																
M - Medium,	CO3																
H – High)	CO4																
Course Conte	nt	UN Alp	IT I	: ets, N	Jum	bers,	Exact	article	es and	not ex	kact A	rticles		!			
		UN Pre	ITI posi	[: tions	, Pre	esent	Tense										
		UN Pas	IT I t Te	II: nse a	ind a	abou	t famil	у									
		UN Fut	IT - ure	- IV: Гепs	es												
Text books an Reference boo	d ks	Tex [1] Ref	xt Bo Stuc ferei	ook: lio d nce F	A10 Book	Corne as:	elsen (Goyala	as Pul	blicati	ons N	ew De	lhi.				
E-resources an other digital material	nd	[1] [2] [3]	<u>http:</u> <u>http:</u> <u>http:</u>	<u>s://w</u> s://ie s://w	<u>ww.</u> lang ww.	fluen uage cours	tin3m s.com/ sera.or	onths. /frencl g/cour	com/fr n.html rses?q	rench- uery=	for-kie learn%	<u>ds/</u> 620ger	man				

Course Cates	orv:	Hun	naniti	es El	lectiv	e			Credit	s:					1
Course Type	:	The	orv						Lectur	e-Tut	orial-	Pract	tice:		1-0-
			5												0
Prerequisites	:	Intro	oduct	ion to	o Phi	losop	hy		Contin	uous	Evalu	ation	:		100
									Semes	ter en	d Eva	luati	on:		-
								Ī	Total I	Marks	:				100
Course	Upon	succ	essful	com	pleti	on of	the co	urse,	the stu	dent w	ill be	able t	:0		
Outcomes	CO1	Rela	ate b	oiolog	gical	and	socio	-cult	tural fa	ictors	in u	nders	tandi	ng h	uman
		Beh	aviou	ır.											
	CO2	Unc	lersta	nd th	e nat	ure o	f senso	ry pi	rocesses	, types	s of at	tentio	ns.		
	CO3	Exp	lain	diffe	erent	type	s of 1	learn	ing an	d the	proc	edure	s, di	stingu	ishes
		betv	veen	diffe	rent t	ypes	of men	nory	,						
	CO4	Den	nonst	rate	an u	nders	standin	g of	some	cognit	tive p	roces	ses i	nvolv	ed in
~		Prol	blem	solvi	ng an	nd dee	cision-	maki	ng.			-	-	50	20
Contributio		P	P P P P PO PO												
n of Course		$\left \begin{array}{c} 0 \\ 1 \end{array} \right $	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$												
towards	<u>CO1</u>	1	2 3 4 5 11 12												
achievement	CO1		H M L M												
of Program	CO_2		M M M M												
Outcomes	CO_4										И		M		
(L-Low, M-	004										11		11/1		
High)															
Course	UNIT	Ì.						1							
Content	Intro	ductio	on: F	svch	ology	v as	a scie	entif	ic study	v of	behav	iour.	Biol	ogical	and
	socio	cultur	al ba	ses of	f beh	aviou	r, field	s of	psychol	ogy				U	
	UNIT	TII:													
	Sense	ory ar	nd per	rcept	ual p	roces	ses: Se	nsati	ion, atte	ntion a	and pe	ercept	ion		
	UNIT	TIII:													
	Cogn	ition	and A	Affec	t: Lea	arnin	g and r	nemo	ory. Em	otion a	and m	otivat	tion		
	UNIT	<u> </u>	7												
	Think	ting, p	proble	em so	olving	g and	decisio	on m	aking, I	Person	ality a	nd in	tellig	ence	
Text books	Text	Book	(s):												
and	[1].Zin	ıbard	o, P.	G.	(201	3). Ps	ycho	logy ai	nd Lif	e (20	th E	d.). 1	New '	York:
Reference		Pea	rson	Educ	ation										
books	Refer	ence	Bool	ks:											
	[1	J. Bar	on, R	A.]	Psycł	nolog	y (5th	Ed.).	New D	elhi: F	Pearso	n Edu	icatio	n. (20	06).
	[2	J. Coo	on, D	., &N	1itter	er, J.	O. Intr	oduc	ction to	Psych	ology:	Gate	eway	to mir	nd
	га	and	beha	viou	r. Ne	w De	lhi: Ce	ngag	ge. (200)	/).	1)) T	v	1 1	10	
	[3	J. Felo	uman	, K. S 12)	s. Psy	cnol	ogy an	u yo	ur life (2	2na Ec	i.). No	ew Y	ork: N	vicGra	IW
E-resources	Γ1	$\frac{1111}{httr}$	$\frac{1}{10}$	$\frac{1}{1}$	portm	astor	sinner	hole		/lists/5	onlin	10-100	ource	es-for	
and other	L1	ן. <u>הווף</u> מכוי	<u>cholo</u>	<u>vv vv.U</u> 01)-m	aiors	<u>usier.</u> :/	<u>sinpsyc</u>	non	<u>izy.com</u>	11313/J	-0/111	<u>ie-res</u>	ource	<u>- 101-</u>	_
and other		psy		<u>5y-in</u>	ajors	"									

17HS2305J - PSYCHOLOGY

digital	[2]. https://www.makeuseof.com/tag/10-psychology-websites-to-help-educate-
material	<u>yourself/</u>
	[3]. <u>https://nptel.ac.in/courses/109/104/109104105/</u>
	[4]. https://nptel.ac.in/courses/109/104/109104082/

17TP1306 - LOGIC & REASONING

Course Cate	gory:	Ins	titutio	nal (Core			C	redit	s:					1	
Course Type	:	Lea	arning	; by I	Doing			L	ectur	e-Tu	torial	-Pra	ctice:		0-0-2	
Prerequisites	:	-						C	ontin	uous	Eval	uatio	on:		100)
								Se	emest	er Ei	nd Ev	alua	tion:		0	
								Т	otal N	Aark	s:				100)
Course	Upon	succe	essful	com	pletic	n of	the co	ourse,	the s	tuden	t will	be a	ble to:			
Outcomes	CO1	Thi	nk rea	ason	logica	ally ii	n any	critic	al sitı	latior	1					
	CO2	Ana	analyze given information to find correct solution													
	CO3	Rec	Reduce the mistakes in day to day activities in practical life													
	CO4	Dev	Develop time management skills by approaching different shortcut method Jse mathematical based reasoning to make decisions													ethods
	CO5	Use														
	CO6	Ap	Apply logical thinking to solve problems and puzzles in qualifying exams													ams
		for	or companies and in other competitive exams													DCO
Contributio		P	PO	P	P	P	P	PO 7	P	P	P	P	PO 12		J	PSO 2
Outcomes			2	3		5	6	/	8	0	10	11	12	1		Ζ
towards	CO1	1	м	5	4	5	M		0	,	10	11				
achievement	CO^2		M				M									
of Program	CO3		M				M									
Cutcomes (L-Low.	CO4	1	М	1			М									
M-Medium,	CO5		М				М									
H- High)	CO6		М				Μ									
Course	UNIT	۱. T۰														
Content	UIII	1.	1. S	eries	Com	pletic	on.									
			2. C	oding	g-Dec	codin	g,									
			3. B	lood	Relat	tion E	Blood	,								
			4. P	uzzle	s test											
			5. S	eries	Com	pletic	on,									
			6. C	oding	g-Dec	codin	g,									
			/. B	1000	Relat	10n E	3100d,	,								
	UNIT	П	0. P	uzzie	s lesi											
	UIII	11.	1 D	irect	ion se	ense t	est									
			2. L	ogica	al Ven	n dia	igram	s,								
			3. N	umb	er tes	t, ran	king t	est,								
			4. N	lathe	matic	al op	eratio	ns								
			5.													
	UNIT	III:	1 4	•.1	<i>,</i> •	1 D										
			1. A	Arithr	netica	al Rea	asonii	ng, notor								
			$\frac{2}{3} \frac{11}{5}$	vllog	iig III ism	1221115	s chal	acter,								
			J. D	, 110g	10111.											

	UNIT IV:
	Non – Verbal:
	1. Water images,
	2. Mirror images,
	3. Paper folding,
	4. Paper cutting,
	5. Embedded Figures,
	6. Dot situation,
	7. Cubes & Dice
Text books	Text Book(s):
and	[1].R. S. Aggarwal, "Verbal and non-verbal reasoning", Revised Edition, S
Reference	Chand publication, 2017 ISBN:81-219-0551-6
books	
E-resources	[1]. <u>https://nptel.ac.in/courses/109/104/109104040/</u>
and other	[2]. <u>https://www.youtube.com/watch?v=aRnOstn04</u>
digital	[3]. Mr. Vineet Gupta,, General Aptitude
material	https://www.youtube.com/watch?v=ZpP10UnilTg
	[4]. https://www.tcyonline.com/video-lectures-aptitude/100647

Course Categ	gory:	Prog	ramm	e Cor	e			Cre	dits:					2		
Course Type:	:	Theo	ry					Lec	ture-	Tuto	rial-P	racti	ce:	1-0-2	1-0-2	
Prerequisites	:	17CS	\$1203	: Prog	gramr	ning	in C	Continuous Evaluation:								
								Sem	ester	70						
			Total Marks:											100		
Course	Upon	succe	ccessful completion of the course, the student will be able to:													
Outcomes	CO1	Exa	Examine the characteristics of object oriented approach													
	CO2	Den	Demonstrate the concept of polymorphism in overload of fund												is and	
		ope	operators													
	CO3	Con	Construct object oriented programs through inheritance and temp												5	
	CO4	App	Apply exception handling mechanism to handle errors occur at ru												e	
Contribution		Р	Р	Р	Р	Р	Р	PO	Р	Р	Р	Р	PO	PS	PSO	
of Course		0	0	0	0	O Ő	0	7	0	0	0	0	12	01	2	
towards	COL	1	2	3	4	5	6		8	9	10			м	т	
achievement	CO1	H U		М										M		
of Program	CO_2	п	М	Ш						М		Ц		M	L M	
Outcomes	CO_4	Н	IVI	Н						IVI		Н		M	M	
(L-LOW, M- Modium H	004	11		11								11		111	141	
High)																
Course	UNIT	I:		I	I	I	I					I			1	
Content	An	Overv	iew	of (C++:	The	Ori	gins	of	C++,	Wha	at Is	Obj	ect-Or	iented	
	Progr	ammir	ng?, I	ntrod	ucing	C++	Class	ses								
	Class	es an	d Ob	jects	: Clas	sses,	Struc	tures	and	Class	es Ar	e Re	lated,	Union	is and	
	Class	es Are	Rela	ted, F	riend	Func	tions	, Friei	nd Cl	asses,	, Para	meter	ized (Constru	ictors,	
	Static Datur	keyw	vord,	The	Scop	e Res	solutio	on Oj	perato	or, Pa	issing	Obje	ects to	o Func	ctions,	
	LINIT	ning C ' II.	bjeci	.s .												
	Array	us Ari	ravs c	of Obi	ects	The t	his Pa	vinter								
	Over	loadin	g: Fi	unctic	on Ov	verloa	ding.	Ove	rload	ing (Constr	uctor	Func	ctions.	Copy	
	Const	ructor	s, O	perato	or O	verloa	iding.	Cre	ating	a N	/lemb	er O	perato	or Fun	iction,	
	Opera	tor O	verlo	ading	, Usi	ng a	Frier	nd Fu	inctic	on, O	verloa	ading	new	and c	lelete,	
	Overl	oading	g Son	ne Spo	ecial (Opera	tors,	Overl	oadir	ng the	Com	ma O	perate	or		
	UNIT	III:														
	Inher	itance	e: Ba	se-Cl	ass A	Acces	s Co	ntrol,	Inhe	eritan	ce an	d pro	otecte	d Mer	nbers,	
	Inher	ting	Multi	ple I	Base	Clas	ses,	Const	ructo	rs, L	Destru	ctors	and	Inheri	tance,	
	Virtua Virtu	al Ease	t Ulas	sses	allina	- 1/i	rtual	Fund	tion +	hroug	haD	lace (موار	Duro V	/irtual	
	Funct	ions I	Early	us. U vs. I (annig ate Ri	nding	riual	1 uncl	lion l	moug	,11 a D		<i>.</i> 1a55,		nual	
	UNIT	IV:	Juriy	v.5. L(indille	>									
	Temr	olates:	Gen	eric I	Functi	ions.	A Fu	nctio	n wit	h Tw	o Ge	neric	Type	s, Exp	licitly	
	Overl	oading	g a Ge	eneric	Func	ction.	Appl	ying	gene	ric Fu	inctio	ons: A	Gen	eric So	rt	
	Gener	ric Cla	sses,	An E	xamp	le wi	th Tw	o Ger	neric	Data	Types	5				
	Appl	ying T	emp	late C	Classe	s: A	Gener	ric Ar	ray C	lass						

17IT3308 - OBJECT ORIENTED PROGRAMMING

	Exception Handling: Exception Handling Fundamentals, Handling Derived-Class
	Exceptions, Exception Handling Options
Text books	Text Book(s):
and	[1].Herbert Schildt, C++ Complete Reference, Third Edition, McGraw-
Reference	Hill,1998
books	Reference Book:
	[1].BjarneStroustrup, The C+ + Programming Language, Third Edition,
	Addison-Wesley,1997
E-resources	[1]. Ira Pohl, C++ For C Programmers, University of California, Santa Cruz,
and other	(08, 05, 2018). Available: https://www.coursera.org/learn/c-plus-plus-a
digital	[2]. Gerry O'Brien, Kate Gregory, James McNellis, Introduction to C++, (08,
material	05, 2018). Available: https://www.edx.org/course/introduction-c-microsoft-
	<u>dev210x-5</u>
	[3]. Prof Partha Pratim Das , IIT Kharagpur, Programmiing in C++,
	https://nptel.ac.in/courses/106/105/106105151/
	[4]. Object Oriented Programming (OOP) Paradigm
	https://www.youtube.com/watch?v=p3H-53kzMuA
	[5]. Prof Deepak B Phatak, IIT Bombay, Object Oriented Programming
	https://www.edx.org/course/object-oriented-programming

Course Cate	gory:	Progr	amm	e Cor	e				Cred	lits:					1.5
Course Type	e:	Lab							Lect	ure-7	Tutor i	ial-Pı	ractic	e:	0-0-3
Prerequisite	s:	17CS	1103	F	roble	m	Solv	ving	Continuous Evaluation:						30
_		Meth	ods					_							
		17CS	1203	Prog	ramm	ing in	n C								
									Sem	ester	end H	Evalu	ation	:	70
							Total Marks:						100		
Course	Unon	Upon successful completion of the course, the student will be able to:													
Outcomes	CO1	Imn	lemer	ompro nt var		nerat	ions (of sta	ck au	iene a	nd lir	ked 1	ist da	ta tvne	20
Outcomes	C02	Analyze and solve a given problem using appropriate data structure												20.	
	CO3	Implement operations on different trees data structures like binary												hinary	
	005	search, AVL and Btrees.												onnary	
	CO4	CO4 Design various searching and sorting algorithms.													
Contributio		D		п	р		р	р		р	п	р	п	DC	DC
n of Course		P	P O	P O	P O	P O	P O	P O	P	P O	P	P O	P O	P5	PS
Outcomes		1	$\frac{0}{2}$	3		5	6		8	9	10	11	12	01	02
towards	CO1	H	2	M	м	5	0	/	0)	10	11	12	М	I.
achievement	CO^2	H	М	M	L		L					М		L	M
of Program	CO3	M	M	M	M		L					M	L	H	M
Outcomes	CO4	M	M	M	H		L					M	L	H	L
Medium H-	001												2		
High)															
<u> </u>	***	1 5					0.0								
Course	Week	1: Fur	idam	ental	prog	rams	a & Si	earch	iing						
Content	Write		progr am to	imn	lemer	nt line	ar an	d hin	aru ca	arch	techni	01165			
	Week	$\frac{1}{2} \cdot \text{Sta}$	ck us	ing a	rrav	and i	ts and	olica	tions	aren		ques.			
	Write	a progi	ram to	imp	lemer	nt the	opera	tions	on st	acks	using	arrav	S		
	Write	a progi	ram fo	or cor	verti	ngag	given	infix	expre	ssion	to po	stfix	form	using	stacks
	Write	a progi	ram fo	or eva	luatir	ng a g	iven	postf	ix exp	ressio	on usi	ng sta	acks	0	
	Week	3 & 4		ue ar	d Ci	rcula	r aue	ue in	nnlem	enta	tion u	sing	arrav	7	
	Write	a nrogi	am to	imn	lemer	nt the	opera	tions	s on ai	ienes	using	array	array VS		
	Write	a progi	am to) imp	lemer	nt the	opera	tions	on qu	rcula	r aueu	ies us	ing ai	ravs	
	Weels	5. S :	-l	- I D.		14-11-0	J 12.4				1		0		
	Write	J: JII	gie ai	imn	lemer	IIIKe ot stac	et inst	ratio	ne nei	na cii	nalv l	inked	list		
	Write	a progi	ram to) imp	lemer	n stat	ne ope	erati	005 USI	ing si	ingiy i ingly	linkeu	d list		
	Write	a progi	am to) imp	lemer	nt que	opera	tions	ons us	nig s nihlv	linke	d list	a not		
	Week	6&7:	Circ	ular	linke	d list	and i	its ar		tions		- 110t			
	Write	a progi	ram to	imp	lemer	nt the	opera	tions	on ci	rcula	r linke	ed list	-		
	Write	a prog	ram f	or the	e repr	esent	ation	of p	olynoi	nials	using	g linko	ed lis	t and	for the
	additic	on of tw	vo su	ch po	lynon	nials.		•	-						

17IT3351 - DATA STRUCTURES LAB

	Week 8:Sorting techniques Implement sorting techniques using C:Insertion Sort, Merge Sort, Quick Sort Design experiment using Searching and sorting techniques
	Week 9: Binary search tree and operationsWrite a program to create binary search tree operationsWrite a program to implement tree traversal techniques using recursion.
	Week 10 & 11: Application oriented Case Studies Design experiment using single/double/circular linked lists. Design experiment on Binary Search Trees Design experiment using sorting and searching techniques.
	Week 12:AVL Tree and B-Tree operations Write a program to perform the following operations: Insertion into an AVL-tree and
	Deletion from an AVL-tree. Write a program to perform B-tree operations: Insertion into a B-tree and Deletion from it.
Text books and	Text Book(s): [1].Horowitz Sahni and Anderson-Freed, "Fundamentals of Data Structures in
Reference books	[2].Mark Allen Weiss, "Data structure and Algorithm Analysis in C", 2ndedition, Addison Wesley Publication, 2010.
	Reference Books: [1]. YedidyahLangsam, Moshe J. Augenstein and Aaron M. Tenenbaum, "Data
	 [2].Jean Paul Trembley and Paul G. Sorenson, "An Introduction to Data Structures with Applications", 2nd edition, McGraw Hill, 2008.
E- resources	[1].SudarshanIyengar: IIT Ropar (12, August, 2018). Data Structures and Algorithms[NPTEL]. Available: http://nptel.ac.in/
and other digital material	 [2]. Erik Demaine, (12, may, 2018). Advanced Data Structures [MIT- OpenCourseWare]. Available: <u>http://ocw.mit.edu/</u> [3] https://www.youtube.com/playlist2list=PLyaSpOzTE6M_Eu6l8irVwXkUyC
materiar	<u>9Gwqr6</u> [4].https://nptel.ac.in/courses/106/102/106102064/

Course Cate	gory:	Progr	amm	e Cor	e			0	Credit	ts:				2	
Course Type	:	Lab						Ι	lectu	re-Tu	toria	l-Pra	ctice:	0-0)-2
Prerequisite	s:	17HS	1105	/17HS	S1205	5 - T	echnica	1 0	Contin	30					
-		Engli	sh &0	Comn	nunic	ation	skills -								
								S	emes	ter e	nd Ev	aluat	ion:	70	
								Γ	otal [Mark	ks:			10	0
Course	Upon	success	ccessful completion of the course, the student will be able to:												
Outcomes	CO1	Exe	Execute rational pronunciation of speech sounds including accentuation.												
	CO2	App	Apply elements of listening comprehension in professional environments												
	CO3	Dev	Develop the abilities of rational argumentation and skills of pul												ublic
		spea	speaking.												
	CO4	Den	Demonstrate proficiency in the elements of professional commun												ation
		inclu	including the competitive examination												
Contributio		Р	P P P P P P P P P P P P P P P												PS
n of Course		0	0	0	0	0	6	Ο	0	0	0	0	12	S	O 2
Outcomes		1	2	3	4	5		7	8	9	10	11		0	
achievement	~~ 1														
of Program	COl														M
Outcomes	CO2			M	M	M	H	H	H	M	H	M		L	M
(L-Low, M-	<u>CO3</u>	H	H M M H H								H	M		L	H
Medium, H-	CO4	М	L	М	M	L	Н	н	н	н	н	M	М	L	Н
High)															
Course	UNIT	:I:													
Content	Eleme	nts of	Spok	en E	xpres	sion a	and pro	oces	ses of	Liste	ening				
		comp	orehe	nsior	1:										
		Speed	h Me	chani	ism										
		Artici	ilatio	n of v	vowel	s and	conson	ants							
		Patter	ns of	Acce	entuat	ion	, ·		1						
			sand	proce	esses (DI LIS	tening	com	prene	nsion					
	UNII	II:: ng of 6	ubat	antia	tion	nd D	ofutat	on i	n D.1		naak				
		Grout	n Dig	anua	uon a	illu N	d Moni	tore	пги д)	JIC 5	реак	ing:			
		Pyran	nid D	iscus	sion				u)						
		PNI		15045	51011										
	\succ	Semin	nar Ta	alk an	d Pov	ver P	oint Pre	esent	ation						
	UNIT	III:													
	Profes	sional	Com	mun	icatio	n:									
	\succ	Self A	Affirn	nation	l										
	\succ	Textu	al Pa	tterns											
	\succ	Adva	nced	Comp	oositio	on inc	luding	Mer	no an	d e-m	ail				
		Résur	né Pr	epara	tion										
	\checkmark	Corpo	orate	ethic	of No	on-Ve	erbal Co	omm	unica	tion					

14HS1352 - COMMUNICATION SKILLS LAB

	UNIT IV:
	Life Skills and Vocabulary for Competitive Examinations:
	Select Life Skills(50)
	Select Logies, Isms, Phobias and Manias (25 each)
	Sentence Completion and Double Unit Verbal Analogies (50 items)
	Fundamentals of Syllogisms(Descriptive and Pictorial)
Text books	Text Book(s):
and	[1]. Martin Cutts, Oxford Guide to Plain English, 7 th Impression, OUP, 2011
Reference	[2]. Exercises in Spoken English, Prepared by Department of Phonetics and Spoke
books	English, CIEFL, OUP, 21 st Impression, 2003
	Reference Books:
	[1]. Stephen R Covey, The 7 Habits of Highly Effective people, II edition,
	(Pocket Books) Simon & Schuster UK Ltd, 2004
	[2]. Eclectic Learning Materials offered by the Department
Е-	[1]. ODll Language Learner's Software, 27-6-2012 Orell Techno Systems
resources	[2]. Visionet Spears Digital Language Lab software Advance Pro, 28-01-2015
and other	[3]. <u>www.natcorp.ox.ac.uk</u> , British National Corpus accessed on 28-11-2017
digital	
material	

Course	Inst	itutio	nal C	ore				Cred	its:				-				
Category.	• The	ory M	landa	tory	rourse	a		Lect	ure_T	utori	al_Pr	actic	e• 2	2-0-0			
Prerequisite	s• _		lanua	liory	Jours	0		Cont	inun	is Ev	aluat	ion.	c. 2	<u>16S1+</u>	4682		
1 I CI Cquisite	5. –													3 A + 5 HA			
								Semester end Evaluation						-			
								Total Marks.						100			
Course	Upon s	ucces	sful c	ompl	etion	of the		urse, the student will be able to:									
Outcomes	CO1	Unc	lerst:	and	the '	vario		natura	al re	sour	res	analy	vze a	and e	xplore		
o uteomes	001	deg	radat	ion r	nana	geme	ent	mature		Sour		unun	,20 0	ina c	Apioie		
	CO2	CO2 Understand the Ecosystems and need of Biodiversity															
	CO3	O3 Realize and Explore the Problems related to 1											$\frac{J}{En}$	Environmental			
	005	poll	ution	1 and	its n	nanag	gem	ent	00101	110 1	erace	u te	, 51	, 11 0 111			
	CO4 Apply the Role of Information Technology and an											alvze	social				
	issues, Acts associated with Environment.																
Contributio		Р	Р	Р	Р	Р	Р	PO	Р	Р	Р	Р	PO	PS	PSO		
n of Course		0	0	0	0	0	0	7	0	0	0	0	12	01	2		
Outcomes		1	2	3	4	5	6		8	9	10	11					
achievement	CO1	L							Н	L		L					
of Program	CO2			L			Η		Η								
Outcomes	CO3			L			Η										
(L-Low, M-	CO4			L			Η		Η		L						
Medium, H-																	
High)																	
Course	UNIT	l:			T ,	¢ E			1.0	1.							
Content	The Mu	iltidis	ciplir	nary N	Vature	e of E	nvire	onmen	tal St	udies							
	Definit	ion, se	cope a	and if	nport	ance											
	Netural	or put		varen	ess.												
	Donouu	hla a	nd M	on roi	امسما	alo D	20011	roog.									
	Natural	resol	irces	and a	ssoci	ated r	rohl	ems									
	a) For	est re	sour	es. I	Jse a	nd or	ver-	exploit	ation	defo	restat	tion	Timh	er exti	action		
	mir	ing (lams	and th	neir e	ffects	on f	orests	and to	ribal r	people	2.	1 1110		ww 1011,		
	b) Wa	ter re	sourc	es: U	lse ar	nd ov	er-ut	ilizatio	on of	surfa	ce an	id gro	ound v	water.	floods.		
	dro	ught.	confl	icts o	ver w	ater.	dams	s-benet	fits ar	nd pro	blem	s.		,	,		
	c) Min	neral	resou	rces:	Use a	and ex	kploi	tation,	envi	ronme	ental	effect	ts of e	extracti	ng and		
	usii	ıg mi	neral	resou	rces.		•	,							-		
	d) Foo	d res	sourc	es: V	Vorld	food	l pr	oblems	s, cha	anges	caus	sed b	y ag	ricultu	re and		
	ove	rgraz	ing, e	effect	s of 1	mode	rn a	gricult	ure, f	ertiliz	zer-pe	esticid	le pro	blems	, water		
	log	ging,	salini	ty.													
	e) Ene	ergy r	esour	ces: (Grow	ing ei	nerg	y need	s, ren	lewab	le an	d nor	n-rene	wable	energy		
	sou	rces,	use of	falter	nate e	energ	y soi	arces.									
	f) Lar	d res	ource	es: La	ind as	s a re	sour	ce, lan	id deg	gradat	tion,	man i	induce	ed land	dslides,		
	soil	erosi	on an	d des	ertific	cation	1.										

17MC1307 - ENVIRONMENTAL STUDIES

Role of an individual in conservation of natural resources.
Equitable use of resources for sustainable lifestyles.
UNIT II:
Ecosystems
Concept of an ecosystem.
Structure and function of an ecosystem.
Producers, consumers and decomposers.
Energy flow in the ecosystem.
Ecological succession.
Food chains, food webs and ecological pyramids.
Introduction, types, characteristic features, structure and function of the
following ecosystem:
(a)Forest ecosystem
(b) Grassland ecosystem
(c)Desert ecosystem
(d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans,
estuaries)
Biodiversity and its Conservation
Introduction, definition: genetic, species and ecosystem diversity.
Value of high variety: consumptive use productive use social athical
value of blourversity. consumptive use, productive use, social, etilical,
Biodiversity at global National and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss poaching of wildlife man-wildlife
conflicts
Endangered and endemic species of India
Conservation of biodiversity: in-situ and ex-situ conservation of
biodiversity.
UNIT III:
Environmental Pollution
Definition
Causes, effects and control measures of
a) Air pollution
b) Water pollution
c) Soil pollution
d) Marine pollution
e) Noise pollution
f) Thermal pollution
g) Nuclear hazards
Solid waste management: Causes, effects and control measures of urban and
industrial wastes.
Role of an individual in prevention of pollution.
Disaster management: Floods, earthquake, cyclone and landslides.

	UNIT IV:
	Social Issues and the Environment
	From unsustainable to sustainable development.
	Urban problems related to energy.
	Water conservation, rain water harvesting, watershed management.
	Resettlement and rehabilitation of people; its problems and concerns.
	Environmental ethics: Issues and possible solutions.
	Climate change, global warming, acid rain, ozone layer depletion,
	nuclear accidents and holocaust.
	Wasteland reclamation.
	Consumerism and waste products.
	Environment Protection Act.
	Air (Prevention and Control of Pollution) Act.
	Water (Prevention and Control of Pollution) Act.
	Wildlife Protection Act.
	Forest Conservation Act.
	Issues involved in enforcement of environmental legislation.
	Public awareness.
	Human Population and the Environment
	Population growth, variation among nations.
	Population explosion—Family Welfare Programme.
	Environment and human health.
	Human rights.
	Value education.
	HIV/AIDS.
	Women and Child Welfare.
	Role of Information Technology in environment and human health.
	Field Work/Case Studies {NOT TO BE INCLUDED IN SEMESTER
	END EXAMS}
	Visit to a local area to document environmental assets-
	river/forest/grassland/hill/ mountain.
	Visit to a local polluted site—Urban/Rural/Industrial/Agricultural.
	Study of common plants, insects, birds.
	Study of simple ecosystems—pond, river, hill slopes, etc.
Text books	Text Book(s):
and	[1]. Text book for ENVIRONMENTAL STUDIES for under graduate courses of all
Reference	branches of higher education – ErachBharucha For University Grants
books	Commission, University press,2004
	[1] Anianevulu V Introduction to Environmental sciences B S Publications
	PVT Ltd Hyderabad 2004
E-resources	[1]. collegesat.du.ac.in/UG/Envinromental%20Studies_ebook.pdf
and other	[2]. <u>https://nptel.ac.in/courses/127/105/127105018/</u>
digital	[3]. <u>https://nptel.ac.in/courses/120/108/120108004/</u>
material	[4]. http://www.nptelvideos.in/2012/12/fundamentals-of-environmental-
	pollution.html
SEMESTER – IV

17IT3401 - STATISTICS WITH	I R
1/11 34 01 - STATISTICS WITT	1 11

Course Catego	ory:	Prog	ramm	e Coi	e			Credi	ts:		3					
Course Type:	v	Theo	ry					Lecture-Tutorial-Practice:						2-0-2		
Prerequisites:		17IT	3302-	- Disc	rete			Conti	nuou	s Eva	aluati	on:		30		
-		Math	emat	ical S	tructu	ires										
								Seme	ster e	nd E	valua	tion:	,	70		
								Total	Fotal Marks:100							
Course	Upor	n succe	essful	com	pletio	n of t	he c	ourse, t	he st	udent	will l	be abl	e to:			
Outcomes	CO1	Con	Comprehend the semantics, data handling and control statements in R													
	CO2	Ana	Analyze the libraries for data manipulation and to data visualization in R													
	CO3	Den	Demonstrate the knowledge of probability and conduct hypothesis tests for													
		stati	statistical inference													
	CO4	Syn	thesiz	ze dat	a to f	it line	ar a	nd nonl	inear	mod	els					
		D D	D	D	D	D	D	DO 7	D	D	D	Б	DO	DC	DC	
Contribution		P	' P P P P P P P P P											PS		
Outcomes						5	0		0	0	10	11	12	01	02	
towards		1	2	3	4	3	6		0	9	10	11				
achievement	CO1	М	м				0							М	М	
of Program	C01	M	IVI			м								M	M	
Outcomes	CO_2				п	IVI						м			M	
(L-Low,	CO_4	11 11	M	п	M	м									M	
M-Medium,	004	п	IVI	п	IVI	IVI						п		п	111	
H- High)																
Course	UNI	ГI:														
Content	The	R Env	riron	ment	: Con	nmano	1 Li	ne inter	face,	R Sti	udio, I	Instal	ling F	R Packa	iges.	
	Basi	cs of I	R: Ba	isic n	nath,	variat	oles,	data t	ypes,	vecto	ors, ca	alling	func	tion, m	issing	
	data,	data f	rames	s, lists	s, mat	rices,	arra	ays.	1.0							
	Reac	ling da	ata ir C	Ito K	: Rea	ding (280	s, Exce	el Dat	a.						
	Stati	stical	Grap	ons: E	sase C	Jraph	s, gg	gplot2.	ford		arrit	ah ar		und too	ta far	
	loons	ing K Savbil		ions,	contr	or sta	tem	ents - 1	i and	eise	, swite	cn, cc	ompo	und tes	ts, 101	
		, wiiii г н.	c 100	µs .												
	Gro	1 11. 1n ma	ninul	ation	· Anr	dv Fa	mil	v aggre	ogte	nlvr	data	table				
	Data	Resh	anin	g. chi	ind r	hind	ioin	is resh	ane2	Stri	ngs: 1	naste	sprii	nt extr	acting	
	text.	regula	r exp	ressic	ons.	<i></i> ,	Jon			~		p	spin	,		
	Doin	g mat	th an	d sin	nulati	ons i	n R	: Math	Fur	octior	ns: Ca	lcula	ting a	a Proba	bility.	
	cumu	ilative	sun	ns an	d pr	oduct	s, r	ninima	and	max	xima,	calc	ulus,	sortin	g, set	
	opera	ations.			1		-				-					
	Simu	lation	n Pro	gram	ming	g in R	R: B	uilt-in-l	Rand	om V	ariab	le ger	nerato	ors, obt	aining	
	the s	same	rando	om s	tream	in	repe	ated r	uns,	an e	xamp	le to	ac	combina	atorial	
	simulation															
	UNI	Г III:														
	Prob	abilit	y Dis	tribu	tions	: Noi	mal	Distri	butio	n, Bi	nomia	ıl Dis	stribu	tion, P	oisson	
	Distr	ibutio	n, Ot	her D	istrib	ution	s, B	asic St	atistio	cs, su	ımmaı	ry sta	tistic	s, corre	elation	
	and c	ovaria	ince.	t-tests	s. AN	OVA										

	UNIT IV:										
	Linear Models: Simple Linear Regression, Multiple Regression, Logistic										
	Regression, Poisson Regression. Nonlinear Models: Nonlinear least squares,										
	splines, generalized additive models, decision trees, random forests.										
	Time Series: Autoregressive Moving Average, VAR, GARCH										
	Clustering: K Means, PAM, Hierarchical Clustering										
Text books	Text Book(s):										
and	[1]. Jared P. Lander, R for Everyone, Addison Wesley Data & Analytics Series,										
Reference	Pearson, 2014.										
books	[2].Norman Matloff, The Art of R Programming, No Strach Press, San										
	Francisco 2011										
	Reference Books:										
	[1].G. Jay Kerns, Introduction to Probability and Statistics using R, First										
	Edition, 2010										
	[2]. Peter Dalgaard, Introductory Statistics with R, Springer, Second Edition,										
	2008										
E-resources	[1]. Rafael Irizarry, Michael Love, Statistics with R, Harvard University										
and other	(18, 04, 2018). Available: https://www.edx.org/course/statistics-r-harvardx-										
digital	<u>ph525-1x-1</u>										
material	[2].Mine Çetinkaya-Rundel, David Banks, Colin Rundel, Merlise A Clyde,										
	Duke University, (18, 04, 2018). Statistics with R Specialization.										
	Available: https://www.coursera.org/specializations/statistics										
	[3]. Dr. Shalabh, Professor, IIT Kanpur, Introduction to R software, 2019										
	https://onlinecourses.nptel.ac.in/noc19_ma33/preview										
	[4]. David Romney, Harvard University										
	https://scholar.harvard.edu/dromney/online-resources-learning-r										

Course Catego	ory:	Prog	gramr	ne Co	ore		C	redit	s:			Credits:							
Course Type:		The	ory				L	.ectur	·e-Tu	torial	-Prac	tice:	2	2-1-0					
Prerequisites:		17IT	[3303	5 Date	1 Stru	ctures	; C	ontin	luous	Eval	uatior	a:	3	0					
	L						S	emes	ter en	nd Ev	aluati	on:	7	0					
							Т	'otal I	Mark	s:			1	00					
Course	Upor	1 succ	cessfi	ıl con	npleti	on of	the co	ourse,	, the s	tuden	t will	be ab	le to:	_	_				
Outcomes	CO1	Ar rel	Analyze the characteristics, architecture of DBMS and constraints of relational model																
	CO2	Fo rel	Formulate solutions to a broad range of query problems using SQL and relational algebra											L and					
	CO3	De	Design the databases using ER model and normalization for a given requirement specification												given				
	CO4	Im co	Implement the isolation property using serializability and concurrency control techniques												rrency				
Contribution		Р	Р	Р	P	Р	Р	Р	Р	Р	PO	Р	PO	PS	PS				
of Course		Ο	0	0	0	0	0	0	0	0	10	0	12	01	O 2				
Outcomes			2	3	4	5	6	7	8	9		11							
achievement	<u>C01</u>			T T								T T			T T				
of Program	C01													M					
Outcomes	C02	- 11 H		M	-							H		M	M				
(L-L0W, M-Medium	CO4	M		H					<u> </u>			L		M	H				
H- High)																			
Course	UNI	Г І:	1	1			1		1		1	1	1		1				
Content	Data appro DBM Data instar and i Rela Mod	UNIT I: Databases And Database Users: Introduction, characteristics of the database approach, actors on the scene, workers behind the scene, advantages of using the DBMS approach Database System Concepts And Architecture: Data models, schemas, and instances, three schema architecture and data independence, Database languages and interfaces, the database system environment Relational Data Model And Relational Database Constraints: Relational Model Concepts, Relational Model Constraints and Relational Database Schemas																	
	SQL Sche Quer SQL The Relat JOIN Relat	: SQI ma C ies, I Rela tional I and tional	L Dat hang nsert, tiona Alg DIV l Alg	a Def e Sta , Dele I Alg ebra ISIOI ebra	finitio temer ete and ebra: Opera N, Ac	on and its in d Upc Unai ations dditioi	Data SQL late S ry Re fron nal R	1 Type , Basi Statem lation 1 Set elatio	es, Sp c Qua nents i al Op Theo nal O	ecifyi eries i in SQ peratic ory, B perati	ng Ba in SQ L, Vi ons: S Sinary ions, I	sic Co L, Mo lews (ELEC Relat Examj	onstra ore Co Virtu T and tional ples c	aints in omplex al Tabl d PRO. Opera of Quer	SQL, SQL les) in JECT, ations: ries in				

17IT3402 - DATABASE MANAGEMENT SYSTEMS

	UNIT III:
	Data Modeling Using The Entity-Relationship(ER) Model: Using High-Level
	Conceptual Data Models for Database Design, Entity Types, Entity Sets,
	Attributes and Keys, Relationship types, Relationship Sets, Roles and Structural
	Constraints, Weak Entity Types
	Database Design Theory And Methodology: Informal Design Guidelines for
	Relation Schemas, Functional Dependencies, Normal forms based on Primary
	keys, General Definitions of Second and Third Normal Forms, Boyce-Codd
	Normal Form, Multi valued dependency and Fourth normal form, Properties of
	relational decompositions
	UNIT IV:
	Transaction Processing Concepts And Theory : Introduction to transaction
	processing, transaction and system concepts, desirable properties of transactions,
	characterizing schedules based on recoverability and Serializability
	Concurrency Control Techniques: Two phase locking techniques for
	concurrency control, Concurrency control based on Timestamp ordering,
	NoSQL : An Overview of NoSQL, List of NoSQL Databases.
Text books	
and	[1]. Elmasri and Navathe. Fundamentals of Database Systems. Ed 5. Pearson
Reference	Education.
DOOKS	[2]. Gauravvaish, "Getting Started with NoSQL" (Kindle Edition), 1 edition. 2007.
	Reference Books:
	[1]. Silberschatz, Korth and Sudharshan. Data base System Concepts. Ed4.
	McGrawHill.
	[2]. Raghu Ramakrishnan and Johannes Gehrke., Database Management
	Systems . Ed 3. McGraw-Hill
E-resources	[1]. Jennifer widom, (09,05,2015). Introduction to Databases
and other	https://www.youtube.com/watch?v=ShjrtAQmIVg
digital	[2]. P. B. Mahanty, (09,05,2015). DBMS and RDBMS.
material	http://nptel.iitm.ac.in/video.php?courseId=1128&v=7952RsbAx2w8
	[3].Prof.D.Janakiram,(09,05,2015). DBMS.
	https://www.youtube.com/watch?v=EUzsy3W4I0g&list=PL53624456284
	0E982
	[4]. Karl seguin, "The Little MongoDBBooK", 2/E version 2.6, 2011.

Course Cat	egory:	Pro	gram	me Co	ore			Credits: 3								
Course Typ	be:	The	eory					Lectu	re-Tı	itoria	l-Pra	ctice:	2	2-1-0		
Prerequisit	es:	17I	T130	1 Disc	erete			Conti	nuou	s Eva	luatio	on:	3	30		
		Ma	thema	atical	Struct	tures										
		17I	T330	3 Data	a Stru	ctures	5									
								Seme	ster e	nd Ev	valuat	tion:	7	70		
	n							Total	Marl	ks:			1	00		
Course	Upon s	succes	essful completion of the course, the student will be able to:													
Outcomes	CO1	Ana	alyze the performance of algorithms using time and space complexities.												S.	
	CO2	Synt	nthesize design techniques like Divide & Conquer, Greedy and choose											noose		
		appr	opriat	e tech	nique	e to so	lve n	ovel p	roble	ns.						
	CO3	App	ly alg	orithr	n des	ign te	chnic	jues u	sing 1	10n-li	near o	data s	tructu	res to	solve	
		prob	lems.													
	CO4	Clas	lassify problems as P, NP, NP-hard and NP-complete and analyze the													
		sign	gnificance													
Contributi		PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PS	PS	
on of	a a 1	1	2	3	4	5	6	7	8	9	10	11	12	01	02	
Outcomes	COI	L	L	L		L						L			Н	
towards	CO2	H	H			H						TT		M		
achieveme	CO3	L	H	M	Н	H						Н			M	
nt of	CO4		L			M										
Program																
Outcomes																
(L-LOW, M																
Medium.																
H- High)																
Course	UNIT	I:														
Content	Introd	luctio	n: A	Igorit	hm	Speci	ficati	on: F	seudo	o coo	de C	onver	ntions,	Recu	ırsive	
	Algori	thms,	Per	forma	ance	Ana	lysis:	Spa	.ce (Comp	lexity	, Ti	me	Compl	exity,	
	Asymp	ototic	Notat	ion (E	Big —	oh, O	mega	i, Thet	a, Lit	tle —	oh).					
	Eleme	entary	^y Dat	a Str	uctu	res: S	Sets	and D	Disjoir	nts: Ir	ntrodu	iction	, unic	on and	find	
	operat	ions.	_					-						- 1		
	Basic	Trav	ersal	and S	Searc	h Tec	hniq	ues: 1	echn	ques	for B	inary	trees,	Techn	iques	
	for Gr	aphs:	Brea	dth F	Irst S	earch	and	Irave	rsal, I	Depth	First	Sear	ch an	d Irav	ersal,	
	Conne	cted c	compc	onents	and s	spann	ing tr	ees, B	iconn	ected	comp	onen	is and	DFS.		
	UNIT	п.														
	Divide	II: and	conc	mer.	Gene	ral m	etho	l Rin	arv se	arch	Find	ina tł	ne Ma	vimun	n and	
	Minim	um N	Легое	sort	Ouiel	sort	Stras	i, Dille sen's	matri	x mul	tinlics	ation	10 1010	17111111		
	Greed	v m	ethod	: Ge	neral	met	hod	knan	sack	probl	em	Joh	Seque	encing	with	
	deadli	eadlines Minimum cost spanning trees. Prim's and Kruskal's algorithms Single														
	source	short	est pa	th pro	blem	•	0		- 2			. ~ •	0,	-, ~	3-5	
			I	I												

17IT3403 - DESIGN AND ANALYSIS OF ALGORITHMS

	UNIT III:
	Dynamic Programming: General method, Multistage graph problem, All pairs
	shortest Path problem, 0/1 knapsack problem, Travelling sales person problem.
	Backtracking: General method, 8-queens problem, sum of subsets, graph coloring,
	Hamiltonian cycles.
	UNIT IV:
	Branch and Bound: The method: Least Cost (LC) Search, Control Abstractions for
	LC-Search, FIFO Branch-and-Bound, LC Branch-and-Bound, 0/1knapsack problem:
	LC Branch and Bound solution, FIFO Branch and Bound solution, Travelling sales
	person problem.
	NP-Hard and NP-Complete problems: Basic concepts, non-deterministic
	algorithms, the classes NP Hard and NP Complete and Cook's theorem.
Text	Text Book(s):
books	[1].E. Horowitz, et al, —Fundamentals of Computer Algorithms, 2 Edition,
and	University Press(India)Pvt. Ltd, 2011.
Reference	Reference Books:
books	[1].S.K.Basu, —Design Methods and Analysis of Algorithms, PHI Learning
	Private Limited, New Delhi, 2008
	[2]. T.H.Cormen, et al, —Introduction to Algorithms, 2 ed, PHI Pvt. Ltd. /
	Pearson Education, 2001.
Е-	[1]. Prof. AbhiramRamade, (03, 05, 2018). Computer Science Department, IIT-
resources	Bombay, Available: <u>http://nptel.ac.in/courses/106101060/</u>
and other	[2]. Prof. TimRoughgarden, (03, 05, 2018). Kleinberg and Tardos, Algorithm
digital	Design, 2005,
material	Available: <u>http://openclassroom.stanford.edu/MainFolder/CoursePage.php?cou</u>
	rse=IntroToAlgorithms
	[3]. Robert Sedgewick, Princeton University, Analysis of Algorithms,
	https://www.coursera.org/lecture/analysis-of-algorithms/resources-JMWPy
	[4].https://treevideolectures.com/course/2281/design-and-analysis-of-
	algorithms

Course Category:	Progra	amme	e Core	e				Cre	dits:		3							
Course Type	Theor	v						Lect	ture_'	Futor	ial_P	ractio	•••	3-0-0				
Prerequisites	17CS	<u>y</u> 1103-	. 1	Proble	-m	Sol	ving	Continuous Evaluation:						30				
r rerequisites.	17C5 Metho	nds	. 1	1000		501	ving	CON	unuu	us Li	aiua			50				
	17CS	1203-	Prog	ramm	ning in	1 C												
	17IT3	303-	Data	Struc	tures	10												
	17115	505	D'utu	Stitue	cui es			Sem	ester	end]	Evalu	ation	:	70				
								Tota	al Ma	rks:			-	100				
Course	Unon	SUCCE	ecful	comr	letio	n of th		irce t	he str	ident y	will b	e ahl	e to:					
Outcomes	opon																	
	CO1	Understand the basic building blocks in python programming language to											ige to					
		construct different applications.																
	CO2	App	ly the	nece	ssary	data s	struct	ures t	o solv	ve a gi	iven p	oroble	em.					
	CO3	Extr	act ar	nd im	port p	ackag	ges fo	or dev	elopii	ng dif	feren	t solu	tions	for rea	l time			
	000	prot	olems.															
	CO4	Implement the problems in terms of real-world objects using concept of																
Contribution		PO	PO	PO	PO	PO	PO	PO	PO	PO	ΡO	PO	PO	PSO	PSO			
of Course		1	$\frac{10}{2}$	3	4	5	6	7	8	9	10	11	12	1	$\frac{150}{2}$			
Outcomes	CO1	Н	M	M				,	0	M	10		H	M	L			
towards	CO2	M	M	M						M			H	L	M			
achievement of	CO3	M	M	M						M			Н	H	M			
Program	CO4	М	М	М						М			Н	Н	T.			
(L-Low.	001	111	111	1.1						1.1					Ľ			
M-Medium.																		
H- High)																		
Course	UNIT	ľ																
Content	Intro	ducti	on: H	listory	/-Orig	gins o	f pytł	ion, F	eatur	es of	Pytho	on- wl	hy cho	oose py	thon,			
	what o	can I	do wi	th py	thon,	Instal	ling, I	Pytho	n 2 &	3 ins	tallat	ion oi	n wine	lows				
	Varia	bles,	Expi	ressio	ns &	Stat	emen	ts: V	ariab	les, V	'ariab	le na	mes &	& keyv	vords,			
	Opera	itors d	& ope	rands	, Exp	ressio	ons, O	rder o	of ope	eration	ns, Mo	odulu	s Ope	erator, S	String			
	Opera	tions				D 1								a 1'				
	Cond	ition	al Ex	ecuti	on:	Boole	ean e	xpres	sions,	Log	ical	opera	itors,	Condi	tional			
	execu	tion,	Alte	rnativ	e ex	ecutio	on, C	haine	ed co	onditio	onals,	Nes	sted (conditi	onals,			
	excep	tions	using	try a	na exe	cept,	Short	circu	it eva	luatio	n of l	ogica	l expr	ession	S.			
	finishing iterations with continue Definite loops, "Infinite loops" and break,																	
	UNIT II																	
	Funct	11 tione	Fund	rtion	Calle	Buil	t-in f	inctio	ns t	vne co	nver	sion	functi	ons ra	ndom			
	numh	numbers math functions adding new functions definition and uses flow of																
	execu	tion,	paran	neters	& a	rgum	ents,	fruitfi	umbers, math functions, adding new functions, definition and uses, flow of execution, parameters & arguments, fruitful and void functions why functions?									

17IT3404 - PYTHON PROGRAMMING

	recursion, scope of a variable.
	Modules: Packages small description about modularity, Third Party Packages, A
	brief tour of standard library, command line arguments, Error output redirection
	and program termination, String pattern matching, Mathematics, Internet Access,
	Dates & times, Date Compressions
	UNIT III
	Lists: Syntactically, accessing element from list, slicing a list, lists are mutable
	sequences, deleting items in a list and deleting list, methods, searching
	Dictionaries: Creating a dictionary, Dictionary operations, Dictionary methods,
	Aliasing and copying
	Tuples: Tuples are immutable, comparing tuples, Tuple assignment, Dictionaries
	and tuples, Multiple assignment with dictionaries, Using tuples as keys in
	dictionaries
	strings: A suffig is a sequence, detuning the length of a suffig using ten, mayersai
	counting The in operator String comparison string methods
	Counting , the in operator, sumg comparison, sumg memous Sate: Modifying a Set removing items from set set operations
	Sets. Modifying a set, removing items from set, set operations.
	Object Oriented Programming OOP in Python: Python Classes Methods
	Constructors Class variables & Instance Variables Basic inheritance Special
	methods. Data Hiding
	Error and Exceptions: Expect the unexpected- Exceptions, Exceptions aren't
	Exceptional, Exceptions defining clean up actions, predefined clean up actions
Text books	Text Book(s):
and	[1]. VamsiKurama, "Python Programming: A Modern Approach", Pearson
Reference	India, 2017.
books	[2]. Charles Severance, " Python for Informatics- Exploring Information", 1st
	edition Shroff Publishers, 2017.
	Reference Books:
	[1]. Mark Lutz, "Learning Python", 5th edition, Orielly, 2013.
	[2]. Allen Downey "Think Python, How to Think Like a Computer Scientist",
	2nd edition, Green Tea Press, 2015. [2] W. Chun, "Core Buthen Programming" and Edition, Brantice Hall, 2006
	[3]. W.Chull, Cole Fylioli Flogramming, 210 Eution, Flenice Hall, 2000. [4] Kenneth A. Lambert, "Introduction to Puthon", 1st edition, Cangage
	[4]. Kenneth A. Lambert, introduction to Tython, 1st edition, Cengage
E-resources	[1] Charles Severance: University of Michigan Python for Everybody
and other	[1] Charles Severance: Oniversity of Whenigan, yulon for Everybody [COURSERA] Available: https://www.coursera.org/
digital	[2] MadhavanMukund (12 may 2018) Programming Data Structures &
material	Algorithms using Python [NPTEL]. Available: http://nptel.ac.in/
	[3]. Prof. S.R.S.Iyengar, IIT Ropar, The Joy of Computing using Python, 2018
	https://nptel.ac.in/courses/106/106/106106182/
	[4]. Charles Russell Sevarance, University of Michigan, Python for Everybody,
	2019
	https://www.coursera.org/learn/python

Course Categor	ry:	Institutional Core Credits:											1			
Course Type:		Learni	ing by	Doir	ıg				Lectu	ıre-T	utoria	al-Pra	actice	: 0-	0-0-2	
Prerequisites:									Cont	inuou	ıs val	uatio	n:	10	0	
	I								Seme	ster e	end E	valua	tion:	0		
									Total	Mar	ks:			10	0	
Course	Upor	1 succe	ssful	comp	letion	of the	e cou	se, th	ne stuc	lent w	ill be	able	to:			
Outcomes	CO1	Pres	ent th	emse	lves e	ffectiv	vely i	n the	profes	ssiona	l wor	ld by	shedd	ing of	their	
		inhi	oition	s aboi	it con	nmun	icatin	g in E	Englisł	1						
	CO2	Intro	oduce	them	selves	s as w	ell as	other	s appr	opria	tely.					
	CO3	Use skill	Use vocabulary to form sentences and narrate stories by using creative thinking skills													
	CO4	Invo	Involve in practical activity oriented sessions.													
	CO5	Lear	Learn about various expressions to be used in different situations.													
	CO6	Resp	Respond positively by developing their analytical thinking skills.													
Contribution		PO	PO P											PSO		
of Course		1	1 2 3 4 5 6 7 8 9 10 11 12 2										2			
towards	CO1		M M													
achievement of	CO2		M				M									
Program	CO3		M				M									
Outcomes	C04		M				M									
(L-Low, M-	COS		M				M									
High)	000		141				111									
Course	UNI	T I:														
Content			1.	Begin	ners,	Funct	ional,	Situa	ationa	l Con	versat	tions				
			2.	Practi	cing o	on Fui	nction	al Co	nvers	ations	5.					
	UNI	T II:														
			1.	Errors	s in u	sage o	of Par	ts of	Speed	ch wi	th a tl	hrust	on Ve	rbs, A	ljectives	
			2	and C	onjun	ictions	$\mathbf{S}, \mathbf{I}\mathbf{d}\mathbf{I}\mathbf{C}$	ms/P	hrases	5.						
			2. 3	D. IIII	oticir	Ing B	asic C	ional	Conv	orcati	ong					
	UNI	тш	<u>J.</u> 1 Ir	otrodu	cing (Self &	$\frac{1}{2}$ Othe	ers	COIIV	cisuti	0115					
	0111		2. S	tructu	res ar	nd For	ming	Sente	ences							
			3. T	eleph	onic E	Etique	tte, So	ocial	Etique	ette ar	nd Tab	ole Ma	anners	5		
			4. P	ractic	ing or	ı Funo	ctiona	l Con	iversa	tions.						
	UNI	T IV:	1. D	irect,	Indire	ect/Re	porti	ng Sp	eech							
			2. P	ublic	Speak	ting B	asics									
			3. V	ersan	t Test	Prepa	ratior	1								
T	Df		<u>4. P</u>	ractic	ing or	n Situ	ationa	l Cor	iversa	tions.						
lext books	Kete	rence	BOOK	S: Dali	noni	"Ctra	natha	n Va		mm	niaati	on Cl	cille"	Lad	Moruthi	
allu Reference		ij. Swa Puh	licatio	r = 011	110111, 113 I	SRN.	11gtile 978-8	1_10 1_90'	ur C0 7052-1	7-6	meatl		s ,	1 eu.,	waruum	
books	ſ	2]. Mar	ntaBł	atnao	ar &	Nitin	Bhatr	agar	"Con	0 nmun	icativ	e Eng	glish"	I ed	Pearson	
		Indi	a, 201	0. IS	BN:81	13173	2045		201				,,	,		

17TP1405 - ENGLISH FOR PROFESSIONALS

17IT3406 - OPERATING SYSTEMS

Course Categ	gory:	Prog	ramm	ne Co	re				Credi		4				
Course Type:	:	Theo	ory						Lectu	re-Tu	itoria	l-Pra	actic	e: 3	8-0-2
Prerequisites	:	14C	S1103	8 Intro	oducti	on to	compu	iting	Conti	nuou	s Eva	luati	on:	3	30
									Seme	ster e	nd Ev	alua	tion	: 7	70
									Total	Marl	ks:			1	.00
Course	Upon	succe	ccessful completion of the course, the student will be able to:												
Outcomes	CO1	Ana	Analyze different Operating Systems and its Services & Functions												
	CO2	Imp	Implement CPU scheduling & synchronization algorithms Demonstrate the techniques for handling deadlock & memory managem												
	CO3	Den												nent	
	CO4	Ana tech	Analyze various I/O management, File systems and disk scheduling techniques											uling	
Contribution		Р	Р	Р	Р	Р	PO	PO	PO	PO	PO	Р	Р	PS	Р
of Course		0	0	0	0	0	6	7	8	9	10	0	0	0	S
towards		1	2	3	4	5						1	1	1	$\left \begin{array}{c} 0 \\ 2 \end{array} \right $
achievement	CO1											1	Z M	T	Z I
of Program	CO1	L	М										M	L	L
Outcomes (L-Low	CO3	L	M										H	L	L
Medium-M, H- High)	CO4	М	М										Н	L	L
H- High) Course Content	UNIT Intro Comp Syster Syster Struct Proce Inter I UNIT Multi Issues Proce Synch Synch UNIT Deadl Recov Memo	M duction outer S m Stri- om Ca ure. SS Co Process in threa S Sch noniza in in cocks, very fr ocks, very Ma ation.	M on: V ystem uctur alls, ncept s Con ded I () and neduli zation I Syst Deac om D Ianag Pagin	Vhat Arcl es: O Types Progr exec ing: H : Bac Hardy em M dlock eadlo emer g. Se	oper hitect peratiss of cess (iication (),sig Basic (),sig Basic kgrou ware, Model Prevock. nt Str	ating ure ing-S Syste Conce nal ha Conc ind, T Sema l, De ventio	system system S em Cal ept, Pro Overv andling epts, So The Cri phores adlock on, De es: Bac	m do Service Ils, Sy ocess S view, chedul tical-S , Class Chara adlock	, Com es, Use ystem Schedul Multi-T ing Cri section sic Prot acteriza Avoi und, Sv	puter r Ope Progr ling, (Thread teria, Probl blems ation, idance	Syst rating rams, Dperat ding M Schecem, P of Sy Methe, De	eem -Syst Ope tions vlode dulin eters nchro adloo	H Orga tem eratin on F els, T g Alg on's oniza for ck I uous	L Inter g-Sys Proces Threa gorith Solution Hand Detec Mer	L tion, face stem sses, ding ums tion, lling tion, nory

	Virtual Memory Management: Background, Demand Paging, Copy-on-Write,									
	Page Replacement -FIFO, LRU, OPTIMAL, Thrashing.									
	UNIT IV:									
	File System: File Concept, Access Methods, Directory and Disk Structure, File-									
	System Mounting, File Sharing, Protection.									
	Implementing File Systems: File-System Structure, File-System Implementation,									
	Directory Implementation, Allocation Methods, Free-Space Management.									
	Second Storage Structure: Overview of Mass-Storage Structure, Disk									
	Scheduling, Disk Management									
Text books	Text Book(s):									
and	[1]. Abraham Silberschatz, Peter B. Galvin and Greg Gagne, "Operating System									
Reference	Concepts", 8thed, John Wiley & Sons (Asia) Pvt .Ltd, 2012.									
books	Reference Books:									
	[2]. Dhananjay M. Dhamdhere, "Operating Systems: A Concept-Based Approach",									
	3ed, McGraw-Hill Education India Pvt. Ltd, 2010									
	[3]. William Stallings, "Operating System: Internals and Design Principles", 6 ed,									
	2009									
	[4]. Andrew S. Tanenbaum, "Modern Operating Systems", 3 rd, PHI, 2008.									
E-resources	[1]. Prof. P.K. Biswas, Video Lectures on "Operating Systems" Available:									
and other	http://www.satishkashyap.com/2013/02/video-lectures-on-operating-systems-									
digital	<u>by.html</u>									
material	[2]. C. Franklin and D. Coustan, Memory Management Available:									
	http://computer.howstuffworks.com/operating-system7.html									
	[3]. https://www.tutorialspoint.com/operating_system/os_types.htm									
	[4]. Mythili Vutukuru, IIT Bombay, Lecture notes on Operating Systems									
	https://www.cse.iitb.ac.in/~mythili/os/									

Course Cate	gory:	Prog	ram (Core				(Credit	ts:				1.5	5
Course Type	e:	Lab						Ι	Lectur	re-Tu	itoria	l-Pra	ctice:	0-0)-3
Prerequisite	s:	14CS	51203	- Pro	gramı	ning	in C	(Contii	nuou	s Eval	luatic	on:	30	
								S	bemes	ter e	nd Ev	aluat	tion:	70	
								T	[otal]	Marl	ks:			10	0
Course	Upon	succes	sful c	ompl	etion	of the	e cours	e, th	e stud	lent v	vill be	able	to:		
Outcomes	CO1	Expe	rimei	nt DE	DL an	d DM	IL com	man	ıds wi	th di	fferen	t integ	grity co	onstra	ints
	CO2	Appl	y fun	ctions	s and	opera	tors in	SQI	L quei	ries					
	CO3	Form	ulate	solut	ions t	o qu	ery pro	blen	ns usi	ng ne	ested c	querie	s and a	aggreg	gate
		opera	ators												
	CO4	Dem	onstra	ate Pl	L/SQ	L con	cepts c	n th	e give	en dat	tabase	;	1	1	
Contributio		PO	Р	Р	Р	Р	PO	Р	Р	Р	Р	Р	PO	PS	PS
n of Course		1	0	0	0	0	6	0	0	0	0	0	12	01	02
towards		T	2 3 4 5 7 8 9 10 11 L L M L M L M L												T
achievement	COI											L		M	L
of Program	CO2	M		M										M	L
Outcomes	<u>CO3</u>	M		M								M		M	
(L-Low, M-	CO4	L	M M M M												
Medium, H-															
High) Contonto	Waal	1. Cor	nnora	tha f	 		liffara	+ D	DMC	coftu	ioro oi	d im	nlama	nt tha	Data
Contents	Defini	1. COL	noua	re ne	cature	25 01 0	11110101	II D.	DIVIS	SOILW		1 u 1111	pieme		Dala
	Week	$2 \cdot An$	ngua	ge. ifferei	nt Inte	ority	Cons	train	its on	relati	ions				
	Week	3. Wo	rking	with	Data	Mani	nulatic	n co	mma	nds 1	Basic	SOL	comm	ands v	vith
	relatio	nal . lo	gical	opera	ators		puluite					~	•••••••		
	Week	4: Ma	athen	natica	l, Stri	ng, da	ate/tim	e fui	nction	IS					
	Week	5: SQI	nes	ted qu	ieries	U,									
	Week	6:Sele	ct sta	temer	nt witl	h grou	up by, I	havi	ng an	d agg	regate	e opei	ations		
	Week	7: PL	/SQI	_ prog	gramn	ning:	Cursor	s, T	rigge	rs, Fu	inctio	ns and	d Proce	edures	5
	Week	8: Cas	e stuc	dy: EF	R moo	lel an	d norn	naliz	ation	for a	ny rea	l life	applic	ation	
	Week	9: Cas	e stud	dy: Cr	eatio	n of ta	ables ,	lata	insert	ion fo	or the	case	study	_	
	Week	10: Ca	se sti	udy: E	Basic	querie	es prac	etice	d in	Week	2,3,4	for t	he case	e study	/
	Week	11: Ca	se sti	idy: A	Advan	iced q	ueries	pra	cticed	l in V	Neek :	5,6 fo	or the c	ase st	udy
	Week	12: Ca	se sti	udy: A	Apply	PL/S	QL co	ncep	ots pra	ictice	d in V	veek /	for th	e case	
Toyt bool-	study	l Comi	01. M	ichro	Alar	0011	<u></u>	octo	rin~ ()ra al	<u>, COT</u>	Dom	rheal-	")	1
1 ext DOOKS		l. Sanji	ay M	$\frac{1}{2} \frac{1}{2} \frac{1}$	Alan \mathbf{M}_{α}	eaun	eu, M 004	aste	ring (Jracle	= SQL	rape	TDACK	, 2nc	l
allu Rafaranaa	[2]		n ,U en Fa	Neneti	y ivit(na, 20 Iracla	004. D1/SA	I P.	oct Dr	actics	-ς γ/τ	(\mathbf{C})	vere O	racla	
hooks	L ² .	Datał	on re	ucisti	un, c	14010	, 1 / DQ		05111		., ∠/L		1015 0		
Soons		11G)	", O']	Reillv	Med	ia .20	07.								

17IT3451 - DATABASE MANAGEMENT SYSTEMS LAB

E-	[1]. ShyamalalKumawat,(09,05,2015).
resources	MYSQL.https://www.youtube.com/watch?v=XiDnK9Lq-Ng
and other	[2]www.techgig.com/practice/Specializations/Databases
digital	[3] www.w3schools.com/sql/
material	[4] https://www.tutorialspoint.com/sql/index.htm

Course Catego	ory:	Prog	ramm	ne Co	re				(Credit	s:				1.5
Course Type:		Lab							Ι	ectur	e-Tut	torial	-Pract	ice:	0-0-3
Prerequisites:		17C 17C 17I1	S1103 S1203 T3303	8- Pro 8- Pro - Data	blem gram a Stru	Solvi ming ctures	ng Mo in C	ethods	6	Contin	uous	Evalu	uation	:	30
									S	emest	ter en	d Eva	aluatio	on:	70
									T	otal N	Mark	s:			100
	Upon	succe	ssful	comp	letion	of th	e cou	rse, th	e stu	dent w	vill be	able	to:		
	CO1	Imp] appl	lemen icatio	t pyt ns.	hon	progra	ammi	ng co	nstru	icts to	o bui	ld sn	nall to	large	scale
Course Outcomes	CO2	Imp	lemen	t the	proble	ems ir	ı term	s of re	eal-w	orld o	bjects	s using	gOOPs	s techn	ology.
outcomes	CO3	Eval	uate a	und ha	andle	the er	rors d	uring	runti	me in	volve	d in a	progra	am.	
	CO4	Extr prob	act ar lems.	nd im	port j	packa	ges fo	or dev	elop	ing di	fferen	t solu	itions	for rea	l time
Contribution		PO P													PSO
of Course		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$												2	
Outcomes	CO1	Н	H M H M H M H M H M H M												L
towards	CO2	Н	H M M H M H M M M H L M M M M H H M M M M H H M M M M H H												
achievement	CO3	Μ													
Outcomes (L-Low,	CO4	М													
Medium-M, H- High)															
<u>III IIigii)</u>	Week Runni Write	1: Fuing ins	undar structi gram	nenta ions in to pur	al pro n Inte rpose	gram ractiv fully r	s e inte aise I	rprete ndent	r and ation	l a Pyt Error	hon S and C	cript Correc	t it	I	I
	Devel	op Py	thon j	progra	ams u	sing t	oasic o	operat	ions	in Pyt	hon				
	Week Devel	3 & op Py	4: Co thon j	nditi progra	o nal & ams tl	&Con nat ma	trol I akes u	Flow ise of	cond	itiona	land	contro	ol flow	structu	ures
Course	Week Devel	5: D op Pv	ata St thon 1	t ruct u	ires	sing s	uitab	le Dat	a stri	ictures	3				
Content	Week Devel	ор Гу с 6 & ор Ру	7: Da	ta St i progra	ructu ams u	res sing s	uitab	le Dat	a stru	uctures	5				
	Week Devel	8: Fu	unction	o ns progra	ams u	sing r	ecurs	ive an	d no	n-recu	rsive	functi	ions		
	Week Illustr	9: M ate in	odule stallir	es ng pac	kage	s via I	PIP ar	d dev	elop	pytho	n prog	grams	using	modul	es
	Week Appli	10 & cation	z 11: orier	nted C	Case S	tudies	5								

17IT3452 - PYTHON PROGRAMMING LAB

	Week 12: Classes, Inheritance & Exception handling
	Illustrate Class variables and instance variable
	Develop Python programs to exemplify the concepts of inheritance and overloading.
	Develop Python programs to illustrate exception handling.
	Text Book(s):
	[1]. VamsiKurama, "Python Programming: A Modern Approach", Pearson India,
	2017.
	[2]. Charles Severance, " Python for Informatics: Exploring Information", 1st
Text books	edition Shroff Publishers, 2017.
and	Reference Books:
Reference	[1]. Mark Lutz,"Learning Python", 5th edition, Orielly, 2013.
books	[2]. Allen Downey "Think Python, How to Think Like a Computer Scientist", 2nd
	edition, Green Tea Press, 2015.
	[3]. W.Chun, "Core Python Programming", 2nd Edition, Prentice Hall, 2006.
	[4]. Kenneth A. Lambert, "Introduction to Python", 1st edition, Cengage Learning,
	2011.
	[1]. Charles Severance: University of Michigan, Python for Everybody
	[COURSERA]. Available: <u>https://www.coursera.org/</u>
	[2]. Madhavan Mukund, (12, may, 2018). Programming, Data Structures &
E-resources	Algorithms using Python [NPTEL]. Available: <u>http://nptel.ac.in/</u>
and other	[3]. Prof. S.R.S.Iyengar, IIT Ropar, The Joy of Computing using Python, 2018
digital	https://nptel.ac.in/courses/106/106/106106182/
material	[4]. Charles Russell Sevarance, University of Michigan, Python for Everybody,
	2019
	https://www.coursera.org/learn/python

Course Catego	ory:	Progra	mme	Core					Cred	its:				1.	.5
Course Type:		Lab							Lect	ure-T	utori	ial-Pr	actice	e: 0-	-0-3
Prerequisites:		14CS1	103-	Intro	ductio	on to			Cont	inuo	us Ev	aluat	ion:	30	0
		compu	ting												
		14CS1	203-	Progr	amm	ing ir	l C								
									Seme	ester	end H	Evalu	ation:	70)
									Tota	I Ma	rks:			10	00
Course	Upon	succes	ssful o	compl	letion	of th	e coui	se, t	he stu	dent v	will b	e able	e to:		
Outcomes	CO1	Und	ersta	nd th	ie in	porta	ince	of t	he wo	eb as	s an	effe	etive	mediu	ım of
	~~	com	muni	cation	1										
	CO2	Dev	elop	basic	skills	ın an	alyzır	ng th	e usab	ility (of a w	veb sit	te usin	<u>g H</u> TI	ML.
	CO3	Dev	velop	hand	s on	expe	erience	e us	ing op	ben s	ource	e tech	nolog	ies su	ich as
		HII	ML, (Dan	1 N <i>T</i> 0									
	CO4	Gon	ascrij	n, rn	r and	t IVIY:	SQL asad i	inon	the co	ncon	ts of]	итм	[& D	ЦD	
Contribution	004	P P <th>PS</th>												PS	
of Course	$\begin{vmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $												02		
Outcomes												01	-		
towards	CO1 L L L M												М	М	
achievement	CO2	CO2 H H M												М	М
OI Program	CO3												М	М	
(L-Low,	CO4	L												М	М
M- Medium,															
H- High)															
Course	Week	x 1:													
Content	Creat	e a sim	iple w	vebpa	ge usi	ng H	TML.								
	Use f	rames	to Inc	stude	Image	es and	l Vide	OS. inat	ho wo	h naa	0				
	Auu a	$\frac{1}{7}$	unig	Style	sneet	. 101 C	lesign	ing i	ne we	o pag	е.				
	Write	a pros	oram	in hti	nl to	creat	e a w	ehna	ge wi	th foi	ır fra	mes (Pictur	e table	e list
	and h	vperlin				••••••	• • • •	•opu				(•,••••	,,
	Week	x 3:	/												
	Write	a prog	gram	in htr	nl to	create	e a we	bpag	ge to s	how	variou	us cor	nfectio	nary i	tems
	using	ordere	d list	and u	inord	ered l	ist.								
	Desig	gn a dy	namic	e web	page	with	valida	ation	using	Java	Script	t.			
	Week	x 4:							G	1.0					
	Deve	lop we	b pag	es usi	ng H	ΓML	to exe	ercis	e Cont	rol S	tatem	ents			1
	Case	Study	:Desi	ign th	ie sta	tic w	eb pag	ges i	require	ed foi	an c	online	book	store	web
	Site.	. 5.													
	Dovo	(J: Ion wa	h naa	AG 1101	na Fi	inctio	ng A	rratic	Ohie	ota					
	Weel	<u>. 6.</u>	u pag	us usi	ng rt	mene	ль, А	iiays	, Obje						
	Deve	lop We	bPag	es usi	ng PI	HP or	ı maki	ัทg แ	se of I	Data t	vnes				
	20,0	r				01									

17IT3453 - WEB PROGRAMMING LAB

	Week 7:
	Develop web pages using PHP that makes use of operators
	Week 8:
	Develop web pages using PHP that makes use of control structures
	Case Study: A simple calculator web application that takes numbers and an
	operator (+,-,*, /, %) from an HTML page and returns the result page with the
	operation performed on the operands.
	Modify the above program such that it stores each query in a database and checks
	the database first for the results. If the query is already available in the DB, it
	returns the value that was previously computed (from DB) or it computes
	the result and returns it after storing the new query and result in DB.
	Week 9:
	Develop web pages using PHP arrays and functions
	Week 10:
	Database manipulation using PHP
	Week 11:
	Case Study:
	Implement form validation using PHP
	PHP Sessions – Illustrated with a simple login system
Text books	Text Books:
and	[1]. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, Internet& World Wide
Reference	Web How to Program, Prentice Hall, Fifth Edition, 2011
books	[2].C. Bates, "Web Programming building Internet Applications", Willey
	Dream Lech, 3rd edition, 2006
	[3]. Kevin Tatroe, Peter Macintyre, Programming PHP, O REILLY, 3rd
	Edition,2015
	[1] David Elanagan JavaSarint: The Definitive Guide O'Deilly Media 6th
	Edition 2011
	[2] S. M. Grath, XMI, by Example, Prentice Hall of India, 5 edition C. Bates
	Web Programming building Internet Applications Willey Dream Tech
	3rd edition 2006
E-resources	Web resources:
and other	[1].http://nptel.ac.in/syllabus/syllabus.php?subjectId=106105084
digital	[2]. XML in 10 point. http://www.w3.org/XML/1999/XML-in-10-points
material	[3].Cascading Style Sheets from W3. http://www.w3.org/Style/CSS/

Course Cates	gory:	Hui	maniti	les ele	ective		Cre	dits:					1			
Course Type	:	The	eorv				Lect	ture-	Futor	ial-P	ractio	e:	2	-0-0		
Prerequisites	:		J				Con	tinuo	us Ev	valua	tion:		1	00		
							Som	ostor	and	Fyalu	otion	•	_			
							Tote	al Ma	rbe	Evalu		L•	1	00		
Course	Unon	\$110.04	ecful	comr	letio	n of th		rse f	he stu	dent v	will h	e able	to.	00		
Outcomes	CO1	Kno	$\frac{1}{2}$	s fund	lamer	ntal la	$\frac{1000}{2000}$	he lar	nd stu	uent	will U		. 10.			
Outcomes	CO^2	Un	dersta	nd ho	w fur	ndame	mtal r	ights	are ni	otect	ed					
	CO3	Per	ceive	the st	ruetu	re and	form	ation	$\frac{\text{are } p_1}{\text{of th}}$	e Indi	an Go	werni	nent 9	System		
	CO4	Exr	lain x	when	and h	$\frac{10}{0}$ and $\frac{10}{2}$	emei	genc	$\frac{01 \text{ m}}{2}$	he im	nose	1 and	what	the		
	001	con	seque	nces	are.	ow u		gene.	y cun		iposet	a una	vv mat	uite		
Contributio		Р	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO	PS	
n of Course		0	2	3	4	5	6	7	8	9	10	11	12	1	O 2	
Outcomes		1														
towards	CO1										Μ					
achievement	CO2															
OI Program	CO3															
(L-Low, M-	CO4															
Medium, H-																
High)																
Course	UNIT	I:	<u> </u>													
Content	Intro	roduction to Constitution of India: Meaning of the Constitution Law and														
	Consti	institutionalism, Historical perspective of constitution of India, Salient features of														
	Consti	stitution of India.														
	UNIT	II:														
	Funda	amen	ital 1	rights	s: Sc	cheme	of	the	fund	ament	al ri	ghts,	sche	eme o	f the	
	fundar	nenta	al rigł	nt to e	equali	ty, sc	heme	of th	e fun	dame	ntal ri	ight to	o certa	ain free	edoms	
	under	Artic	19	, sco	pe of	the r	ight c	of life	and	perso	nal li	berty	unde	r Artic	le 21,	
	writs j	urisd	liction	l												
	UNIT	III:	л т			,•, ,•	Б	1			1 1	• . •1	<i>.</i> .	c1 ·	1.0	
	Natur	'e of	the II	Idian	cons	tituti	on: Fo	edera	l struc	cture a	and d	Istribi	ation	of legis	slative	
	and III	nanci		vers t	of go	en the		n and	i state	s Tha C	onatit	ution	1 01110	ra and	status	
	r ariia	Drog	ident	of In	dia A	mon	lmont	of th			unsuit Fional		powe	d Proc	status	
	Histor	ical I	Derene	orine	uia, A	ne cor	netitut	ional	amen	dmen	ts in 1	pow. India	215 all	u 1100	cuure,	
	Local	Self	Gove	rnme	s or u	onstit	ution	al Scł	amen 1eme	in Ind	lia	muia				
	UNIT	IV:	0010	1 1111		011511	ution				iiu					
	Emer	genc	v Pro	visio	1s: Na	ationa	l Eme	rgena	ev. Pr	esider	nt rule	e. fina	ncial	emerge	encv	
Text books	Text B	ook(s):					0	<u> </u>			,		8	- 5	
and	[1] Dr	J.N	Pan	dey, (Consti	tution	al Lav	w of	India	publi	shed	by Co	entral	law A	gency,	
Reference	Allaha	bad, I	Edition	n 2018	3											
books	Refere	ence I	Books	<u> </u>	.,		1. 5	, .		G	-	1				
	[]] V.I	N Shu	kla's,	Const	itutioi	1 of In	dia Ea	stern	Book	Comp	any, L	Juckno	OW.			
	[2] או דם [3] ד	r. jaii Dhac	i, indi ai Cor	all CO nstitut	ion of	uon La India	ıw, Wa Wadh	aunwa ar	i and Cor	voinpa nnany	uiy, N v Nace	agpur	•			
		2. Uas	u, COI	isiitut	1011 01	muia,	vv aul	iwa di		прапу	, wag	pur.				

17MC1407B - INDIAN CONSTITUTION

SEMESTER V

17IT3501- SOFTWARE ENGINEERING

Course Type: Theory Lecture-Tutorial-Practice: 3-0-0 Prerequisites: Introduction to Computers Continuous Evaluation: 30 Semester end Evaluation: 70 Total Marks: 100 Course Upon successful completion of the course, the student will be able to: 00 Course Upon successful completion of the course, the student will be able to: 00 Course CO1 Identify an appropriate software model that would implement the customer requirements. CO2 CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. CO2 H L L M M L CO3 IL M L L M M L L Outcomes CO2 H L L L M M M L Coarse CO2 H L L L M M M Outcomes CO4 H L<	Course Category:	Progra	amme	Core						Cre	edits:					3
Prerequisites: Introduction to Computers Continuous Evaluation: 30 Semester end Evaluation: 70 Total Marks: 100 Outcomes Upon successful completion of the course, the student will be able to: 70 Outcomes Identify an appropriate software model that would implement the customer requirements. 02 CO2 Analyze the requirements and identify the suitable architecture for the problem. 03 CO3 Discriminate the specifications at each stage of Software Development Life Cycle. 04 CO4 Implement various software testing strategies for verification and validation of the software products. 01 Course 01 1 12 1 Outcomes CO1 1 1 1 1 Course 01 1 1 1 1 1 Outcomes CO3 H L L M M M L Course CO1 L M L M M M M Course CO4 H L M M M M M Content	Course Type:	Theor	V							Lec	ture-	Tutor	ial-P	ractic	e:	3-0-0
Course Outcomes Upon successful completion of the course, the student will be able to: CO1 Identify an appropriate software model that would implement the customer requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Contribution of Course PO	Prerequisites:	Introd	uction	to Co	mpute	ers				Cor	ntinu	ous Ev	valua	tion:		30
Total Marks: 100 Total Marks: 100 Total Marks: 100 Course Upon successful completion of the course, the student will be able to: Course CO1 Identify an appropriate software model that would implement the customer requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Course OI L M M M D PO PO <th< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>Sen</th><th>nester</th><th>r end</th><th>Evalu</th><th>ation</th><th>:</th><th>70</th></th<>										Sen	nester	r end	Evalu	ation	:	70
Course Outcomes Upon successful completion of the course, the student will be able to: CO1 Identify an appropriate software model that would implement the customer requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Course 01 L M M M Outcomes CO2 H L L M M M Program CO3 H L L L M M M M Outcomes CO4 H L L L M M M L L Program CO4 H L L L M										Tot	al M	arks	Livuru		•	100
Course Outcomes Upon successful completion of the course, the student will be able to: CO1 Identify an appropriate software model that would implement the customer requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H- High) PO										100						100
Outcomes CO1 Identify an appropriate software model that would implement the customer requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Contribution of Course PO P	Course	Upon	succes	sful co	omple	etion of	of the	cours	e, the	stude	nt wil	l be al	ble to:			
requirements. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Contribution of Course PO	Outcomes	CO1	Ident	ify ar	n app	ropria	ate sc	oftwar	e mo	del t	hat v	vould	impl	ement	the cu	ustomer
CO2 Analyze the requirements and identify the suitable architecture for the problem. CO3 Discriminate the specifications at each stage of Software Development Life Cycle. CO4 Implement various software testing strategies for verification and validation of the software products. Contribution of Course PO <			requi	remen	ts.	1							1			
CO3 Discriminate the specifications at each stage of Software Development Life Cycle.CO4Implement various software testing strategies for verification and validation of the software products.Contribution of CoursePO		CO2	Anal	yze the	e requ	ireme	ents ar	nd ide	ntify t	he sui	itable	archit	tecture	e for t	he probl	em.
CO4Implement various software testing strategies for verification and validation of the software products.Contribution of CoursePOPOPOPOPOPOPOPOPOPOPOPSOPSO2OutcomesCO1LMLLLLMMLCourseCO1LMLLLMMLOutcomesCO2HLLLMMLCo3HLLLLMMMOutcomesCO4HLMLMMMOutcomesCO4HLMLLMMMProgramCO3HLMLLMMMOutcomesCO4HLMMMMMCo3HLMLMLMMMCo4HLMMMMMMCo4HLMMMMMMCo4HLMIIMIICorrseUNIT I:Introduction:SoftwareEngineeringEthics, Software, Software, SoftwareMyths, CapabilityMaturity Model Integration.Software Process Models:Process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models		CO3	Disci	imina	te the	speci	ficatio	ons at	each s	stage	of So	ftware	Deve	lopm	ent Life	Cycle.
software products. Contribution of Course Outcomes 1 2 3 4 5 6 7 8 9 10 11 12 1 Outcomes CO1 L M L L I I M L I I M M L I		CO4	Imple	ement	vario	us soi	ftware	testir	ng stra	tegie	s for	verific	ation	and v	alidation	n of the
Contribution of Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H- High)PO 1PO 2PO PO 3PO PO 4PO PO 6PO PO 7PO 8PO 9PO 90 11PO 12PSO 11PSO2 12CollLMLLLMMLCO2HLLLLMLLCO3HLLLLMMMCO4HLMLLMMMCo4HLMHLMHHHighHLHHHHHCourse ContentUNIT I: Introduction:SoftwareEngineeringEthics, Ethics, Software, Software, Software, SoftwareSoftwareMyths, Capability Model, Incremental process Models: Agile Process Models: Agility, Agile Process, Agile Process, 			softw	are pr	oduct	s.			-	J						
Course Outcomes towards achievement of Program Outcomes (L-Low, M-Medium, H- High)1234567891011121CO1LMLLLLMMMLMLProgram Outcomes (L-Low, M-Medium, H- High)CO3HLLLLMLMMMMCourse ContentUNIT I: Introduction:SoftwareEngineeringEthics, Integration. Software ProcessSoftwareEngineeringEthics, Software, Software, Software, Software Requirements:Non-Functional requirements, Von-Functional requirements, User requirements,	Contribution of		PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO	PSO2
Outcomes towards achievement ofCO1LMLLMMLProgram Outcomes (L-Low, M-Medium, H- High)CO3HLLLLMLMMMOutcomes (L-Low, M-Medium, H- High)CO4HLMLLLLMMMMMCourse ContentUNIT I: Introduction:Introduction: SoftwareSoftware Engineering ProcessEthics, Software, Software, Software, Software ProcessVaterfall Model, Introduction: Software Requirements:Introductional requirements, Unified process, Agile Process, Ag	Course		1	2	3	4	5	6	7	8	9	10	11	12	1	
towards achievement of Program CO1 L M L M L L CO2 H L L L L M L M L L Program CO3 H L L L L M L M M M M Outcomes (L-Low, (L-Low, M-Medium, H- H L M L M	Outcomes	CO1	CO1 L M L M M												М	T
achievement of Program CO2 II III IIII IIII IIII IIII IIII IIII IIII IIII IIII IIIII IIIII IIIII IIIIII IIIII IIIIII IIIIIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	towards	CO1 L M M CO2 H L L L M L												IVI		
Program Outcomes (L-Low, M-Medium, H- High) CO3 H L I L M L M <th< th=""><th>achievement of</th><th colspan="12">$\begin{array}{c c c c c c c c c c c c c c c c c c c$</th><th></th><th></th></th<>	achievement of	$\begin{array}{c c c c c c c c c c c c c c c c c c c $														
Outcomes CO4 H L M	Program	CO3	O3 H L L M L M M												M	M
M-Medium, H- High) UNIT I: Course UNIT I: Content Introduction: Software Engineering Ethics, Software, Software Myths, Capability Maturity Model Integration. Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements,	(I -I ow	CO4	H L M M M											M	M	
High) UNIT I: Course UNIT I: Content Introduction: Software Engineering Ethics, Software, Software Myths, Capability Maturity Model Integration. Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements,	M-Medium, H-															
Course ContentUNIT I: Introduction: Software Engineering Ethics, Software, Software Myths, Capability Maturity Model Integration. Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements,	High)															
ContentIntroduction: Software Engineering Ethics, Software, Software Myths, Capability Maturity Model Integration. Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models.UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements,	Course	UNIT	' I:													4
Maturity Model Integration. Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements : Functional ,Non-Functional requirements, User requirements,	Content	Intro	ductio	n: So	ftwar	e En	ginee	ring	Ethics	, So	ftware	e, So	ftware	e My	ths, Ca	pability
 Software Process Models: Prescriptive process model, Waterfall Model, Incremental process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements, 		Matur	ity Mo	odel In	tegrat	ion.	-	-						•		
 process model, Evolutionary process model, Unified process. Agile Process Models: Agility, Agile Process, Agile Process Models. UNIT II: Software Requirements: Functional ,Non-Functional requirements, User requirements, 		Softw	are P	rocess	Mo	dels:	Presc	riptive	e proc	cess r	nodel	, Wat	terfall	Mod	el, Incre	emental
Agile Process Models: Agility, Agile Process, Agile Process Models.UNIT II:Software Requirements: Functional ,Non-Functional requirements, User requirements,		proces	ss mod	lel, Ev	olutio	nary	proces	ss moo	del, U	nified	l proc	ess.				
UNIT II: Software Requirements : Functional ,Non-Functional requirements, User requirements,		Agile	Proce	ss Mo	dels:	Agili	ty, Ag	ile Pr	ocess,	Agile	e Proc	ess M	Iodels	•		
Software Requirements: Functional ,Non-Functional requirements, User requirements,		UNIT	'II:													
		Softw	are R	equire	emen	ts: Fu	inction	nal ,N	lon-Fi	inctio	onal re	equire	ments	, Use	r requir	ements,
System Requirements, Software Requirements Specification Document,		Syster	n Req	uireme	ents, S	Softwa	are Re	quire	ments	Spec	ificati	on Do	ocume	nt,		
Requirements Engineering: Requirements Engineering tasks, Initiating the		Requ	ireme	nts 1	Engin	eerin	ig: I	Requi	remen	ts I	Engin	eering	, tas	ks,	Initiatin	g the
Requirements engineering process, Eliciting Requirements- Developing use cases,		Requi	remen	ts eng	gineer	ing	proces	ss, E	liciting	g Re	quire	ments	- De	velopi	ng use	cases,
Building the Analysis model, Negotiating, validating Requirements.		Build	ing the	Analy	/s1s m	iodel,	Nego	tiating	g, valı	dating	g Req	uirem	ents.			
		UNII	ÌIII:					1 1.								
Building Analysis Model: Data modeling concepts,		Build	ing Ai	1alysis	Mod	lel: D	ata mo	odelin	g con	cepts,		D		- ·		р [.]
Architectural Design: Architectural Styles and Patterns, Design Engineering: Design		Archi	tectur	al De	sign:	Arch	Itectu	rai St	yles a	ina Pa	attern	s, Des	sign I	ngin	eering:	Design
Process and Design Unality Design Concents		Proce	ss and		n Qua	uity, I	Design	1 Con	cepts.				4101 N	[ada]	م د ا ۱۸ ۸ ۲	Class
Introduction to UML An Occurring of the UML A Concentral Model of UML Office		Intro	uuctio		ענג: הים יי	An ([ew 0]		JIVIL,	A Co	Uncepi	ual IV			L, Class
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class		Diagr	ams, om S≁		Dia	igram	s, Us plour	t = U	ise D	nagra	ins,	intera	cuon	Diag	iams, A	ACUVITY
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity			ann, St ' 117-		igram	is, De	pioyn		lagraf	115.						
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity Diagram, State Diagrams, Deployment Diagrams.		UNII Testi-	1V: 10 St	entonia	ыс. Л	Stro	tegio	Ann	oach	to S	oftwo	$\mathbf{T}_{\mathbf{r}}$	acting	_ V	erificati	on and
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity Diagram, State Diagrams, Deployment Diagrams.		UNIT	'IV: ng S≁-	ratori	ыс. Л	Stro	terio	Ann	oach	to S	oftwo	T_{2}	octing	_ V	erificati	on and
Process and Design (Diality Design Concents		Proce Intro	ss and ductio	Designed to U	n Qua J ML:	An C	Design Overvi	n Con	cepts. f the I	JML,	A C	oncep	tual N	Iodel	of UMI	., Class
Introduction to UML: An Overview of the UML. A Conceptual Model of UML Class		Diagr	ams.	Obiect	t Dia	igram	s. Us	se Ca	ise D) iagra	ms.	Intera	ction	Diag	rams.	Activity
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity		Diagr	am, St	ate Dia	agram	is, De	ploym	nent D	iagrai	ns.				U		2
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity Diagram, State Diagrams, Deployment Diagrams.		UNIT	IV:		-		-		-							
Introduction to UML: An Overview of the UML, A Conceptual Model of UML, Class Diagrams, Object Diagrams, Use Case Diagrams, Interaction Diagrams, Activity Diagram, State Diagrams, Deployment Diagrams. UNIT IV:		Testin	ig Sti	rategie	es: A	Stra	itegic	Appr	oach	to S	oftwa	re Te	esting	– V	erificati	on and

	Validation, Organizing for software testing, Test Strategies for Conventional software,
	Validation Testing, System Testing, Art of Debugging
	Testing Tactics: Software Testing Fundamentals, Black Box Testing, White Box Testing,
	Basis Path Testing, Control Structure Testing.
Text books	Text Books:
and Reference	[1].Roger S Pressman, "Software Engineering – A Practitioner's Approach", Sixth
books	Edition, MCGRAW Hill Publications, 2010.
	[2].I. Somerville, "Software Engineering", 6 ed.: Pearson Education.
	[3]. Grady Booch, James Rumbaugh, Ivar Jacobson, "The Unified Modeling Language
	user guide", Tenth Edition, Pearson, 2011.
	Reference Books:
	[1].C. Ghezzi, et al., "Fundamentals of Software Engineering", Second Edition, PHI.
	[2].RajibMall, "Fundamentals of Software Engineering", Second Edition, PHI.
E-resources	[1]. Prof.N.L. Sarda, Prof. UmeshBellur, Prof.R.K. Joshi and Prof. Shashi Kelkar,
and other	Department of Computer Science & Engineering ,IIT Bombay, Oct 8, 2008.
digital	https://www.youtube.com/watch?v=Z6f9ckEEIsU,
material	[2]. NPTEL, Lecture Series on Software Engineering by Software engineering NPTEL.
	Available: http://nptel.iitm.ac.in/video.php?courseId=1076
	[3]. Software engineering MIT Videos.
	Available: http://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-
	912- introduction-to-copyright-law-january-iap-2006/video-lectures/lecture- 4-
	softwarelicensing
	[4].https://www.youtube.com/watch?v=4qKnEgsF.CA&list=PLrYIqcAgMeQg
	yMfiyWf7hn8BPUw8j ors

Course Cate	egory:	Prog	ramme	Core				C	redits	5:				Z	1	
Course Type	e:	Theo	ry					L	ectur	e-Tu	toria	l-Pra	ctice	: 3	8-0-2	
Prerequisite	s:	17IT.	3402 -	DBMS	5			C	ontin	uous	Eval	uatio	on:	3	30	
								Se	emest	er en	nd Ev	alua	tion:	7	70	
								Т	otal N	Aark	s:			1	100	
Course	Upon s	success	sful co	mpleti	ion o	f the	cours	e, the	e stud	ent w	vill be	able	to:			
Outcomes	CO1	Unde	erstand	l the ba	asic c	once	pts of	war	ehous	sing a	ind m	ining	•			
	CO2	Deriv	ve vari	ous in	terest	ting p	attern	is an	d asso	ociati	ons ii	n data	asets.			
	CO3	Desig	gn and	devel	op cl	assifi	er mo	dels	to pro	edict	futur	e tren	ds.			
	CO4	Appl	y unsu	pervis	ed le	arnin	g tecl	nniqu	ies fo	r a gi	ven a	pplic	ation	•	-	
Contributio		PO	PO	PO	Р	Р	Р	Р	Р	Р	Р	Р	Р	PSO	PSO	
n of Course		1	$\frac{10}{2}$	3	0	0	0	Ο	0	0	0	0	0	1	$\frac{150}{2}$	
towards		-	_		4	5	6	7	8	9	10	11	12		_	
achievemen	CO1	T			H	L							M	H		
t of	<u>CO2</u>		M		H								т	H		
Program	003	M	M		Н	M							L	H		
Outcomes	CO4	Ш	м		Ш	м							м	Ш	т	
(L-Low, H-	CO4	п	M H M L													
	UNIT	I.														
Content	Data	T I: a Warehouse and Online Analytical Processing: Data Warehouse basic														
Content	concer	ta Warehouse and Online Analytical Processing: Data Warehouse basic ncepts, Data Warehouse Modeling: Data cube and OLAP, Data Warehouse														
	Implen	cepts, Data Warehouse Modeling: Data cube and OLAP, Data Warehouse elementation. Data Generalization by Attribute Oriented Induction														
	Data I	Prepro	ocessir	ng: Ov	vervie	ew, D	ata (lean	ing, l	Data	Integ	ratio	n, Da	ta Red	luction,	
	Data T	ransfo	rmatic	on and	Data	Disc	retiza	tion.	U,		C		·		,	
	UNIT	II:														
	Data N	Aining	g Intro	oducti	on: I	ntrod	uctio	n, W	hy Da	ata M	lining	g, kin	ds of	Data t	hat can	
	be mir	ied, Pa	atterns	that	can b	e Mi	ned,	tech	nolog	ies w	vhere	it ca	in be	used	, major	
	issues	in data	Minii	1g.			•			C			ъ	· c		
	Nining	g Fre	quent	Patte	erns,	ASS Asth	ociati	ons,	and	CO ottom	rrela	tions	: Bas	SIC CO	ncepts,	
	Evalua	tion M	Iethod	۱۷۱۱۱۱ ۶	ng 1	victil	Jus,	VV 1110	CII F	allen	15 A		neres	sung—	rauem	
	UNIT		letilou	5.												
	Classi	ficatio	n: Intr	oducti	ion. I	Decisi	on tr	ee in	ductio	on, B	avesi	an Cl	assifi	cation	Rule-	
	Based	Class	ificatio	on, M	lodel	Eva	luatio	n ar	nd Se	electi	on, I	Fechr	iques	s to in	mprove	
	Classif	ication	n Acc	uracy.	, Cla	assific	catior	by	Bac	k p	ropag	ation	, Su	pport	Vector	
	Machin	nes, Ot	ther cl	assific	ation	meth	ods.									
	UNIT	IV:		_	-		-							_		
	Cluste	r Ana	lysis:	Introd	uctio	n, ov	ervie	w of	basi	c clu	sterin	g me	thods	s, Parti	tioning	
	method	ls, Hi	erarch	ical m	netho	ds, E)ensit	y-Ba	sed]	Meth	ods:	DBS	CAN	& 0	PTICS,	
	Grid-b	ased (ing N	ietho	a: S	IKIN	υð	ι CL	IUUI	2, EV	aiuat	ion (of Clu	stering,	
	June	Analy	y 515.													
	l															

17IT3502 - DATA MINING

Text books	Text Book(s):
and	[1]. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques"
Reference	Third Edition, Elsevier, 2012.
books	
	Reference Books:
	[1].G. K. Gupta ,"Introduction to Data Mining with Case Studies", Easter
	Economy Edition, Prentice Hall of India, 2006
	[2] A Pang-Ning Tan, Michael Steinbach and Vipin Kumar, "Introduction to
	DataMining", Second Edition Pearson Education, 2016
	[3].K.P. Soman, ShyamDiwakar and V. Ajay "Insight into Data mining Theory
	and Practice", Easter Economy Edition, Prentice Hall of India, 2006
E-	[1] Data Warehouse Tutorial For Beginners Data Warehouse Concepts Data
resources	Warehousing Edureka (2017)
and other	https://www.youtube.com/watch?v=J326LIUrZM8&t=4s
digital	[2] How Artificial Neural Network (Ann) Algorithm Work Data Mining
material	Introduction To Neural Network (2016)
	https://www.youtube.com/watch?v=fwnaijgpih,
	[3].https://Www.Kdnuggets.Com/2015/05/Most-Viewed-Data-Mining-Videos-
	<u>Youtube.Html</u>
	[4]. https://Bigdata-Madesimple.Com/Free-Video-Tutorials-On-Data-Mining/

17IT3503 - COMPUTER NETWORKS

Course Categ	ory:	Prog	ramme	e core					Credi	ts:				3			
Course Type		Theo	ry						Lectu	re-Tu	itoria	l-Pract	ice:	2-0-	-2		
Prerequisites	:	-							Conti	nuou	s Eval	uation	:	30			
									Seme	ster e	nd Ev	aluatio	on:	70			
								-	<u>Total</u>	Marl	KS:			100			
								I						100			
Course	Upon s	uccess	sful co	mplet	ion of	f the c	ourse	the s	tuden	t will	be abl	e to:					
Outcomes	CO1	Anal	vze th	e refe	rence	mode	ls and	phys	ical co	onnect	ions o	of netw	ork sv	stems			
	CO2	Appl	y diffe	erent r	orotoc	ols fu	nctior	ing a	t Appl	icatio	n laye	r and T	ransp	ort lav	ver.		
	CO3	Evalu	iate va	arious	Rout	ing al	gorith	ms fo	r findi	ng the	e optir	nal pat	h.		,		
	CO4	Unde	erstand	l the c	oncep	ots of	wirel	ess co	mmur	nicatio	n , m	obility	and se	curity	1		
Contribution		PO	PO	PO	PO	PO	PO	РО	PO	PO	PO	PO	PO	PS	PS		
of Course		1	2	3	4	5	6	7	8	9	10	11	12	01	02		
Outcomes	CO1					L						L		Н	М		
towards	CO2		L			L	Μ	М				L		Н	М		
of Program	CO3	Н	L			Μ		L				L		Н	М		
Outcomes	CO4																
(L-Low,		T.				T.		М				T.		н	М		
Medium-M,		Ľ															
H- High)																	
Course	UNIT	l:	ction: Uses of Computer Networks Network Hardware LANs MANs WANs														
Content	Introd	oduction: Uses of Computer Networks, Network Hardware, LANs, MANs, WANs,															
	Netwoi Defense	rk Son	ware.		Netwo	OTK COL	re oforon		Indal	тсі	תו/כ	Dafara		Indal	tha		
	compa	rison o	f OSI	8. 11 and 7		Drofe	rence	mode	louel,	ICI	-/IP .	Kelelel	ice n	louel	, the		
	UNIT	II •	0.001	, and				mout	.15								
	Annlic	n. ation	Laver	• Prir	ncinle	s of n	etwor	k anr	licatio	ons T	he W	eb and	нтт	P FT	РE-		
	Mail in	the in	ternet	DNS	S-The	interr	et's d	irecto	rv ser	vice.	ne vv	co una	111 1	, , , , ,	г, <i>ב</i>		
	Trans	oort I	Laver:	Con	nectic	onless	Tran	sport:	UDF	P. Co	nnecti	on-Orio	ented	Trans	sport:		
	TCP, P	rincip	les of	conge	stion	contro	ol, TC	P Cor	ngestio	on Co	ntrol.				T · · ·		
	UNIT	III:		<u> </u>					~								
	The N	etwor	'k La	yer:	Introc	luctio	n, Vi	rtual	circui	ts an	d Da	tagram	Netw	vorks,	The		
	Interne	t Proto	ocol(II	P), Ro	uting	Algo	rithms	, Case	e Stud	ies- D	istanc	e Vecto	or, Lir	nk Sta	te		
	The Li	ink La	yer a	nd Lo	cal A	rea N	etwo	rks :I	ntrodu	iction	and s	ervices	, Erro	r Dete	ction		
	and Co	rrectio	on Tec	hniqu	es, Sv	vitche	d Loc	al Are	ea Net	work	5						
	UNIT	IV:					-										
	Wirele	ess ai	nd N	lobile	Ne	twork	ks: li	itrodu	iction.	Wi	reless	links	and	Net	work		
	charact	teristic	s, W1-	-f1, Mo	bile I	lΡ, Μι	iltime	dia N	etwor	king A	Applic	ations	C		. 1		
	Securi	iy in Ilo	Comp	Juter	INETW	Orks	: ne	lwork	secu	iity, I	rincij	pies of	Cryp	logra	pny,		
Contont	Drinoi	115 nloc of	Dete	Tran	sfor												
Revond	1 mer	10 6214	Data	IIall	5101												
Svllabus																	

Text books	Text Book(s):
and	[1]. James F. Kurose, Keith W. Ross, "Computer Networking: A Top-Down Approach
Reference	Featuring the Internet", Sixth ed.: Pearson Education,2013
books	[2]. A. S. Tanenbaum, "Computer Networks", 5th Edition, Pearson Education / PHI,
	2011
	Reference Books:
	[1]. Behrouz A Fourzan, Data communications and networking 4th edition, TMH
	[2], Larry L. Peterson, Bruce S. Davie, "Computer Networks: A Systems Approach".
	5 th edition. Morgan Publishers, 2011.
	· · · · · · · · · · · · · · · · · · ·
E-resources	[1] Prof. SOUMYA K GHOSH, Prof. SANDIP CHAKRABORTY, Department of
and other	Computer Science & Engineering IIT Kharagpur, NPTEL, Lecture Series on
digital	Computer Networks and Internet protocol by July 8, 2018
material	https://nptel.ac.in/courses/106105183/,
	[2] Tech terms ,OSI Animation ,Aug 2018
	https://www.youtube.com/watch?v=vv4y_uOneC0,
	[3] Ravindrababu Ravula, Classless Inter Domain Routing (CIDR), May 30, 2014
	https://www.youtube.com/watch?v=86RDE bP1Bs&index=7&t=0s&list=PLEbnTDJU
	r IegfoqO4iPnPYQui46QqT0j
	[4].https://www.tlm.unavarra.es/~daniel/docencia/arss/arss10_11/practicas/Tutorial_CS
	MA-CD.pdf, Daniel CSMA/CD
	[5]. Internet Technologies, Internet Domain Name System
	http://www.tutorialspoint.com/internet_technologies/internet_domain_name_system.ht
	m,

Course Cate	gory:	Ope	en Ele	ective	-I				Cr	redit	s:				3		
Course Type	•	The	ory						Le	ectur	e-Tu	itoria	l-Pra	ctice	: 3.	3-0-0	
Prerequisites	5:	Intr	oduct	tion to	o Con	npute	rs		Co	ontin	3	0					
									Se	mes	ter ei	nd Ev	alua	tion:	7	0	
									To	otal I	Mark	ks:			1	00	
Course	Upon	succe	ccessful completion of the course, the student will be able to:														
Outcomes	CO1	Ider	dentify problems that are amenable to solution by AI methods and												ds and		
		Rep	tepresent knowledge of the world using logic and Infer new facts from that												om that		
	<u> </u>	kno	nowledge														
	CO2	Den	emonstrate the capability to create simple AI applications using Natura												Natural		
	002	Lan	Language Processing and machine learning.														
	<u>CO3</u>	Eluc	Elucidate the best practices for Chatbot development														
	004	Exp Lea	Explicate the purpose of Reinforcement Learning and apply Reinforcement learning to real life planning problems												cement		
Contributio		P	P	P	P	P	P	P()	<u>Р</u>	Р	Р	Р	Р	PSO	PSO	
n of Course		0	0	0	0	0	0	7		0	0	0	0	0	1	2	
Outcomes		1	2	3	4	5	6			8	9	10	11	12			
towards	CO1	Н	М			L									L		
of Program	CO2	L	Н	L			Μ				L					L	
Outcomes	CO3		М			Н									Μ		
(L-Low, M-	CO4		L	Μ		Μ	L									М	
Medium, H-																	
High) Course	LINUT	<u> </u>	<u> </u>	<u> </u>													
Content	Introdu	1: uction	η Δn	nlicat	tions	of Δ		nctr	ain	t Sat	tisfac	tion	Prohl	ems_	Backt	racking	
Content	Search	n foi	r C	SPs	Knor	wledg	r, co ze a	nd	re	ason	ing-	Kna	wled	lge-ha	ised	Agents	
	Propos	sition	al Lo	gic, F	irst o	rder l	logic,	Un	cer	tain	and p	orobal	oilisti	c reas	soning	- Basic	
	Probat	oility	Nota	ition,	Baye	es' Ri	ule a	nd	Its	Use	, Re	prese	nting	Knov	wledge	e in an	
	Uncert	tain D)omai	in, the	e Sem	antic	s of B	aye	sia	n Ne	etwor	ks					
	UNIT	II:															
	Learn	ing:	Learr	ning t	from	obsei	rvatio	ns,	Fo	rms	of L	earni	ng, I	nduct	ive Le	earning,	
	Learni	ng d	ecisio	on tre	ees, v	why	learni	ng	WC	orks,	Lea	rning	ın	Neura	and	Belief	
	Compl	EKS, lata E	Statis	licai Natur	Lear	ming	Met oo Dr	nou	S-	Stat	Juaru	u Le	arnin Sf MI	Ig, L D C	ompor	g with	
	NIP	Enter	nrise	Annli	ar La	ns of	ge 11 NI P		5511 1906	ng, C e of]	NI P	iew (JI INI	л, с	ompoi		
	11121,1	Linter	J1150 .	дррп	catio	115 01	INDI,	03	agv								
	UNIT	III:															
	Chatb	ots:	Introd	ductic	on, Tl	he Ri	se of	Cł	atb	oots,	NLP	n t	he cl	oud, 1	NL In	terface,	
	Buildi	ng a	Cha	ıtbot,	Trai	nsforr	native	e u	ser	ex	perie	nce	of ch	natbot	s, De	signing	
	elemen	nts of	a ch	atbot	, Bes	t prae	ctices	for	ch	natbo	ot dev	/elopi	nent,	NLP	comp	onents,	
	NLP W	vrapp	er to o	chatbe	ots, A	udiol	bots a	nd	Mu	sicbe	ots.						
	virtua	al ASS	nstan	us: A	icilité	clure	or a	V II'l	ual	ASS	istail	ι.					

17IT2504A – AI TOOLS, TECHNIQUES AND APPLICATIONS

	UNIT IV:
	Introduction to Reinforcement Learning, Game Playing [Deep Blue in Chess, IBM
	Watson in Jeopardy, Google's DeepMind in AlphaGo], Agents and Environment,
	Action-Value Function, Deep Reinforced Learning
	Applications: Robotics, Gaming
Content	Diagnostic systems, Virtual Assistants
beyond	Smart Applications: Smart Manufacturing, Smart Agriculture, Smart Healthcare,
Svllabus	Smart Education, Smart Grids, Smart Transportation and Autonomous Vehicles,
2	Smart Homes, Smart Cities.
Text books	Text books:
and	[1] Stuart J. Russell and Peter Norvig. Artificial Intelligence A Modern Approach
Reference	[2] Tom Markiewicz& Josh Zheng Getting started with Artificial Intelligence.
books	Published by O'Reilly Media.2017
	References:
	[1] AurélienGéron, Hands on Machine Learning with Scikit-Learn and TensorFlow
	[Concepts, Tools, and Techniques to Build Intelligent Systems], Published by
	O'Reilly Media,2017
E-resources	[1]. Pytorch:
and other	https://pytorch.org/
digital	https://github.com/pytorch
material	[2]. Keras:
	https://keras.io/
	https://github.com/keras-team
	[3]. Theano:
	http://deeplearning.net/software/theano/
	https://github.com/Theano/Theano
	[4]. Cafee2:
	https://caffe2.ai/
	https://github.com/caffe2
	[5]. Deeplearning4j:
	https://deeplearning4j.org/
	[6]. Scikit-learn: <u>https://scikit-learn.org/stable/</u>
	https://github.com/scikit-learn/scikit-learn
	[7]. Deep Learning.Ai:
	https://www.deeplearning.ai/
	[8]. YOLO:
	https://www.pyimagesearch.com/2018/11/12/yolo-object-detection-with-opency/
	[9]. nVIDIA:CUDA
	https://developer.nvidia.com/cuda-math-library

17IT2504B - LINUX PROGRAMMING

Course Cat	egory:	Ope	n Ele	ctive	- I				Cre	edit	s:					3	
Course Typ	e:	The	ory						Lee	ctur	e-Tu	toria	l-Pra	ctice	:	3-0	-0
Prerequisit	es:								Co	ntir	nuous	s Eva	luati	on:		30	
		I							Ser	mes	ter E	nd E	valua	tion:		70	
								Γ	Tot	tal I	Mark	ks:				100)
Course	Upon s	ucces	sful c	ompl	etion	of th	e cou	rse,	the	stu	dent v	will b	e able	e to:			
Outcomes	CO1	App	pply Linux utilities and Shell scripting language (bash) to solve Problems.														
	CO2	Dev	Develop the skills necessary for working with files														
	CO3	Unc	Inderstanding of Linux environment which includes program argument												uments		
		and	nd Environment variables.														
	CO4	Fan	Camiliar with the skills necessary for memory Management, process														
		mar	nanagement and Locks. P P P P P P P P P P P P P P P P P P P													DCO	
Contributi		P	P	P	P	P	P		נן נ	P O	P	P	P	P	PS0	J	PSO 2
Course			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$													Z	
Outcomes	CO1	I	2 3 4 5 6 8 9 10 11 12												I		
towards	CO^2	L	L			171									N	1	L
achieveme	CO3	L												L			
nt oi Program	<u> </u>	М													М		
Outcomes	CO4	M															
(L-Low,																	
M -																	
Medium,																	
H- Hign)	UNIT	[[•															
Content	Getting	r. 2 Stai	rted [.]	An Ir	ntrodu	iction	to U	nix	Lir	าแช	and (INU	Prog	ramm	ing I	lini	ıx
content	Shell P	rogra	mmir	ng: A	bit Pl	hilosc	pphy.	Wh	at s	she	ell. Pi	pes a	nd Re	edirec	tion.	She	ell as a
	program	nmin	g Lan	guag	e, She	ell Sy	ntax					F)		
	UNIT	[]:															
	Worki	ng wi	ith Fi	les: I	linux	file s	structi	ures	s, Sy	yste	m cal	lls an	d Dev	vice d	river	s, I	Library
	function	ns, L	ow-L	evel	File A	Acces	s, Th	ne s	tanc	dard	I/O	Libra	ary, F	Forma	tted	Inp	ut and
	Output	Files	And	Direc	tory	Main	tenan	ce									
	UNII	III:	raata	ion S	oonni	na Di	raata	ria	0.19	4 Er	rora						
	Linux	ig Di envir	onm	nt I	Progra	$\lim_{m} \Delta$	roum	ents	E and	ı El nvir	1015 onme	nt va	riahle	a Ti	ime	and	l Date
	Tempo	rarv	Files	Use	er inf	orma	tion	Ho	st i	info	rmati	on		ing 1	Reso	irce	es and
	Limits.	i ui y	1 1105,	0.50	/1 1111	omu	uon,	110	50 1	mito	1111411	ion, i	2055	<u>6</u> , 1			und and
	UNIT	IV:															
	Data N	Aana	geme	ent: 1	Manag	ging	Mem	ory	, Fi	le l	Locki	ing. I	Proce	sses a	and	Sig	naling:
	What is	s a pro	ocess,	Proc	ess st	tructu	re, St	arti	ng r	new	proc	ess, S	lignal	S			
Text	Text B	ook(s	s):	-		_								-	•-		
books and	[1] Nei	I Mat	tthew	and	Richa	rd St	ones	"Be	egin	ning	g Lin	ux Pi	ograi	nmin	g"4	th e	edition
Reference	Wrox P	ublic	ation	-													

books	References:
	[1]Unix and Shell Programming, B. A. Forouzan and R. F. Gilberg, Cengage
	Learning.
	[2]Linux System Programming, OReilly, SPD.
E-	[1]www.edx.org/course/introduction-to-
resources	linux?source=aw&awc=6798_1542702468_21911ce46d678d6e6c9d565e4a3be10e
and other	[2]https://nptel.ac.in/courses/117106113/
digital	[3]https://www.youtube.com/watch?v=akU1Ji8Vzdk
material	

Course Cat	egory:	Ope	n Elec	- I			(Credi	its:					3			
Course Typ	oe:	The	ory					Ι	Lecture-Tutorial-Practice: 3								
Prerequisit	es:	17I	Г3509-	- Java	a Progr	amm	ing	(Conti		30						
					- 0		0	S	leme		70						
								ī	Total Marks: 10								
Course	Upon	succes	essful completion of the course. the student will be able to:														
Outcomes	CO1	Com	omprehend the basics of Android development framework.														
	CO2	Deve	evelop an application using the interfaces Intents & Lavouts														
	CO3	Creat	eate the User Interface Programmatically.														
	CO4	Demo	emonstrate the saving of data & Navigation using Maps.														
Contributi	001	PO	D PO P PO P P P P P P P PO P PSO PSO												50		
on of		1	$ \begin{bmatrix} 1 \\ 2 \end{bmatrix} 0 \begin{bmatrix} 1 \\ 4 \end{bmatrix} 0 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \end{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} 1 \\ 1 \\$												$\frac{1}{2}$		
Course		-													-		
Outcomes	CO1	L	L L H H L														
towards	CO2	_	L	Н	Н	1	l		1				1	Н	L		
achieveme	CO3		L	Н	Н									Н	L		
nt oi Program	CO.4																
Outcomes	CO4	Н	H H H												L		
(L-Low.																	
M-																	
Medium,																	
H- High)																	
Course	UNIT	Ι															
Content	Gettin	ig Sta	arted	Wit	h And	lroid	l Pr	ogra	mmi	ng:	Abou	it And	lroid	- A	Androi	d	
	Versio	ns, Fe	eatures	of A	Androi	d, Ai	chite	cture	of A	Andro	oid, .	Androi	d De	vices	in th	e	
	Marke	t, The	Andro	id M	arket.			~				~~	~				
	Obtai	ning t	he Re	quire	ed Too	ls: A	ndro	id St	udio,	And	roid	SDK, (Creat	ing A	Androi	d	
	Virtua	I Devi	(A = 1)	AVD	s), The	e An	droid	Dev	velop	er C	omm	unity.	Laun	chin	g You	ır	
	First A	ndroi	d Appl	icatio	on.			1	1.		,• •,		ı ·	C.	1	1	
	Activi	ties, F	ragme	ents,	and Ir	itent	s: Un	derst		ng Ao	ctivit	les - Aj	pplyii	ng St	yles a	nd	
	Ineme	25 10 a1	1 ACU	/ity, I	nuing	ine A	ACUV	iy 11	ue, L	Jispia	iying	a Dialo	ug w	indo	w.		
		11 na 1a	4		ing Tr		D			Dagu	lta f		Into		Doggin	~	
	Data I	ug AC Ising	an Inta	ont O	mg II biect	nem	.s. K	ciulti	ing .	resu	.ns 11	on an	i inte	int, I	assin	в	
	Data (Fragn	nonte	A ddir	on E	'ujeet Tragme	nte	Dvn	amic	ally	T if		vele	ofa	Fra	amen	t	
	Intera	etions	hetwe	en F	ragine	nte	Unde	rstar	ally, Idina	the	C C Inter	yele v nt Obie	or a	Isino	.ginen Inter	ı, nt	
	Filters		betwe		ragine	nus,	Unuc	1 Stal	lung	, uic	me	n Obje	, τ	Sille	, men	It	
	Gettin	g ta k	now t	he A	ndroid	l Use	er Int	terfa	ce: T	Inder	stand	ling the	e Con	nnon	ents of	fa	
	Screen	- Vi	ews a	nd V	/iewGi	ouns	E Fra	me	Lavo	out I	Jinea	r Lavo	ut (I	Horiz	contal	&	
	Vertica	al). Ta	ble La	vout	Relati	veL	avout	. Fra	me L	avou	t. Sci	oll Vie	W.	- 0112		~~	
	UNIT	III:		<i>J</i> = 0.0,				, 			., 201						
	Gettin	g to	know	the	Andr	oid	User	Inte	erfac	e: M	[anag	ing ch	anges	s to	Scree	n	
	Orient	ation-l	Persist	ing	State	Info	rmati	on	Duri	ng (Chan	ges in	Cc	onfig	uration	1,	
	Detect	ing Or	ientati	on C	hanges	, Coi	ntroll	ing tł	ne Or	rienta	tion of	of the A	Activi	ty, Ü	tilizin	g	

17IT2504C - MOBILE APPLICATION DEVELOPMENT

	the Action Bar - Adding Action Items to the Action Bar.
	Designing your User Interface with Views: Using Basic Views - TextView View,
	Button, ImageButton, EditText, Checkbox, ToggleButton, RadioButton, and Radio
	Group Views, ProgressBar View, AutoCompleteTextView View.
	UNIT IV:
	Designing your User Interface with Views: Using Picker Views - TimePicker
	View, DatePicker View, Using List Views to Display Long Lists- ListView View,
	Using the Spinner View.
	Displaying Pictures and Menus with Views: Using Image Views to Display
	Pictures-Image View View, ImageSwitcher, GridView, Using Menus with
	Views- Creating the Helper Methods, Options Menu, and Context Menu, Using
	WebView-WebView.
Text	Text Book(s):
books and	[1], J.F.DiMarzio (Wrox), "Beginning Android Programming with Android
Reference	Studio".4th Edition, 2016.
books	
	Reference Books:
	[1]. Reto Meier, "Professional Android 4 Application Development", Wiley
	Publishing, 2012.
	[2]. James Steele, Nelson, "The Android Developer"s Cookbook: Building
	Applications with the Android SDK", 2nd Edition, Addison-Wesley Professional,
	2013.
	[3]. Sayed Y. Hashimi, SatyKomatineni, "Pro Android 3", Apress, 2011
E-	[1]. Wei Meng Lee, Beginning Android 4 Application Development,
resources	Worx WileyPublishing,2014.
and other	http://www.kmvportal.co.in/Course/MAD/Android%20Book.pdf
digital	[2]. Android Tutorial Simply Easy Learning,
material	https://www.tutorialspoint.com//android/android_tutorial.pdf
	[3]. https://www.udacity.com/course/new-android-fundamentalsud851
	4. https://developer.android.com/training/basics/firstapp

Course		Interdisciplinary Elective Credits:												3		
Category:		Theor	ex 7					Loot	3_0_0							
Droroquisit	be:	Intro	y Juatia	n to C	omni	itora		Con	tinuo		iai-r ra voluoti	actice:		30		
Trerequisit	CS .	muot	iuctio		ompu			Con	unuo	us Ev		<u>.</u>		70		
								Sem	ester	end I	Evalua	tion:		/0		
								Tota	al Ma	rks:				100		
C	TT		queezesful completion of the course, the student will be able to:													
Course		n succ	successful completion of the course, the student will be able to:													
Outcomes	COI	An	Analyze the information storage issues and derive an information mo												n the	
	CO	101	form of an entity relation diagram. Transform information model into a relational database schema													
	C02		Transform information model into a relational database schema. Formulate solutions to a broad range of query problems using formal Informal query languages													
	0.05	ларана При														
	CO ₄	Un	Informal query languages. Understand the normalization theory and construct normalized databa													
Contributi		PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PS	PS	
on of		1	2	3	4	5	6	7	8	9	10	11	12	01	02	
Course	CO	т	TT											L	т	
Outcomes	1	L	н													
towards achieveme	CO		T	н								М		L	м	
nt of	2		L									IVI			111	
Program Outcomes	CO 3		М		Н							L		L	М	
(L-Low,	CO												Н	М		
M -	4	T	ц		и							ц			м	
Medium,		L	11		11							11			1V1	
H- High)																
Course	UNI	T I:	¢ъ	. 1			D .1			DI		1 /		C DI		
Content	Ove Dec	rview	OI Da	ata ba	ase sy a data	stem	S: F1	le syst	tems v	vs DE	SMS, 8	advanta	iges of	t a DE	3MS,	
	data	hases	g and s	storm	g uata	l III a I	DDIVI	s, suu	icture	01 a 1	JDINIS	, reopi	e who	WOIK	with	
	Intr	oduct	ion ta	n Dat	ahası	Des	ion. 1	Datab	ase D	esion	and	FR Di	aoram	s. Ent	tities	
	attri	butes a	and E	ntity	sets.	Relati	onshi	ps and	d relat	tionsh	in sets	s addit	ional	featur	es of	
	the l	ER Mo	odel.	•	, .						r	,				
	UN	T II:														
	Rela	tiona	l Moo	lel: In	ntrodu	iction	to th	e Rela	ationa	l Mo	del; In	tegrity	Cons	traint	Over	
	relat	ions;	Que	erying	, relat	tional	data	; Log	gical o	lata b	base D	esign	; Intro	ductio	on to	
	View	ws; De	stroyi	ng / a	lterin	g Tab	les an	d Viev	WS.							
	SQI	.: Que	eries A	And (Const	raints	s – Pa	rt I: F	Form of	of Ba	sic SQ	L Que	ry - E	xampl	es of	
	Basi	<u>c SQL</u>	. Quei	nes; l	JNIO	N, IN	TERS	SECT,	and H	EXCE	PT;					
				A 1 4	.	• ,	ъ		хт <i>і</i>	1.0		т, 1	<i>.</i> .		, 1	
	SQL	J: Que	corres A	And (Constr	aints	- Par	t II: I	Nester	ı Que	eries -	Introd		to N	ested	
	Que	nes,	· NIT		INESTE	u Qu	eries	, set	- U01	npari	son Uj	perator	s; A	aggreg	auve	
		1 a 1015	, INU.	LL VÖ NOT	Imp	- Cuir	IPal 150	OII USI	ng N struct	un va	iues, ter Ioi	ne Dia	i conn sallow	iccuvl ing N	цу S - ТПТ	
	AN	<i>,</i> 01	anu	1001,	, mpa	act OL	i byt		SUUCE	s, Ou	ICI JUI	ms, DR	sanuw	ing iv	ULL	

17IT2505A - DATABASE MANAGEMENT SYSTEMS

	values .
	UNIT IV:
	Schema Refinement and Normal forms: Schema refinement - Problems Caused by
	redundancy; Functional Dependencies: reasoning about FDS, Closure of a Set of
	FDs; NORMAL FORMS-FIRST, SECOND, THIRD Normal forms, BCNF;
	properties of decomposition - Lossless join Decomposition, Dependency preserving
	Decomposition; Multi valued Dependencies - forth Normal Form.
	NoSQL: An Overview of NoSQL, List of NoSQL Databases.
Text	Text Book(s):
books and	[1]. Raghurama Krishnan, Johannes Gehrke, "Database Management Systems",
Reference	3rd Edition, TATA McGrawHill.
books	[2]. Gaurav vaish, "Getting Started with NoSQL" (Kindle Edition), 1st
	edition,2007.
	Defense of Decker
	[1] Elmagri and Nevetha Eundemontals of Databasa Systems Ed 5 Decrean
	Education
	[2] Silberschatz Korth and Sudharshan Data base System Concents Edd
	McGrawHill
Е-	[1] S. Sharma "Introduction to DBMS" 09-05-2015
resources	http://www.youtube.com/watch?y=1f34MwgUhx8
and other	[2]. P. B. Mahanty, "DBMS and RDBMS", 09-05-2015
digital	http://nptel.iitm.ac.in/video.php?courseId=1128&v=7952RsbAx2w8
material	[3]. Shyamalal Kumawat, "MYSQL", 09-05-2015
	https://www.youtube.com/watch?v=XiDnK9Lq-Ng
	[4]. Prof.D.Janakiram, "DBMS", 09-05-2015
	https://www.youtube.com/watch?v=EUzsy3W4I0g&list=PL536244562840E9
	82
	[5]. Jennifer widom, "Introduction to Databases", 09-05-2015
	https://www.youtube.com/watch?v=ShjrtAQmIVg.

Course Categ	ory:	Inter	disci	plinar	y Ele	ctive		(Credi	ts:				3	3		
Course Type:		The	ory					Ι	lectu	re-Tu	toria	l-Pra	ctice:	3-	3-0-0		
Prerequisites:		17C	S120	3-Pro	gram	ming	in C	(Conti	30	30						
_								S	emes	ster e	nd Ev	alua	tion:	70			
								T	otal	Mark	ks:			10	0		
Course	Upon	succe	essful	comp	oletio	n of t	he cou	rse, 1	the st	udent	will	be abl	e to:				
Outcomes	CO1	Exa	mine	the cl	haract	teristi	cs of c	bjec	t orie	nted a	appro	ach					
	CO2	Den	emonstrate the concept of polymorphism in overload of functions and														
		oper	perators														
	CO3	Con	onstruct object oriented programs through inheritance and templa												8		
	CO4	App	Apply exception handling mechanism to handle errors occur at runtim												le DCO		
Contribution		P	P P P P P P P P P P P P P P P P P P P												PSO		
Outcomes			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$											1	2		
towards	CO1	и Ц	2	5	4	5		/	0	9	10	11		1 M	Т		
achievement	$C0^{1}$	Н		М						1				M	L		
of Program	CO3	H	М	H						M		Н		M	M		
Outcomes (I - I ow M-	CO4	Н		Н								Н		M	M		
Medium, H-																	
High)																	
Course	UNIT	ΓΙ:															
Content	An (n Overview of C++: The Origins of C++, What Is Object-Oriented															
	Progr	ammi	ng? I	ntrod	ucing	C++	Classe	es		~1		-					
	Class	es an	d Ot	bjects	: Cla	sses,	Struct	ures	and	Class	es Ai	re Re	lated, U	Unior	is and		
	Class	es A	re St	Kelato	ea,	Friend	a Fu	nctic	ons, Docoly	Frien	la C	lasse	s, Pai		erized		
	Funct	ions	rs, Su Retur	ning	Cywu Obiec	nu, II ste		pe r	Ceson	ution	Opera	ator, 1	assing	, Obje			
	UNIT	<u>' II:</u>	itetui	mig	objec												
	Array	vs: Ar	ravs	of Ob	jects.	The 1	this Pc	inter	ſ								
	Over	loadii	ng: F	uncti	on O	verloa	ading,	Ove	erload	ling (Consti	ructor	Funct	ions,	Copy		
	Const	ructo	rs, O	perat	or O	verlo	ading,	Cre	eating	, a N	Летb	er O	perator	· Fur	nction,		
	Opera	tor (Overl	oadin	g Us	sing a	a Frie	nd	Funct	tion,	Over	loadir	ng Sor	ne S	pecial		
	Opera	tors,	Overl	oadir	ng the	Com	ma Op	berat	or								
	UNIT		P	a			G		. .	•							
	Inher	itanc	e: Ba	ase-C	lass .	Acces	s Cor	ntrol,	Inh	eritan	ce ar	id pro	otected	Mer	nbers,		
	Vietov	ting	Wult		ыase	Clas	ses, (ons	iructo	ors, L	Jestru	ctors	and	Inneri	lance,		
	Vintua	u das al Fu	nctio	5585 ns• (allin	σ a V	irtual I	Func	tion t	hroue	nhaF	Rase (Tlase D	ure V	/irtual		
	Funct	ions	Early	vs I	ate B	indin	g.	unc		moug	, i a L		1000, 1		intual		
		,					0.										
	UNIT	IV:															
	Temp	olates	: Ger	neric 1	Funct	ions,	A Fu	nctio	n wi	th Tw	vo Ge	eneric	Types	, Exp	licitly		
	Overl	oadin	g a G	eneri	c Fun	ction.			~	-			. –				
	Appl	ying	gene	ric Fi	inctio	ons: A	A Gene	eric S	Sort (Jener	ic Cla	asses,	An Ex	ampl	e with		

17IT2505B - OBJECT ORIENTED PROGRAMMING

	Two Generic Data Types															
	Applying Template Classes: A Generic Array Class															
	Exception Handling: Exception Handling Fundamentals, Handling Derived-Class															
	Exceptions, Exception Handling Options															
Text books	Text Book:															
and	[1].Herbert Schildt, C++ Complete Reference, Third Edition, McGraw-															
Reference	Hill,1998															
books	Reference Book:															
	[1].Bjarne Stroustrup, The C+ + Programming Language, Third Edition,															
	Addison-Wesley,1997															
E-resources	[1]. Ira Pohl, C++ For C Programmers, University of California, Santa Cruz,															
and other	(08, 05, 2018). Available: <u>https://www.coursera.org/learn/c-plus-plus-a</u>															
digital	[2]. Gerry O'Brien, Kate Gregory, James McNellis, Introduction to C++, (08,															
material	05, 2018). Available: https://www.edx.org/course/introduction-c-microsoft-															
	<u>dev210x-5</u>															
	[3]. Prof Partha Pratim Das , IIT Kharagpur, Programmiing in C++,															
	https://nptel.ac.in/courses/106/105/106105151/															
	[4]. Object Oriented Programming (OOP) Paradigm															
	https://www.youtube.com/watch?v=p3H-53kzMuA															
	[5]. Prof Deepak B Phatak, IIT Bombay, Object Oriented Programming															
	https://www.edx.org/course/object-oriented-programming															
Course Cate	gory:	Inte	rdisci	plina	ry Ele	ective	;	(Credi	ts:				3	3	
--------------------	---------	------------------------------	---	---------	-----------------	----------	--------	---	----------------	--------------	---------	--------	------------------	---------	------------	--
Course Type		The	ory		2]	Lectu	re-Tı	itoria	l-Pra	octice	: 3	3-0-0	
Prerequisite	s:	17C	<u>S120</u>	3– Pr	ograr	nmin	g in C	C (Conti	nuou	s Eva	luati	on:	3	30	
		1			0		0		Semes		70					
								٢	Fotal	Marl	ks:			1	100	
Course	Upon	succe	ssful	comp	letio	n of tl	ne co	urse,	the st	udent	will	be ab	le to:			
Outcomes	CO1	Ana	lyze	the co	onstru	icts, c	ondit	ional	and i	terati	ve sta	teme	nts in	pythe	on	
	CO2	Den	nonst	rate tl	he ap	plicat	oility	of fil	e and	string	g hano	lling	in py	thon		
	CO3	Inte	Interpret the knowledge of python modules and packages													
	CO4	Svn	Synthesize data structures such as list, dictionary, set and tuple to solve a													
	001	give	given problem													
Contributio		P	P P P P P P P PO P P P P P P P P P P P) PSO	
n of Course		0	0	0	0	0	0	7	0	0	0	0	0	1	2	
Outcomes		1	2	3	4	5	6		8	9	10	11	12			
towards	CO1	Н		Μ	М									Н	М	
achievement	CO2	Н	М	М	L		L					Μ		Н	М	
Outcomes	CO3	M M M M L M L									L	М	М			
(L-Low, M-	CO4	М	М	М	Н		L					М	L	М	Н	
Medium, H-																
High)																
Course	UNIT	I:														
Content	Introd	luctio	on- V	ariab	oles, e	expre	ssion	s and	d state	emen	ts-Va	lues a	and ty	vpes, v	variables,	
	variab	le na	mes	and	keyw	ords,	state	ment	ts, op	erator	rs and	d ope	erands	s, exp	pressions,	
	order	of op	eratic	ns, n	nodul	us op	erato	r, str	ing oj	perati	ons, a	asking	g the	user	for input,	
	comm	ents, o	choos	sing n	nnem	onic	variat	ole na	imes.	1	• 1				1.4. 1	
	Condi	tiona	I ex	ecuti	on-	Bool	ean	expr	ession	IS, IC	ogical	ope	erator	s, cc)nditional	
	execut	ions i	utern	ative	exect ad av	ation,	chart	oiro	it ovo	luntic	s, nesi		onanio ol ovn	rossic	, catching	
	Itorati	ion_{-} 1	using Undai	ting a	lu cx variab	der t	be w	hila	iii Eva	nuali	infini	te loc	ii exp	infini	ite loons"	
	and br	oak f	inish	ing it	eratio	nes, t	ith co	ntini	o def	inite	loons	using	ps, for	loon	natterns	
		$\frac{cun, 1}{\mathbf{II}}$		ing it	ciulio	/115 VV1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	c, uci	mite	100p3	using	5,01,	loop	patterns.	
	Funct	ions-	Fund	ction	calls	buil	t-in f	unct	ions	tvne	conve	ersion	func	ctions	random	
	numbe	ers. n	nath	funct	ions.	addi	ng n	ew f	unctio	ons. (lefini	tions	and	uses.	flow of	
	execut	ion, 1	paran	neters	and	argu	ment	s, fru	iitful	funct	ions	and v	void f	uncti	ons, why	
	functio	ons.				C		-								
	String	s- A	string	g is a	ı sequ	lence	, gett	ing t	he ler	ngth o	of a s	tring	using	g len,	traversal	
	throug	has	string	, with	ı a İ	oop,	string	g slic	ces, st	trings	are	imm	ıtable	e, loo	ping and	
	counti	ng, th	e in o	opera	tor, s	tring	comp	ariso	n, <i>stri</i>	<i>ing</i> m	ethoc	ls, pa	rsing	string	gs, format	
	operat	or.														

17IT2505C - PYTHON PROGRAMMING

	UNIT III:
	Modules Packages and Distribution- Packages Small Description about
	Modularity, Sound -A Package, Third Party Packages, A Brief Tour of Standard
	Library: Operating System Interface, File Wildcards. Command Line Arguments,
	Error Output Redirection and Program Termination, String Pattern Matching,
	Mathematics, Internet Access, Dates and Times, Data Compression, Performance
	Measurement, Quality Control.
	Files- Persistence, Opening Files, Text Files and Lines, Reading Files, Searching
	through a File, Letting the user choose the Filename, Using try, except and open,
	Writing Files.
	Regular Expressions: Character matching in regular expressions, Extracting data
	using regular expressions, Combining searching and extracting, Escape character
	UNIT IV:
	Lists and Dictionaries: A list is a sequence, Lists are mutable, Traversing a list,
	List operations, List slices, List methods, Deleting elements, Lists and functions,
	Lists and strings, Parsing lines, Objects and values, Aliasing, List arguments.
	Dictionary as a set of counters, Dictionaries and files, Looping and dictionaries,
	Advanced text parsing.
	Tuples and Sets: Tuples are immutable, Comparing tuples, Tuple assignment,
	Dictionaries and tuples, Multiple assignment with dictionaries, The most common
	words, Using tuples as keys in dictionaries. Sets: Modifying a set, Removing Items
	from the Set, Set Operations, Set's Membership.
Text books	Text Book(s):
and	[3]. Charles Severance, Python for Informatics- Exploring Information.
Reference	[4]. VamsiKurama, "Python Programming: A Modern Approach", Pearson India,
books	2017.
	Reference Books:
	[1]. David M. Beazley. Python Essential Reference. 3rd Ed. Sams, Indianapolis.
	2006. ISBN: 0-6723-2862-3.H.
	[2]. Wesley J. Chun. Core Python Programming. 2nd Ed. Prentice Hall, Upper
	Saddle River, NJ. 2007. ISBN: 0-132-26993-7.
	[3]. Allen B. Downey, Think Python - An Introduction to Software Design,
	Green Tea Press Needham, Massachusetts, Version 2.0.17, 2012.
	[4]. Mark Lutz, "Learning Python", 5th edition, Orielly,2013.
E-	[1]. Charles Severance "Programming for Everybody (Getting Started
resources	with Python)"
and other	https://www.coursera.org/course/pythonlearn
digital	[2]. John Guttag "Introduction to Computer Science and Programming
material	Using Python" <u>https://www.edx.org/course/introduction-computer-science-</u>
	$\frac{\text{mitx-6-00-} 1x-0}{1 + 4 + 2 + 2}$
	[3]. https://www.thenewboston.com/videos.php?cat=36
	[4]. http://diveintopython.org/

17IT2506 - SELF LEARNING ELECTIVE COURSE OPEN ELECTIVE – III

Credits – 2

*Students can opt any one of the self-learning courses prescribed by the Department. Students register and cleared the opted course in MOOCS/ NPTEL on or before the Last Instruction Day of <u>V Semester</u>. They have to submit the certificate before the Last Instruction Day of <u>V Semester</u>.

Course Category:		Soft S	kills	III				C	redits	5:					1	
Course Typ	e:	Learn	ing b	v Doi	ng			L	ectur	e-Tut	torial	-Prac	ctice:		0 -	0 - 2
Prerequisit	es:		<u> </u>	<i>,</i>	U			C	ontin	uous	Eval	uatio	n:		100)
•								S	emest		-					
								Т	'otal N		100)				
	Upon	succes	sful c	compl	letion	of th	e cou	rse, t	he stu	dent v	will b	e able	e to:			
	CO1	Unc	lersta	nd th	e corp	oorate	etiqu	lette.								
Course	CO2	Mał	Make presentations effectively with appropriate body language Be composed with positive attitude Understand the core competencies to succeed in professional and personal													
Outcomes	CO3	Beo														
	CO4	Und														ersonal
	001	life	101510	ina tin	0 001	0 0011	peter		10 54	00000]		501011	41 u 11	u p	21501141
Contributi		Р	Р	Р	Р	Р	PS	0	PSO							
on of		Ο	0	0	0	0	0	7	0	0	0	0	0	1		2
Course		1	2	3	4	5	6		8	9	10	11	12			
Outcomes	CO1								Μ		Н					
towards	CO2									Μ	Н			L		М
nt of	CO3										Η			L		L
Program	CO4									Μ	Η					L
Outcomes																
(L-Low,																
M- Modium																
H- High)																
Course	UNIT] – I							_							
Content	1. A	nalytic	al Th	ninki	ng &	Liste	ning	Skill	S							
	Self-I	ntroduo	ction,	Sha	ping	Your	ng M	inds	- A	Talk	by	Azim	Pre	mji	(Lis	stening
	Activ	ity), Se	lf - A	naly	sis, D	evelo	ping	Posit	ive At	titude	e, Per	ceptio	on.			
	2. Co	mmun	icatio	on Sk	ills		. ~				_	_				
	Verba	<u>I Comr</u>	nunic	cation	i; Nor	n Vert	oal Co	mm	unicat	ion (I	Body	Lang	uage)			
		– 11 £ M		ant f	1.:11.											
	J. Sel	1-IVIana r. Mana	agem	ent S	Stregg	Mar	anam	ont	Time	Mar	anan	nent	Siv 7	Thin	kino	Hata
	Team	Buildi	igenn no T	eader	shin (niatvi Juali	ties	ciii,	ime	Ivial	agen	ient,	SIX	1 111111	king	, 11ats,
	4. Eti	avette	11 <u>6</u> , L	cauci	sinp v	Zuun	105									
	Soc	ial Etio	uette	. Bus	iness	Etiau	ette.	Feler	ohone	Etiau	lette.	Dinin	ıg Eti	auet	te	
	UNIT	<u> </u>		,		1."	,	-1		- 1			<u> </u>	1		
	5. 8	Standa	rd O	perat	tion N	leth a	ods									
	Note	Making	g, No	te Tal	cing,	Minu	ites Pi	epar	ation,	Ema	il & I	Letter	Writi	ing		
	6 Vei	rbal At	oility													
	Syn	onyms	, Ant	onym	is, Or	ne Wo	ord S	ıbsti	tutes-	Corre	ction	of S	enten	ces-	Ana	logies,
	Spo	tting E	rrors	, Sen	tence	Com	pletio	n, C	ourse	of A	ction	-Sent	tences	s Ass	sum	ptions,
	Sen	tence A	rgun	ients,	Read	lıng (Compi	eher	ision,	Pract	ice w	ork				

17TP1507 - PERSONALITY DEVELOPMENT

	UNIT-IV
	7. Job-Oriented Skills -I
	Group Discussion, Mock Group Discussions
	8. Job-Oriented Skills –II
	Resume Preparation, Interview Skills, Mock Interviews
Text	[1]Barun K. Mitra, Personality Development and Soft Skills, Oxford University
books and	Press, 2011.
Reference	[2] S.P. Dhanavel, English and Soft Skills, Orient Blackswan, 2010.
books	[3] R.S.Aggarwal, A Modern Approach to Verbal & Non-Verbal Reasoning, S.Chand
	& Company Ltd., 2018.
	[4] Raman, Meenakshi & Sharma, Sangeeta, Technical Communication Principles
	and Practice, Oxford University Press, 2011.
E-	[1] www. Indiabix.com
resources	[2] <u>www.freshersworld.com</u>
and other	[3] <u>https://freevideolectures.com/course/4844/nptel-soft-skill-development/30</u>
digital	[4] https://nptel.ac.in/courses/109/105/109105110/
material	

Course Category:		Pro	ogran	nme (Core				C	redit		3				
Course Typ	e:	Th	eory						L	ectur	e - Ti	utoria	al - P	ractio	ce:	2-1-0
		17	CS12	203 P	rogra	mmir	ng in	С	С	ontin	uous	Eval	uatio	n:		30
Prerequisite	es:	17	IT33(08 O	bject	Orien	nted		S	emest	er en	d Ev	aluat	ion:		70
		Pre	ogran	nming	g				Т	otal N	Aark	s:				100
Course									0.1						11.	
outcomes			Dependences the fundamental concentre of this tarianted and the													:
	CO	1	Para	Paraphrase the fundamental concepts of object oriented approach												
	CO	n	Ana	Analyze exception handling techniques and I/O streams to handle use input and output												
	0.02	2	inpu													
	CO	3	Den	Demonstrate the usage of multi threads and collection framework												ork for
			stru	structures Synthesize Graphical User Interfaces using applete and event herdling												
	CO4	4	Syn	Synthesize Graphical User Interfaces using applets and event handling												
Contributi			P	P	P	P	P	P	P	P	P	P	P	P	PSO	PSO
01 01 Course				$\frac{0}{2}$	$\begin{bmatrix} 0\\2 \end{bmatrix}$	O	0	0	$\begin{bmatrix} 0\\7 \end{bmatrix}$	0 °	0	0	0	0	1	2
Outcomes	00	1	I T	2	3	4	3	0	/	0	9	10	11	12	м	т
towards		1	L												M	L
achieveme nt of	CC)2		М	Н										L	Μ
Program	CC)3			М						Н			М	Н	Н
Outcomes		-														
(L – Low, M																
Medium. H	CC)4			M						М			Н	M	Н
– High)																
	UN	IT I	[:													
Course	Intr	odu	iction	n: Ov	ervie	w of J	lava, i	Data	Туре	s, Vai	iable	s and	array	vs.		
Content	Cla	sses	anc	l Obj	jects:	Cla	ss tu	indam	nental	s, de	clarii	ng ol	ojects	s, ass	igning	object
	rele	reno hod	se va	riable	es, in d fine	lfodu	cing word	metno	ods, i	consu	ructor	s, th	is ke	yword	i, ove	loading
	Stri	ng	B, Stat	lling:	The	String	2 Con	s. struci	tors. S	String	Tok	enizei	class	s.		
	UN		I:				, 201			3	, - 010					
	Inh	erit	ance	Inhe	ritanc	e bas	sics, u	ising	super	, crea	ting a	a mul	tileve	l hier	archy,	method
	over	rridi	ing, i	dynar	nic 1	netho	d di	spate	h, us	ing a	abstra	ict cl	asses	, usi	ng fin	al with
	inhe	erita	nce.		_											
	Pac	kag	ges &	Inte	rface	es: De	efinin	g a p	acka	ge, fii	nding	pack	age a	and C	CLASS	PATH.,
	Pac	kag	es ai	nd N	Memb	er a	ccess	, im	porti	ng p	ackag	ges,	Defin	ning	an ir	nterface,
	imp	iem	entin	g in	terfac	es, 1	nesteo	a int	ertac	es, a	ipply	ing i	nterf	aces,	varia	oles in
	Fxc	ent	cs. ion h	andli	nσ·											
	Exc	epti	on ha	andlir	ng fu	ndam	entals	s. exc	eptio	n tvn	es. u	ncaug	tht ex	ccenti	ons. 11	sing trv
	and	cate	ch, m	ultipl	e cato	ch cla	uses,	throw	v, thro	ows, f	inally	/, crea	ating	your	own ex	ception

17IT3509 - JAVA PROGRAMMING

	subclasses.
	UNIT III: Assertions: Using assert statement, Assertion enabling and disabling options Multithread Programming: The Java thread model, creating a thread: implementing runnable, extending thread, creating multiple threads, thread priorities Collections Framework: Collections overview, Collection interfaces: Collection, List, and Set. Collection Classes: ArrayList, LinkedList, HashSet, TreeSet
	 UNIT – IV The Applet Class: Applet basics, applet architecture, applet skeleton, applet initialization and termination. Event Handling: The delegation event model- Events, Event Sources, Event Listeners. Event Classes, KeyEvent Class, Event Listener Interfaces Swing Components: JLabel and ImageIcon, JTextField, The Swing Buttons: JButton, CheckBox, RadioButton, JList, JComboBox
Content Beyond Syllabus	Java Database Connectivity
Text books and Reference books	 Text Books: [1] Herbert Schildt, "Java The Complete Reference", 10thEdition, McGraw-Hill Education, New Delhi, 2018. Reference Books: [1] Herbert Schildt, Dale Skrien, "Java Fundamentals A Comprehension Introduction", Special Indian Edition, McGraw-Hill Education India Pvt. Ltd, 2013. [2] Paul J. Dietel and Dr.Harvey M. Deitel, "Java How to Program", 9th Edition, Prentice-Hall, Pearson Education, 2011. [3] Timothy Budd, "Understanding Object Oriented Programming with Java ", Updated edition, Pearson Education, 2013.
E- resources and other digital material	 [1] Prof. I. Sengupta. Department of Computer Science & Engineering, I.I.T.,Kharagpur, "Internet Technologies", NPTEL, (4th, May, 2018), http://nptel.ac.in/video.php?subjectId=106105084 [2] Mia Minnes, Leo Porter, Christine Alvarado, University of California, San Diego ", Object Oriented Programming in Java", (04-05-2018) Available: https://www.coursera.org/learn/object-oriented-java [3] Cay Horstmann, Cheng-Han Lee, Sara Tansey, San Jose State University, "Intro to Java Programming", (04-05-2018) Available https://eu.udacity.com/course/intro-to-java-programmingcs046

17IT3551- JAVA PROGRAMMING LAB

Course Category:	Programme Core	Credits:	1
Course Type:	Lab	Lecture - Tutorial - Practice:	0 - 0 - 2
Prerequisites:	17IT3308 Object Oriented	Continuous Evaluation:	30
_	Programming	Semester end Evaluation:	70
		Total Marks:	100

Course outcomes	Upon	Upon successful completion of the course, the student will be able to:													
	CO1	Des	ign Ja	iva A	pplica	ations	on o	bject	orien	ted c	oncep	ots			
	CO2	Imp inhe	lemen ritano	nt tecl	hniqu	es to	handl	e run	time	errors	s and	diffe	ent ty	pes of	
	CO3	Dev	elop	java a	pplic	ations	s on n	nultit	hread	ing ar	nd col	lectio	on clas	sses	
	CO4	Des evei	ign G 1ts.	UI ap	plica	tions	throu	gh Sv	wing o	compo	onent	s and	hand	le the ra	ised
Contributio n of Course Outcomes towards		P O 1	P O 2	P O 3	P O 4	Р О 5	P O 6	Р О 7	P O 8	Р О 9	P O 10	P O 11	P O 12	PSO 1	PSO 2
achievemen t of	CO1	L												М	М
Program Outcomes	CO2		М	Η										М	М
(L – Low, M - Medium, H – High)	CO3			М						Н			М	М	М
	CO4			М						М			Н	М	Н
Course Content	Week Java aj Creatin objects Week Java a Java a Java a Java a Java a Java a Java a Java a Java a	1: pplicang cl s. 2: applic 3: applic applic applic applic 4: applid	ation asses ation ation ation ation ation ation	to imp cont to m to im to im to im to im to im	pleme ainin ake u plem plem plem plem	ent ari g me use of ent p opera ent in ent in ent pa	ithme ethods const olym tions herita terface ackag	tic op s with tructo orphi ance ces es abstr	eration h and rs sm	ons. I with	hout s an	argur d im	nents	and cr	time

	polymorphism Java application on Exception Handling techniques and assertions Week 5: Java application on user defined exceptions, throw and throws keywords Java application to create threads using Thread Class and Runnable interfaces Week 6: Java application on streams Java application to copy contents of one file to another Week 7: Java application to develop web based programs Java application to implement mouse event handling Week 8 & Week 9: Java application on Swing components & GUI Design Week 10 & Week 11: Java application on Collection Framework Case Studies: 1. Simulate the bank, college, library applications using java technology 2. Develop GUI based application using Applets and handle events
Text books and Reference books	 raised by the application Text Books: [1]. Herbert Schildt, "Java The Complete Reference", 10th Edition, McGraw-Hill Education, New Delhi, 2018. [UNIT – I , UNIT – II /li> Reference Books: [1]. Herbert Schildt, Dale Skrien, "Java Fundamentals A Comprehension Introduction", Special Indian Edition, McGraw-Hill Education India Pvt. Ltd, 2013. [2]. Paul J. Dietel and Dr.Harvey M. Deitel, "Java How to Program", 9th Edition, Prentice-Hall, Pearson Education, 2011. [3]. Timothy Budd, "Understanding Object Oriented Programming with Java ", Updated edition, Pearson Education, 2013. [4] Herbert Schildt, "Java The Complete Reference", 8th Edition, McGraw-Hill Education, New Delhi, 2011.
E- resources and other digital material	 [1]. Prof. I. Sengupta. Department of Computer Science & Engineering, I.I.T.,Kharagpur, "Internet Technologies", NPTEL, (14th, May, 2015), http://nptel.ac.in/video.php?subjectId=106105084 [2]. Prof. Shane P. Department of Computer Science & Engineering,, NPTEL Videos, (14th, May, 2015), http://www.nptelvideos.com/video.php?id=1461&c=15 [3]. https://www.javatpoint.com/java-tutorial [4]. https://www.youtube.com/playlist?list=PLE7E8B7F4856C9B19

Course Cat	egory:	Pro	gramı	ning	g Cor	e			Credits:							
Course Typ	e:	Lab)						Lect	ure-]	Futor	ial-P	ractic	e:	0-	0-2
Prerequisit	es:	170	CS120	3 Pr	rograi	nmin	g in C	2	Con	tinuo	us Ev	valua	tion:		30)
_		17I'	Г3303	3 Da	ita Str	ructur	es									
		17I'	Г3404	4 Py	thon	Progr	ammi	ng								
		17I'	Г3509) Jav	va pro	ogram	ming									
									Sem	ester	end	Evalu	ation	:	70)
									Tota	l Ma		10)0			
Course	Upon su	iccess	sful co	omp	letion	n of th	e cou	rse, t	he stu	dent	will b	e able	e to:			
Outcomes	CO1	Den	nonsti	rate	the k	nowle	edge t	o fin	d solu	tions	that 1	uses s	tructu	ired a	ınd	object
		orie	nted l	ang	uages	5										
	CO2	Imp	lemen	nt da	ata sti	ructur	es lin	near,	non-li	inear	and p	oythoi	n stru	cture	s to) solve
		real	world	1 pro	<u>blen</u>	1S	_	D	D		D	D	DO	DC		DCO
Contributio		P	P P P P PO P P P P P												J	PSO
Outcomes			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$													2
towards	CO1	і Ц	2	5	4		0 Ц	/	0	9	10	11 U	п	п		М
achievement	CO^2	п Ц					п Ц					п Ц	п Ц	п Ц		M
of Program	002	11					11					11	11	11		1 V1
Outcomes																l
(L-Low, M																l
Medium																l
H- High)																l
Course		1						Cyc	le I						1	
Content	Design	solut	tions	with	ı Stru	icture	e orie	nted	Lang	guage	s					
	Week 1															
	Program	ming	, App	licat	tions	on Str	uctur	ed O	riente	d Lar	nguag	es to	imple	ment	:	
	• (Contr	ol stri	lctu	res											
	• 1	Modu	larity													
	Week 2								1.0							
	• 1	Imple	ment	app	licatio	ons w	ith A	rrays	and S	tring	S					
	• 1	Progra	ammı	ng a	ipplic	ations	s whic	$\frac{h}{a}$	e refe	rence	S					
	Create				h a 4	~ ~ ~ D -		Cycl	e II	4~						
	Wook 3	аррп	catio	ns ti	nat us	ses Py	tnon	Cor	istruc	τs						
	WEEK J	Trant	a annl	icat	ionst	hat uc	og th		ntral f		truoti	irac				
	Wook A		z appi	Icat	10115 ι	mat us	ses un		ini or i	10w S	ucu	1105				
	WCCK 4	Solve	annl	icat	ions	that i	1969 1	the 1	ist li	st co	mnrel	nensia	n tu	nlec	50	ts and
		dictio	naries	icati	10115	inat t	1303	ine i	151, 11	51 00	mprei	iciisi(<i>m</i> , tu	pies,	30	ts and
	Week 5		111100	,												
	• 1	Progra	ams tl	hat c	can ha	andle	the ru	ın tin	ne erro	ors/ex	centi	ons				
		01					(Cycle	e III							
	Solution	n to t	he ap	plic	ation	s that	t uses	o Obi	ect O	rient	ed Pr	ogra	mmin	ıg		

17IT3552 - ADVANCED PROGRAMMING LAB I

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

	Week 6
	Design solutions that makes use of object oriented programming constructs such as
	control structures, inheritance, exception handling techniques
	Cycle IV
	Applications that uses Data structures
	Week 7
	Programs that can be solved through Linear Data structures
	Week 8
	Programs that can be solved through Non-Linear Data structures
	Week 9
	Applications that can be solved through hashing techniques
Text	Text Book(s):
books and	[1]. Antti Laaksonen, "Guide to Competitive Programming", 1 st edition, Springer
Reference	International Publishing, 2017
books	Reference Books:
	[1]. Halim, Steven and Halim, Felix, Competitive Programming 3, 2013.
	[2]. Ahmed Shamsul Arefin, Art of Programming Contest, ACMSolver, Second
	Edition, 2012
Е-	[1]. Hacker Rank, 10-05-2019 Available <u>https://www.hackerrank.com/</u>
resources	[2]. Hacker Earth, 10-05-2019 Available https://www.hackerearth.com/
and other	[3]. Topcoder, 10-05-2019 Available https://www.topcoder.com/challenges/
digital	[4]. Coder Byte, 10-05-2019 Available https://www.coderbyte.com/
material	[5]. Code wars, 10-05-2019 Available https://www.codewars.com/
	[6]. Code Signals, 10-05-2019 Available https://codesignal.com/
	Code Chef, 10-05-2019 Available https://www.codechef.com/

17MC1508A - BIOLOGY FOR ENGINEERS

Course Cate	Mar	ndator	ry Lea	arning	5	Credits:							-			
Course Type	:	The	ory				Leo	cture-	Tuto	rial-I	Practi	ice:	2	2-0-0		
Prerequisites	5:						Co	ntinu	ous E	valua	ation	:	1	00		
							Ser	neste	r end	Eval	uatio	n:	0	0		
							Tot	tal Ma	arks:				1	00		
	Upon s	succes	ssful o	comp	letion	of th	e cou	rse, th	ne stu	dent v	vill be	e able	to:			
	CO1	Des	cribe	the fi	ından	nental	Prine	ciples	and r	netho	ds of	engir	neerin	g		
	CO2	Iden	tify t	he fui	nctior	s of c	differe	ent typ	pes in	bio-r	nolec	ules				
Course	CO3	Des	cribe	mec	hanis	ms u	nderl	ying	the v	vorki	ng o	f mo	lecula	r biol	ogical	
Outcomes		proc	esses	inc	eludin	g e	nzym	e ca	italysi	is, r	netab	olic	pathy	vays,	gene	
	GOL	expi	ressio	n.		<u> </u>	1 .1									
	CO4	Use	Exce	I, MA		B and	d othe	er com	putat	ional	tools	to qu	antita	tively		
Cantributia		anal	yze b	1010g	ical p	roces	ses.	DO	р	D	D	р	DO	DC	DC	
Contributio		P	P	P	P	P	P		P	P	P	P	PO	P5	PS	
Outcomes		1	$\frac{0}{2}$	2		5	6	/	8	0	10		12	01	02	
towards	CO1	1		5	4 M	5	0		0	9	10	11				
achievement	CO^2		Н		101											
of Program	CO3		M		Н											
Outcomes	CO4		L		M	Н										
(L-Low, M- Medium.	001		-													
H- High)																
	UNIT	I:	I								I			l		
	Introd	uctio	n and	d Cla	ssific	ation	of Li	ving	organ	nisms						
	Introd	luctio	on: F	Funda	menta	al di	fferen	ces ^t	betwe	en se	cience	e and	l eng	ineerir	ng by	
	drawin	g a co	ompa	rison	betwo	een ey	ye and	d cam	era, E	Bird fl	ying	and a	ircraf	t. Biolo	ogy as	
	an inde	epend	lent s	cienti	fic d	iscipl	ine. I	Discus	s hov	w bio	logica	al obs	servat	ions of	f 18th	
	Centur	y tha	t lead	l to n	najor	disco	verie	s. Exa	ample	s froi	n Bro	ownia	in mo	tion ar	nd the	
	origin	of the	ermoc	lynam	nics b	y refe	erring	to the	e orig	inal c	observ	ation	of R	obert E	Brown	
	and Ju	lius IV	layor	Clas	aifian	tion	of 13				haa	. d	· (a)	Callur	lomiter	
Course	Unicol	lulor	on :	Clas	silica	tion r	01 11 1114	ving	orgai	nrol	Dase	tor of	1 (a)	Cellu		
Content	Energy	iuiai	Carb	on uti	ciiuia ilizati	n = 0	utotr	onhe	heter	otron	karyo he lit	tos u thotro	nhs ($\frac{1}{1} \Delta m$	5. (0)	
Content	excreti	n = 0	amir	on uu otelie	e uri	coteli	ic ur	eoteli	c (e)	Hab	itat-	acqua	tic te	errestri	al (e)	
	Moleci	ılar ta	axono	mv- t	hree 1	maior	· king	doms	of lif	e.	i cut	aoqua	,		ur (c)	
	UNIT	II:				linger			01 111	••						
	Biomo	lecul	es an	d Enz	zymes	5										
	Biomo	lecul	es: B	iomo	lecule	es: St	ructu	res of	suga	ars(Gl	ucose	e and	Fruc	tose),	starch	
	and ce	ellulo	se. N	lucleo	tides	and	DNA	A/RNA	A. Ăi	mino	acids	s and	lipic	ls. Pro	teins-	
	structu	re and	d func	ctions	- as e	nzym	es, tra	anspo	rters,	recep	tors a	nd st	ructur	al elem	nents	
	Enzym	nes: I	Enzyn	ne cla	assific	cation	, Me	chani	sm o	f enz	yme a	actior	ı.Enzy	vme ki	netics	
	and kir	netic j	param	neters												

	UNIT III:
	Genetics :
	"Genetics is to biology what Newton's laws are to Physical Sciences" Mendel's
	laws, Concept of segregation and independent assortment. Concept of allele.
	Concepts of recessiveness and dominance. Gene interaction, Epistasis. Meiosis and
	Mitosis be taught as a part of genetics. Emphasis to be give not to the mechanics of
	cell division nor the phases but how genetic material passes from parent to
	offspring.
	Information Transfer: DNA as a genetic material. Hierarchy of DNA structure-
	from single stranded to double helix to nucleosomes. Concept of genetic code.
	Universality and degeneracy of genetic code. Define gene in terms of
	complementation and recombination.
	UNIT IV:
	Metabolism : Exothermic and endothermic versus endergonic and exergoinc
	reactions. Concept of Keq and its relation to standard free energy. ATP as an energy
	currency. Breakdown of glucose to CO2 + H2O (Glycolysis and Krebs cycle) and
	synthesis of glucose from CO2 and H2O (Photosynthesis). Energy yielding and
	energy consuming reactions.
	Microbiology: Concept of single celled organisms. Concept of species and strains.
	Identification and classification of microorganisms. Growth kinetics. Ecological
	aspects of single celled organisms. Microscopy.
	Text Books & Reference Books:
	[1] Distance A stated second de Constall N. A. Davis, J. D. Harris Line
	[1]. Biology: A global approach: Campbell, N. A.; Reece, J. B.; Urry, Lisa;
	Education I td
Toyt books	Education Liu [2] Outlings of Dischamistry, Conn. E.E. Stympf, D.K. Drugning, C. Doi, D.H.
and	[2]. Outlines of Dioenemistry, Conii, E.E., Stumpt, T.K., Diuening, O., Doi, K.H., John Wiley and Sons
Reference	[3] Principles of Biochemistry (V Edition) By Nelson D I : and Cox M
books	M W H Freeman and Company
DOORS	[4] Molecular Genetics (Second edition) Stent G S and Calender R W H
	Freeman and company Distributed by Satish Kumar Jain for CBS Publisher
	Microbiology, Prescott, L.M J.P. Harley and C.A. Klein 1995. 2nd edition
	Wm, C. Brown Publishers
E-resources	[1].https://bee.cals.cornell.edu/sites/bee.cals.cornell.edu/files/shared/documents/
and other	Career_BEE_Final-for-Web.pdf
digital	[2].https://www.teachengineering.org/subjectareas
material	

SEMESTER VI

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

17IT3601 - MACHINE LEARNING

Course Cat	tegory:	Pro	gram	Core			Cre	dits:						4		
Course Typ	be:	The	eory				Lec	ture-	Tuto	rial-]	Pract	ice:		3-0-2		
Prerequisit	es:	17I	T3502	2 Dat	a Mir	ning	Cor	ıtinu	ous E	valu	ation	:		30		
		1					Sen	neste	r end	Eva	luatio	n:		70		
							Tot	Total Marks: 100								
														1		
Course	Upon s	ucces	sful c	ompl	etion	of the	e cour	se, th	e stu	dent v	will b	e able	to:			
Outcomes	CO1	Rec	Recognize the characteristics of machine learning, binary classification and													
		Bay	esian	learn	ing											
	CO2	Solv	ve cla	assific	cation	ı prob	lems	using	conc	ept le	earnin	g and	decis	sion tree	S	
	CO3	App	oly L	inear	and	distan	ce ba	sed 1	earnii	ng mo	odels					
	CO4	Ana	Analyze Genetic and Neural network algorithms													
Contributi		Р	P P P P PO P P P P PO PSO PSO												PSO	
on of		0	0	0	0	0	6	0	0	0	0	0	12	1	2	
Course		1	2	3	4	5		7	8	9	10	11				
towards	COl	M	L	L	L	M								M	M	
achieveme	<u>CO2</u>	H	M	M	M	H								H	H	
nt of	CO3	H	M	M	M	H								H	H	
Program	CO4	Н	I M M M H H H												Н	
Outcomes																
(L-LOW, M-																
Medium,																
H- High)																
Course	UNIT	I														
Content	The in	gred	ients	of m	achin	ie lea	rning	, Tas	sks: tł	ne pro	oblem	is that	t can	be solve	ed with	
	machin	e lea	rnıng,	Moc	lels: t	the ou	tput o	of ma	ichine	e lear	nıng,	Featu	ires, t	he work	chorses	
	of mach	nne l	earnii	ng.	1	1 . 4 .	.1		1						Class	
	Binary	class lity o	silica	tion a	and I	relate	a tas	KS: C	lassii	icatio	on, Sc	coring	, and	ranking	, Class	
	Bavesi	an an	d Co	mnu	tatior	nal La	arni	nσ [.] R	aves	Theo	rem	Raves	Onti	mal Cla	ssifier	
	Gibbs A	Algor	ithm	Naïv	e Bay	ves Cl	assifi	er	uyes	11100	i ciii, i	Duyes	, opu		5511101,	
	UNIT	<u></u>	· • · · · · · · · · · · · · · · · · · ·	1,411	- Duy			~1								
	Beyond	l bii	nary	class	sifica	tion:	Han	dling	mor	e th	an t	wo c	lasses	s, Regr	ession,	
	Unsupe	rvise	d and	desc	riptiv	e lear	ning.	U						, U	,	
	Concer	ot lea	arnin	g : T	he h	ypoth	esis	space	, Pat	hs th	nroug	h the	hyp	othesis	space,	
	Beyond	l conj	uncti	ve co	ncept	s.										
	Tree m	odel	s: Dee	cision	trees	s, Ran	king	and p	orobał	oility	estim	ation	trees	, Tree le	earning	
	as varia	ince r	educt	10n.												
	UNIT	Π														
	Linear	moo	lels:	The	least	-squai	es m	ethoo	l, Th	e pe	rcepti	on: a	a heu	ristic le	earning	
	algorith	m fo	r line	ar cla	ssifie	ers, Su	pport	vect	or ma	chine	es, ob	tainin	g pro	babilitie	s from	
	linear c	lassif	iers,	Going	g beyo	ond li	nearit	y wit	h keri	nel m	ethod	S.				

	Distance Based Models: Introduction, Neighbours and exemplars, Nearest													
	Neighbours classification													
	UNIT IV													
	Artificial Neural Networks: Introduction, Neural network representation,													
	appropriate problems for neural network learning, Multilayer networks and the back													
	propagation algorithm.													
	Genetic Algorithms, Hypothesis Space Search, Genetic Programming													
Text	Text Book(s):													
books	[1]. Machine Learning: The art and Science of algorithms that make sense of data,													
and	Peter Flach, Cambridge University Press, 2012 [2] Tom M. Mitchell, Machine Learning, India Edition 2013, McGraw Hill													
Reference	[2]. Tom M. Mitchell, Machine Learning, India Edition 2013, McGraw Hill Education													
books	Education Reference Realist													
	Reference Books:													
	[1]. Stephen Marsland, "Machine Learning – An Algorithmic Perspective",													
	Second Edition, Chapman and Hall/CRC Machine Learning and Pattern													
	Recognition Series, 2014													
	[2]. Ethem Alpaydın, Introduction to machine learning, second edition, MIT press.													
	[3]. T. Hastie, R. Tibshirani and J. Friedman, "Elements of Statistical Learning",													
	Springer Series, 2 nd edition													
E-	[1]. Kevin Murphy, "MachineLearning: AProbabilisticPerspective", MIT Press,													
resources	2012, https://www.cs.ubc.ca/~murphyk/MLbook/pml-intro-5nov11.pdf													
and other	[2]. Professor S. Sarkar, IIT Kharagpur "Introduction to machine learning",													
digital	https://www.youtube.com/playlist?list=PLYihddLF-													
material	<u>CgYuWNL55Wg8ALkm6u8U7gps</u>													
	[3] Professor Carl Gustaf Jansson, KTH, Video Course on Machine Learning													
	https://nptel.ac.in/noc/individual_course.php?id=noc19-cs35													
	[4]. <u>Tom Mitchell</u> , "Machine Learning",													
	http://www.cs.cmu.edu/~tom/10701_sp11/lectures.shtml													

Course Cate	gory:	Prog	ramm	ne Co	re				Cred		3						
Course Type	<u>8</u> ,-	Theo	rv						Lect	e:	3-0-0						
Prerequisite	s:	17IT	3308	Ohie	ct Or	ientec	1		Con	tinuo	us Ex	valua:	tion:		30		
1 i ci cquisice	5.	Prog	ramm	ning			•		com	uuu	us 11,	uruu			50		
		17IT	3509	Java	Prog	amm	ing										
		1/11			1108				Sem	ester	end l	Evalu	ation	:	70		
									Tota	l Ma	rks:				100		
									k ***								
Course	Upon s	ucces	sful c	omple	etion	of the	e cour	se, th	e stud	lent w	vill be	able	to:				
Outcomes	CO1	Dev	elop	secure	e and	dyna	mic w	veb pa	ages u	sing.	JavaS	cript					
	CO2	Des	ign a	pplic	ations	that	inter	ract	vith r	elatio	nal c	lataba	ases t	hrou	gh Java		
		Data	abase	Conr	nectiv	itv									0		
	CO3	Dev	elon :	and d	enlov	Serv	lets a	nd JS	P teck	nolo	ries						
	CO4	Des	ign si	nglei	nage v	web a	pplic	ations	s throu	igh A	ngula	ar tecl	nnolo	gv			
Contributio		P P P P P P P P P P P P P P P P P P P) PSO			
n of Course		0	0	$\hat{0}$	0	0	0	7	0	$\hat{0}$	$\hat{0}$	0	0	1	$\frac{1}{2}$		
Outcomes		1	$\frac{1}{2}$	3	4	5	6	,	8	9	10	11	12	-	-		
towards	CO1	M	M	Н	-	5	0		0	/	10	T	12	М	I		
achievement	CO^2	M	M	Н								I		M	I		
of Program	CO_2	M	M	н								I		M	M		
Outcomes	CO_4	IVI	IVI	11										M	M		
(L-Low, M-	004			п								п		11/1	1 V1		
Mealum, H-				11								11					
Gaurga	UNIT	 .	L														
Contont	VMI .	l; Intro	duati	on V	MII	Dagio	. Str	uoturi	na D	oto V	MT -	nomo	anaaa		oumont		
Content	$T_{\text{VDA}} \Gamma$	nnu (Afinit	ions()	оп, л отра		Dasic: 2CVN	5, Su /II so	homo		ala, A Imont		name	space	s ,D(Jeument		
		The	con	pent /	of II	DRC 1		Driv	ver T	wneg	s IDE	C P	ackan	00	A Brief		
	Overvi	ew ()f T	he I	DRC	Pro		Dii	ahase	ypes,	nnect	ion	Δ sso	ciatir	ng The		
			1 hrid	ne vi	th the	n Data	ahase	State	ement	ohied	nte R	esult	Assu Set	ciatii	ig inc		
	UNIT	II:	<i>5</i> 011 u	50 11		Duu	10450;	, otat		00j0	<i>1</i> .5, 1 .	csuit	500				
	Java S	ervlet	ts: Jay	za Sei	rvlets	and	comm	non g	atewa	v inte	rface	prog	ramm	ing.	benefits		
	of usin	g a ia	va se	rvlets	. sim	ple ia	va se	rvlet.	anato	omv c	of a ia	iva se	ervlet.	dep	lovment		
	descrip	tor, re	ading	g data	from	a cli	ent, re	eadin	g http	reque	est he	aders	. send	ling	lata to a		
	client a	nd wo	orking	the l	ittp re	espon	se hea	ader.	worki	ng th	e cool	kies,	tracki	ng se	essions		
	UNIT	III:		/	-	-		,		0		,		U			
	Java S	erver	Page	s: JS	P. JSI	e tags	. Ton	ncat.	Reque	est Str	ing. I	User S	Sessio	ons, C	Cookies.		
	Session	ns Obj	ects		,	0	,	,	1		U			,	,		
	Java S	cript:	Intro	ducti	on to	script	ting, I	Funct	ions.	Arrav	s. Ob	iects					
	UNIT	IV:				1	U)		,	5)					
	Angula	ar:															
	Introdu	ction	to an	gular	Hell	o An	gular	, start	ting fi	rst ar	igular	proi	ect. u	nders	standing		
	the An	gular	CLI.	Basi	cs of	Angu	ılar A	Applic	cation	s, cre	ating	a Co	ompor	nent.	built-in		
	Angula	r dire	ctive	s, uno	dersta	inding	g and	usin	g ang	ular	comp	onent	ts, tes	ting	angular		
	compor	nents.	Tem	olate	driver	n forn	ns		0 2		r		,	0	0		

17IT3602 - WEB PROGRAMMING AND DEVELOPMENT

Content	Case Study: Deploy Web application into a server using Servelt/JSP Technology or													
Beyond	Develop a web applications using Angular technology													
Syllabus														
Text books	Text Book(s):													
and	[1]. James Keogh, "J2Ee: The Complete Reference", 1 st Edition, Mcgraw Hill													
Reference	Education, 2002													
books	[2]. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, "Internet & World Wide													
	Web How to Program", 5 th Edition, Pearson Education, 2011													
	[3]. ShyamSeshadri, "Angular: Up and Running", O'Relly Media, Inc., First													
	Edition, 2018													
	Reference Books:													
	[1]. Chris Bates, "Web Programming, building internet applications", 2nd													
	Eedition, WILEY Dreamtech, 2006													
	[2]. Hans Bergsen, "Java Server Pages", SPD O'Reilly, 2nd edition, 2002													
	[3]. Matt Frisbie, Angular 2 Cookbook, 1st Edition, Kindle Edition, 2017													
Е-	[1]. Patrick Royal, Java EE Essentials: Servlets and JavaServer Faces, 20-11-													
resources	2018, Available: <u>https://www.lynda.com/Java-tutorials/Java-EE-Essentials-</u>													
and other	Servlets-JavaServer-Faces/124399-2.html													
digital	[2]. Advanced Java Programming by Infinite Skills, 20-11-2018 Available:													
material	https://www.udemy.com/advanced-java-programming/													
	[3]. Programming Tutorials by Rose India, 20-11-2018 Available:													
	http://www.roseindia.net/													
	[4]. Front-End JavaScript Frameworks: Angular, The Hong Kong University of													
	Science and Technology, 28-11-2018 Available													
	https://www.coursera.org/learn/angular,													

Course Category:	Progra	amme	Electi	ve - I						Credi	ts:				3
Course Type:	Theor	у								Lectu	re-Tu	itoria	l-Pra	actice:	3-0-0
Prerequisites:	17IT 17IT	3502 - 3401 -	Data I Statis	Minin tics w	ig rith R					Conti	nuous	s Eva	luati	on:	30
									_	Semes	ster E	nd E	valua	ation:	70
										Total	Marl	KS:			100
Course	Upon	succes	sful c	omple	etion o	f the	course	e, the	stude	nt will	be al	ole to:	:		
Outcomes	CO1	Unde	erstand	the 1	need a	nd sig	nifica	ince o	f data	a life c	ycle.				
	CO2	2 Apply statistical techniques to visualize the data and evaluate Type I and II errors.													I errors.
	CO3	3 Design classifier model to predict future trends and validate accuracy of the classifier and to implement clustering techniques on the datasets													cy of the
	CO4	Classifier and to implement clustering techniques on the datasets.04Implement Linear model selection methods for real time applications/													
	04	Analyze algorithms for dimensionality reduction on data.													
Contribution		РО	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	PSO1	PSO2
of Course	001	1	2	3	4	5	6	7	8	9	10	11	12	TT	M
Outcomes	$\frac{CO1}{CO2}$	H T	М		М									H U	M
towards	CO_2	L M	IVI L		IVI								М	H	M
achievement	CO4	M	M		М								1.11	H	M
M-Medium,															
H-High)															
Course	UNIT	Ί:	т.	1	,• ,			4 D	1	• ,	6.04	,• ,•	1 T		
Content	Intro and Si	ductio	n: Int Matrix	roduc $\frac{1}{2}$	tion to bra	o Data	asets,	A Br	ief h	istory	of Sta	atistic	al Le	earning,	Notation
	Statis	tical	Lear	ning:	Wha	ıt is	Stati	stical	Lea	arning.	Ass	sessin	g M	Iodel A	Accuracy,
	Introd	uction	to R.	0						U,			C		5 -
	UNIT	'II:													
	Linea	r Reg	gressi	on: S	Simple	e Lin	ear I	Regres	ssion	, Mul	tiple	Line	ar R	egressio	on, other
	Consi	deratic	ons in	the	Regre	ssion	Mod	el, Th	ne M	arketii	ng Pl	an, C	Comp	arison o	of Linear
	Regie			-mea	lest no	eignbo	JIS.								
	Classi	ificatio	on: A	n Ov	erview	vof	Classi	ficatio	on V	Whv N	lot L	inear	Reg	ression?	Logistic
	Regre	ssion,	Linea	Disc	rimina	nt An	alysis	s, A C	ompa	arison (of Cla	ssific	ation	Method	ls.
	Resar	npling	Meth	ods:	Cross-	- Vali	dation	and	The E	Bootstr	ap.				
	UNIT	TV:													
	Linea	r Mo	del S	electi	on ar	nd R	egula	rizati	on:	Subset	Sele	ction,	, Shi	rinkage	Methods,
	Dimei	nsion f Basad	Keduci Moth	tion M	lethod	ls, Co	nsidei	ations	S IN H	ligh D	imens	Sions. Rand	om I	Forest B	oosting
	Suppo	ort Ve	ctor N	/achi	ine: M	asies (um M	argin	class	ifiers,	ging. Supp	ort ve	ctor (classifie	rs

17IT4603A - FUNDAMENTALS OF DATA SCIENCE

Textbooks	Text Book(s):
and	[1]. Gareth James, Daniela Witten, Trevor Hatie, RoberstTibhirani, "An Introduction to
Reference	Statistical Learning-with Applications in R ", 2015
books	Reference Books:
	[1]. Cathy O'Neil and Rachel Schutt. Doing Data Science, Straight Talk From The
	Frontline. O'Reilly. 2014.
	[2]. Mark Gardener, "Beginning R: The statistical programming language", 2012
E-resource	[1]. Latika Singh, K-NN, https://www.youtube.com/watch?v=2YQHPfwVuF8
sand	[2]. David Longstreet, Linear regression,
Other digital	https://www.youtube.com/watch?v=zPG4NjIkCjc
material	[3]. https://www.digimat.in/nptel/courses/video/106105186/L01.html
	[4]. https://www.youtube.com/watch?v=XohgKT13FKY

Course Cate	gory:	Prog	gramr	ne El	ective	e - I			Cred	its:	_				;		
Course Type		The	ory]	Lecture-Tutorial-Practice: 3-0-0								
Prerequisite	s:	17I]	[3503	G Cor	npute	er Net	work	s (Conti	inuou	ıs Ev	aluat	ion:	3	30		
									Seme	ster	End 1	Evalu	ation	: 7	70		
								,	Total Marks:100								
Course	Upon	succe	ssful	comp	letio	n of tl	ne co	urse, t	the stu	ıdent	will	be ab	le to:				
Outcomes	CO1	Und	lersta	nd s	securi	ity a	uttack	s, se	ervice	es, r	necha	nism	s an	nd en	ncryption		
		algo	orithm	is to r	nitiga	ate se	curity	' issue	es in a	ı netv	vork						
	CO2	App	oly au	thent	icatio	n tecl	nniqu	es to :	safeg	uard f	the da	ita tra	nsfer				
	CO3	Ana	lyze	secur	ity pr	actice	es in I	P and	l web	base	d syst	ems.					
	CO4	Ider	dentity malicious activities and incorporate counter measures on digital														
		data	ata.														
Contributio		P	P P														
II OI COUrse Outcomes			$\begin{bmatrix} 0 & 0 & 0 & 0 & 7 & 0 & 0 & 0 \\ 2 & 2 & 4 & 5 & 6 & 7 & 0 & 0 & 0 & 1 \\ \end{bmatrix}$												2		
towards	COL	I T		э М	4 M	3	0		ð M	9 T	10	11	12	м	T		
achievement	CO^2		Н	Н	M	н	L		M	L				H	M		
of Program	CO_2	T		11 11	M	м			M					M	M		
Outcomes		L	Н	Н	M	M			M					IVI			
(L-Low, M-Medium	CO4												Μ				
H- High)																	
Course	UNIT	UNIT I:															
Content	Overview: Computer Security Concepts, The OSI Security Architecture, Security																
	Attack	s, Seo	curity	Serv	rices,	Secu	rity N	Iecha	nisms	5, A N	1odel	for N	Jetwo	rk See	curity.		
	Classi	cal I	Encry	ptior	1 Te	chniq	ues:	Sym	metri	c Cij	pher	Mod	el –	Crypt	ography,		
	Crypta	inalys	is an	d Bru	te Fo	rce A	ttack.		C.	·		т 1:	4	1.1	1		
	BIOCK	Cipi ro T	aers	and	the	Data	Enc	ryptio	on Si The st	tanda rongti	ara: b of I	1 radi	tional	l DIOC	k cipner		
	princi	ne, 1. Mes		iia Ei	iciyp		stanu	aiu, i	ne su	lengu	1 01 1	JE3,	DIUCE	c cipii	ei uesigii		
	Advar	nced 1	Ener	vntio	n Sta	ndar	d. AE	ES Str	uctur	e							
	UNIT	II:		<u>, pero</u> ,						•.							
	Public	e key	cryp	togra	iphy	and]	RSA	: Prir	nciple	s of j	oubli	c-key	crypt	osyst	ems, The		
	RSA A	Algori	thm.														
	Other	Pub	lic-K	ey Cr	ypto	syste	ms: I	Diffie	Hellr	nan k	Key e	xchai	nge. C	Crypt	ographic		
	Hash	Func	tions	: Ap	plicat	ions	of cr	yptog	raphic	c has	h fun	ction	s, Tw	o sim	ple hash		
	functio	ons, S	ecure	Hasi	h Alg	orithr	n (SF	1A).				Dag			Magaaaa		
	Author	ige A	ion E	iticat	ong I		s: Me	essage	e Auti r Mo	nentic	atior	i Keq	uirem	Code	Message		
	hased	on H	ion r ash Fi	unctic	ons · l	HMA	C	1115 10		ssage	лии	icitite	ation	Couc	s, wincs		
	Digita] Sigi	natur	'es · T)igita	l sign	€. ature	S.									
	UNIT	III:			-8.00	~-0"											
	Trans	port	Leve	l Sec	urity	: W	eb S	ecurit	y Co	nside	ratior	ns, Se	cure	Socke	ets Layer		
	(SSL),	Tran	sport	Laye	er Sec	urity	(TLS)							-		
	Wirel	ess N	etwo	rk Se	curit	y :Wi	reles	s Secu	arity,	Mobi	ile De	evice	Secur	ity.			

17IT4603B - NETWORK SECURITY

	IP Security: IP Security Overview, IP Security Policy, Encapsulating Security
	Payload (ESP).
	UNIT IV:
	Malicious Software : Types of Malicious softwares, Viruses, Worms.
	Intruders – Intruders, Intrusion Detection.
	Firewalls : Need for firewalls, Firewall Characteristics, Types of Firewalls.
Content	SPAM, Trojans, Zombie, Bots, Keyloggers, Phishing, Backdoors, Rootkits, Cloud
beyond	Security, WLAN Security
Text books	Text Book(s):
and	[1].W.Stallings, "Cryptography and Network Security: Principles and
Reference	Practice", 6 th ed, Pearson education, 2014.
books	[2].W.Stallings, "Network Security Essentials : Applications and Standards",
	4rth ed, Pearson education, 2011.
	Reference Books:
	[1]. AtulKahate, "Cryptography and Network Security", Third Edition,
	TataMcGraw Hill, Ltd , 2013.
Е-	[1]. Focus Group, "Symmetric and Asymmetric encryption",
resources	https://www.youtube.com/watch?v=btj1skzR5yA, Sept 2018
and other	[2]. Sri Vasan V S, "Digital Signatures", NPTEL IIT MADRAS,
digital	https://www.youtube.com/watch?v=1NMZuLZPUKc, Dec 2017
material	[3].Intrigano "IDS vs IPS", https://www.youtube.com/watch?v=r_gdx39qV1g,
	Dec 2017

Course Cate	gory:	Prog	gram	Elect	ive -	Ι			Cre		3						
Course Type	<u> </u>	The	orv						Lec	ture-	Tuto	rial-F	Practi	ce:	3-0-0		
Prerequisite	s:	Intro	oduct	ion to	o Con	nputir	g		Cor	ntinu	ous E	valua	ation:		30		
1	••					-p	0		Sen	iestei	r End	Eva	luatic	on:	70		
									Total Marks: 100								
Course	Unon	succe	ssful	comr	letio	n of tl	ie coi	irse 1	the st	udent	will	he ab	le to:				
Outcomes	CO1	Con	struc	t fini	te sta	te m	achin	es an	d reg	nılar	expre	ssion	s for	model	ing and		
	001	solv	solving computation problems.														
	CO2	Imp	leme	nt to	$\frac{1}{2}$ dox	$\frac{1}{2}$ $\frac{1}$	nd ho	ottom	un r	parsin	g tec	hnia	ies o	n cont	ext free		
	002	grar	nmar	s	u o (vii ui	10 00	, com	μh μ	Juisin	5 100	miqu	105 0	00110			
	CO3	Anr	lv tea	hnia	ues fo	or cod	e gen	eratio	on and	d cod	e onti	mizat	ion				
	CO4	Des	Design Pushdown Automata and Turing machines for the given grammar or														
	001	lang	language.														
Contributio	L	P	P	PSO	PSO												
n of Course		0	0	0	0	0	0	0	0	0	0	0	0	1	2		
Outcomes		1	2	3	4	5	6	7	8	9	10	11	12	_			
towards	CO1	L	L			L	_			-		М		L	М		
achievement	CO2	М	Н									Н		L	L		
of Program	CO3	H	L									L		L	M		
Outcomes	CO4																
(L-LOW, NI- Medium H-	001	н	н		М							L		T.	L		
High)					111									Ľ			
Course	UNIT																
Content	Finite	Auto	omat	a: De	termi	nistic	Fini	te Au	itoma	ta-De	finiti	on of	DFA	. How	a DFA		
	proces	ses st	trings	, Sim	pler]	Notat	ions f	or D	FA's,	Exte	endin	g the	Trans	sition F	unction		
	to Stri	ngs, T	Гhe L	angu	age of	f DFA	A, No	ndete	rmini	stic F	inite	Auto	mata	– Defir	nition of		
	NFA,	Exte	ended	l Tra	ansiti	on I	Funct	ion,	Lang	guage	of	NFA	ь, Е	quivale	nce of		
	Deterr	ninist	ic and	d Nor	ndeter	minis	stic F	inite A	Autor	nata,	Finite	e auto	mata	with E	psilon –		
	Transi	tions	– U	ses o	f €-	Trans	slatio	ns, F	ormal	l nota	ation	for a	ın €-l	NFA, I	Epsilon-		
	Closur	es, l	Exten	ded	Trans	sition	s and	d La	nguag	ges f	for €	-NFA	.'s, I	Elimina	ting €-		
	Transi	tions.															
	Regul	ar Ex	pres	sions	and	Lang	guage	s: Re	gular	expre	essior	1s - C)perat	tors of	Regular		
	Expres	ssions	s, Bi	uıldin	g R	egula	r Ez	xpress	sions,	Fin	iite .	Autor	nata	and	Regular		
	Expres	ssions	s - C	onve	rtıng	DFA	s to	Reg	gular	expre	ession	is by	elim	inating	, states,		
	Conve	rting	regul	ar ex	pressi	ions t	o auto	omata									
	UNIT	II:	C.		C		.1	т -	• • •			ר ח	ст	• • •	1		
	Introc		n: St	tructu	re of	a cor	npilei		ical A	Analy	SIS —	Kole	of Le	XICAL A	nalyzer		
	- Lexi	cal A	nalys	IS VS	. Pars	sing,	oker	i, patt	erns a	and L	exem	es, Lo		effor			
	Simpl	e Syr	Itax I	rac	iea I	rans	ator	s syn	lax d		$10\Pi -$	Denn			unmars,		
	Deriva	a^{uions}	, Pai	ise	\square Dec	, An	idigu	ity,	rarsii	ng-10	pp-D0	WII .	rarsii	ig, Pr			
	Parsin	g, ₩1			t MIO	uucil(חוג, L ת	vesigi	nng a	n Pred		rars	CI, LE		II SION		
	dofinit	ion c	a1981 f CE4	5.11 3.Do	rivet:	onc ¹	i - K Dorce	Trock	b IC	parse Dori-	I, CO		riet	ity Ta	n Down		
	Dorgin	.1011 0 a P a		J, De	11Väll	UIIS, I Dore	raise	FID		nd T		is, Afi OW	uoigu TT7	11y, 10	p Down		
	r ai sill	g-ree	Juisiv	e-De	scent	ган	smg,	TIK	or a	nu r	ULL	υw,	_LL(1 U	uiiinais,		

17IT4603C- AUTOMATA AND COMPILER DESIGN

	Nonrecursive Predictive Parsing, Bottom Up Parsing – Reductions, Handle Pruning,
	Shift Reduce Parsing, Introduction to LR Parsing – Why LR Parsers, Items and the
	LR(0)Automaton, LR-Parsing Algorithm, Construction of SLR-Parsing Tables,
	More Powerful LR Parsers- Canonical LR(1) Items, Constructing LR(1) Sets of
	Items, Canonical LR(1) Parsing Tables, Constructing LALR Parsing Tables
	UNIT III:
	Syntax Directed Translation: Syntax Directed definition, Evaluation orders for
	SDD's, Applications of Syntax Directed Translation
	Intermediate Code Generation : Variants of Syntax Trees, Three Address Code,
	Type Checking- Rules for Type Checking, Type Conversions
	Code generation: Basic Blocks and Flow Graphs, Optimization of Basic Blocks,
	Simple code Generator, Peephole Optimization.
	UNIT IV:
	Pushdown Automata: Definition of the Pushdown automata, The languages of a
	PDA, Equivalence of PDA's and CFG's, Deterministic Push Down Automata.
	Turing Machines: Introduction, The Turing Machine – Notations, Descriptions,
	Transition diagrams, Language of a Turing Machine, Turing Machines and Halting.
Text books	Text Book(s):
and	[1]. John E. Hopcroft, Rajeev Motwani, Jeffrey D.Ullman, "Introduction to
Reference	Automata Theory, Languages and Computation", 3rd Edition, Pearson
books	Education, 2011
	[2].Daniela Witten, Trevor Hatie, RoberstTibhirani, "Compilers Principles,
	Techniques and Tools", Pearson Education, Second Edition, 2009.
	Reference Books:
	[1]. Michael Sipser, Introduction to the Theory of Computation, PWS
	Publishing.
	[2] Lewis H.P. & Papadimitriou C.H , "Elements of Theory of Computation",
	Second edition, Pearson /PHI.
	[3]. K.L.P.Mishra and N. Chandrashekaran, "Theory of computation", 2 nd edition,
	PHI
E-	[1]. Prof.Kamala Krithivasan, IIT, Madras, "Theory of Automata, Formal Languages
resources	and Computation , 2011, https://pntal.ac.in/courses/106106040/http://dou.tutorialspoint.com/cutomate_theory/ind
and other	ex htm
digital	[2] Neso Academy "Introduction to Theory of Computation" Dec 2016
material	https://www.voutube.com/watch?v=58N2N7zIGrOhttp://www.nptelvideos.in/2012/11/t
	heory-of-computation.html
	[3]. GeeksfoGeeks, "Theory of Computation",
	https://www.geeksforgeeks.org/toc-introduction-theory-computation/

Course Cat	egory:	Prog	gramr	ne El	ective	e			Credits:						3		
Course Typ	e:	The	ory						Lec	Lecture-Tutorial-Practice:							
Prerequisit	es:	17I	F350 1	- So	ftwar	e Eng	gineer	ing	Con	tinu	ous E	valua	tion:		30		
•		1						0	Sem	iestei	· End	Eval	uatio	n:	70		
									Total Marks:100								
Course	Upon s	ucces	ssful o	comp	letion	of th	e cou	rse, tl	he stu	dent	will b	e able	e to:				
Outcomes	CO1	Und	lersta	nd th	ne na	ature	of a	agile	softv	vare	deve	lopm	ent t	o esta	blish a		
		prof	professional software development environment and build teams.														
	CO2	Ana	lyze	the c	uston	ner ro	le an	d tim	e rela	nted p	oroble	ems ir	1 agil	e devel	opment		
		envi	environments.														
	CO3	App	ly m	easure	es for	qual	ity as	suran	ce an	d Tes	t Driv	ven D	evelo	pment	in agile		
		soft	software development environments.														
	CO4	Ana	Analyze the abstraction levels in agile software development and develop														
		trus	trust among team members in learning environment.														
Contributi		P	P	P	P	P	P	P	P	P	P	P	P	PSO1	PSO		
on oi Courso		0	0	\mathbf{O}	0	O C	0	O 7	O	0	0	0	O		2		
Outcomes	001	I	2	3	4	5	6	/	8	9	10	11	12	- T	N		
towards			М												M		
achieveme	CO2	L		т									м		M		
nt of	003	L		L									М	L	М		
Program	CO4		Μ										Μ	L	L		
Outcomes																	
(L-LOW, M-																	
Medium.																	
H- High)																	
Course	UNIT	I:															
Content	Introd	uctio	n to	Ag	ile S	Softw	are	Deve	elopm	ent-(Dverv	iew,	Obje	ectives,	Three		
	Perspe	ctives	on	Softw	are E	Engine	eering	g, Th	e Agi	le M	anifes	sto, A	pplic	ation o	f Agile		
	Softwa	re Do	evelo	pmen	t, Da	ta Ał	out 1	Agile	Soft	ware	Deve	lopm	ent, A	Agile S	oftware		
	Develo	pmer	nt in I	learni	ing Ei	nviroi	nment	ts	a 1					D.1			
	Teamv	vork-	· Ove	rview	, Ob	jectiv	es, A	Kol	e Sch	eme	ın Aş	gile T	eams	, Dilen	nmas in		
	Teamw	Ork,	Team	WORK	in Le	earnin	ig Env	viron	ments	,							
	UNII	II: nora	and	Igone		ornio		iaatir	vog T	ba C	uston	or T	bo II	or Cu	stomora		
	and Us	ers in	anu Lear	ning	- Ov Envir	CIVIC	w, Ou ente	yeen	ves, 1	ne C	usion	ici, i		sei, Cu	stomers		
		Over	view	Ohie	ctive	s Tin	nus ne-Re	lated	Prohl	ems	in Sot	ftware	Proi	ects Ti	ohtness		
	of Soft	ware	Dev	elonn	nent I	S, 111 Metho	nds S	lateu	nable	Pace	Tin	ne Ma	anage	ment o	of Agile		
	Project	s. Tir	ne in	Lear	ning F	Enviro	onmer	its	14010	1 400	, 111		anage	invit 0	1 1.5110		
	UNIT	III:						·-~,									
	Measu	res- (Overv	view,	Obje	ctives	s, Wh	y Are	e Mea	sures	Need	ded?,	Who	Decide	es What		
	Is Mea	sured	l?, W	hat Ś	hould	Be 1	Measi	ured?	, Whe	en Ar	e Me	asure	s Tak	ten?, H	ow Are		
	Measur	res T	aken	?, W	ho Ta	akes	the M	Measu	ures?,	Hov	v Are	e Mea	asures	s Used	?, Case		
	Study-	Mor	nitori	ng a	Larg	ge-Sca	ale P	rojec	t by	Mea	sures,	, Me	asures	s in L	earning		

17IT4603D - AGILE SOFTWARE DEVELOPMENT

	Environments.
	Quality- Overview, Objectives, The Agile Approach to Quality Assurance, Test-
	Driven Development, Measured TDD, Quality in Learning Environments.
	UNIT IV:
	Learning- Overview, Objectives, How Does Agile Software Development Support
	Learning Processes, Learning in Learning Environments
	Abstraction- Overview, Objectives, Abstraction Levels in Agile Software
	Development, Abstraction in Learning Environments
	Trust- Overview, Objectives, Software Intangibility and Process Transparency,
	Game Theory Perspective in Software Development, Ethics in Agile Teams,
	Diversity, Trust in Learning Environments,
Text	Text Book(s):
books and	[1] Hazza and Dubinsky, -Agile Software Engineering, Series: Undergraduate
Reference	Topics in Computer Science, Springer, 2009.
books	Reference Books:
	[1]. Craig Larman, —Agile and Iterative Development: A Managers Guide,
	Addison-Wesley, 2004.
	[2].Kevin C. Desouza, —Agile Information Systems: Conceptualization,
	Construction, and Management, Butterworth-Heinemann, 2007.
E -	[1]. https://www.coursera.org/learn/agile-planning-for-software-products
resources	[2]. Prof Umesh Bellur, IIT Bombay,
and other	https://www.youtube.com/watch?v=jRs-aFETAXY
digital	[3]. Praveen Mittal, University of Minnesota, courser,
material	https://www.coursera.org/learn/agile-software-development
	[4].http://www.nptelvideos.in/2012/11/software-engineering.html

Course Categ	gory:	Prog	gramm	e Ele	ctive	-II		Cre	dits:					3				
Course Type	:	The	ory					Lec	ture-]	Futor	ial-Pr	actic	e:	3	-0-0			
Prerequisites	•	17I	Г3502-	Data	a Min	ing		Con	3	0								
		-						Sen	Semester End Evaluation:									
								Total Marks: 100										
C	TT		<u> </u>	1		6.4		urse the student will be able to:										
Course	Upon CO1	succe	SSTUL C	ompl	$\frac{\text{etion}}{n \Lambda r}$	of th	e cou	rse, ti	ne stud	do D	vill be	able t	to:	0				
Outcomes		Ma	tor the		p Alt		door	Diate	ibuto.	$\frac{\mathbf{D}}{\mathbf{D}}$	Sustar		cyci	С.				
	002	Ivias							Touled		Syster	11.						
	CO3	Acq	counce knowledge on Map Reduce Framework.															
	CO4	App	Apply Pig and Hive concepts for Data Processing.															
Contribution		PO 1	O PO PO </th <th>PSO</th>												PSO			
Course	CO1	I M	<u>1 2 3 4 5 6 7 8 9 10 11 0</u>											1				
Outcomes	CO_2	L			L	M												
towards	CO3	M				M												
(L-Low,	CO4																	
M-Medium,					-													
H-High)		Μ			L	Н												
Course	UNIT																	
Content	Introd	luctio	on to E	Big D	ata:													
	Big D)ata-d	efinitio	on, C	Chara	cteris	tics o	of Big	g Data	a (Vo	olume,	Vari	iety,	Velo	city),			
	Data 1	n the	Wareh	louse	and I	Data	ın Ha	doop,	, Why	18 B1	g Data	Impo	ortar	nt? Pat	terns			
	Intro	g Dai Inctio	n to F	Ioph	on:													
	Data,	Data	Storag	e and	Anal	lysis,	Com	pariso	on wit	h Oth	er Sys	tems:	RD	BMS,	Grid			
	Comp	uting	, Volu	nteer	Com	putin	ig, A	Brief	Histo	ory of	Hado	op, A	pac	he Ha	doop			
	and th	e Hac	loop E	cosys	stem,	Hado	oop R	elease	es.									
	UNIT	П																
	Hado	op D	istribu	ıted	File	Syst	em:	The	Desig	n of	HDFS	S, HI	OFS	Conc	cepts,			
	Block	s, Na	ameno	des a	and	Data	nodes	, Ba	sic F	ilesys	tem (Opera	tion	s, Ha	doop			
	Filesy	stems	, Inter	faces	, The	e Jav	a Inte	erface	, Read	ling	Data f	rom a	a Ha	idoop	URL,			
	Data F	low,	Anato	my o	t a Fi	leRea	id, Ai	natom	iyof a	FileV	vrite, C	Coher	ency	/ Mod	el.			
	UNIT	III				_	-	-					-					
	Map .	Redu	ce–A	Weat	her I	Datas	et, D	ata Fo	ormat, Man	Ana	lyzing	the	Data	with	Unix			
	100lS, Scalin	α Out	lyzing t Hade	the	Data tream	with	Had Hado	oop, on Pii	Map a	and F	Reduce	, Jav	a M	ар Ке	educe,			
	Pig-In	5 Ou stalla	tion ar	id Ru	nning	nng, g of F	Pig E	xecut	ion Tv	vnes	Runni	ng Pi	g Pro	ogram	s. Pig			
	Latin	Edito	rs, Co	mpar	ison y	with	datab	ases,	Pig L	atin,	Functi	ons, 1	Data	Proce	essing			
	Opera	tors.		-					-									

17IT4604A - BIG DATA

	UNITIV:
	Hive-Installing Hive, An Example, Running Hive, Comparison with Traditional
	Databases, HiveQL, Tables, Querying Data.
Textbooks	Text Book(s):
and	[1]. Dirk deRoos, Chris Eaton, George Lapis, Paul Zikopoulos, Tom
Reference	Deutsch, "Understanding Big Data Analytics for Enterprise Class
books	Hadoop and StreamingData", 1st Edition, TMH,2012.
	[2].TomWhite,Hadoop,"TheDefinitiveGuide",3rdEdition,O'Reilly
	Publications, 2012
	Reference Books:
	[1].Michael Berthold, DavidJ. Hand, "Intelligent Data Analysis",
	Springer, 2007.
	[2].David Loshin, "BigDataAnalytics: From Strategic Planning to
	Enterprise Integration with Tools, Techniques, NoSQL, and Graph",
	Morgan Kaufmann Publishers, 2013
	[3].Hadoopin PracticebyAlexHolmes, MANNING
	[4].Hadoop in Action byChuckLam, MANNING
E-resources	[1].Big Data Use cases for Beginners Real Life Case Studies Success
and	Stories https://www.youtube.com/watch?v=HHR0-iJp2sM
Other	[2].Alexey Grishchenko, Hadoop vs MPP, https://0x0fff.com/hadoop-
digital	<u>vs-mpp/</u>
materials	[3].Random notes on bigdata- SlideShare:
	www.slideshare.net/yiranpang/random-notes-on-big-data-26439474
	[4]. <u>https://nptel.ac.in/courses/106/104/106104189/</u>

Course Categ	gory:	Prog	ramm	e Elec	tive I	[Cred	its:					3
Course Type:	:	Theo	ry						Lectu	re-T	utori	ial-Pi	ractio	e:	3-0-0
Prerequisites	:	17IT	3503	– Con	nputer	Netw	orks		Conti		30				
					-				Seme	ster	end H	Evalu	ation	1:	70
									Total	Mar	·ks:				100
Course	Upon s	on successful completion of the course, the student will be able to:													
Outcomes	CO1	Und	erstan	d the	desigr	n conc	epts,	prot	ocols	, priv	acy a	nd se	curity	y of Iı	nternet
		of Things													
	CO2	Ana	lyze tł	ne met	thods	of dat	a acq	uirir	ng, org	ganizi	ing ai	nd an	alytic	s usir	ng
		Cloud platform for IoT applications.													
	CO3	Design IoT applications using Raspberry Pi board using Py													Python
		interfacing various sensors.													
	CO4	Apply the steps of the design methodology in developing IoT applicat													ations.
Contribution		PO	PO PO PO PO PO P P P P P P P P PS 1												PSO
of Course		1	2	3	4	5	0	0	0	0	0	0	0	01	2
Outcomes			6 7 8 9 10 11 12												
towards	CO1	L		Н		L		Μ					Μ	L	
of Program	CO2	L		Μ		Μ		Μ						L	Μ
Outcomes	CO3	L		Μ		Μ		Μ						L	
(L-Low,															
M-Medium,	CO4	L		Μ		Μ		Μ					Μ	L	Μ
H- High)															
Course	UNIT	[:					-								
Content	Introd	uction	to Ir	iterne	et of t	hings	: Intr	odu	ction,	Phys	ical (lesigi	1 of I	oT, L	ogical
	Design	of lol	, 101	Enab	ling te	chnol	ogies	s, 10	l leve	ls &	Deplo	oyme	nt ter	nplate	es.
	Domai	n Spe		0 I S: 1	Home	Auto	matic	on, C	ities	4		ار میں ا	1421		Nand
	IOI an NEV fo	u WIZ. vr IoT	VI: III	lioduo	cuon,	IVIZIVI	, DII	ierei	ice be	etwee	11 10 1	and	IVIZIN	/I, SD	in and
		<u>л 101</u>													
	Intern	n: at Ca	nnocti	wity	Princi	inlos	Intra	oduc	tion	Inter	net (onne	otivit	v In	ternet_
	Rased	Com	nunic	ation	I I IIIC. IP	lpics. Δddre	nuv	ouuc 1 in	the	IoT	Me	dia		se C	ontrol
	Applice	ation I	aver	Protoc	H_2lor	ТТР	HTT	5 Ш РS	FTP	101,	IVIC	uia	AUU	55 C	onnoi,
	Data /	Acaui	ring.	Orga	nizin	σ. Pr	1111 000055	r o, sino	and	Ana	lytic	s. In	trodu	ction	Data
	Acouir	ing an	d Sto	rage	Orgai	o, •• nizinø	the	Dat	a. Tra	insaci	tions	Bus	iness	Prod	cesses
	Integr	ation	and F	nterni	ise Sv	vstems	S. An	alvti	cs.			240		,	
	Data C	ollect	ion. S	torag	e and	Com	putir	1g U	sing a	ı Clo	ud P	latfoi	m: I	ntrodi	action.
	Cloud	Com	outing	Para	adigm	for	Data	аĈ	ollect	ion,	Stora	ige a	and	Com	outing.
	Everytl	ning as	<u>a S</u> ei	vice a	<u>ind Cl</u>	oud S	ervic	e M	odels.	,		-		1	

17IT4604B - INTERNET OF THINGS

	UNIT III:
	 Sensors, Participatory Sensing, RFIDs and Wireless Sensor Networks: Introduction, Sensor Technology, Actuator, Sensor Data Communication Protocols, Radio Frequency Identification Technology, Wireless Sensor Networks Technology. IoT physical devices & Endpoints: IoT Device, Raspberry Pi Board, Raspberry Pi interfaces, programming Raspberry pi with python. UNIT IV:
	IoT Platforms Design Methodology: Introduction, IoT Design Methodology, Case Study on IoT System for Weather Monitoring.
	IoT Privacy, Security and Vulnerabilities Solutions: Vulnerabilities, Security Requirements and Threat Analysis – Privacy, Vulnerabilities of IoT, Security Requirements, Threat Analysis, IoT Security Tomography and Layered Attacker Model.
Text books and Reference books	 Text Book(s): [1] Vijay Madisetti and ArshdeepBahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, University Press Private Limited, 2017 [2] Raj Kamal, "Internet of Things, Architecture and Design Principles" 1st Edition, McGraw Hill Education Private Limited, 2017.
	Reference Books:
	 [1] Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013 [2] Jan Hollor, VlasiosTsiatsis, Cathering, Mulligan, Stafan, Avesand
	[2] Jan Holler, Vlasios Islatsis, Catherine Mulligan, Steran Avesand, StamatisKarnouskos David Boyle "From Machine-to-Machine to the
	Internet of Things: Introduction to a New Age of Intelligence", 1 st
	Edition, Academic Press, 2014.
E-resources	[1] Prof Sudip Misra, IIT, Kharagpur, "Introduction to Internet of Things",
and other	2017 https://www.voutube.com/watch?v=WUIVAivpwiU/A
material	[2] IoT Tutorial for Beginners Internet of Things (IoT) Edureka, 2017
	https://www.youtube.com/watch?v=UrwbeOIIc68
	[3] Prof Sudip Mishra, IIT Kharagpur, Introduction to IoT,
	https://nptel.ac.in/courses/106/105/106105166/
	[4] https://freevideolectures.com/course/4638/nptel-introduction-internet-things

Course Category:		Progr	am E	lectiv	e - II				Credits:								3		
Course Type	e:	Theor	y						L	ectur	∙e-Tu	toria	l-Pra	ctice	:	3-0	0-0		
Prerequisite	s:	17IT3	3509	Java	Progr	amm	ing		С	ontir	nuous	Eva	luatio	on:		30			
							-		S	emes	ter E	nd E	valua	tion:		70			
								Ī	Т	otal I	Mark	s:				100			
Course	Upor	n succe	accessful completion of the course, the student will be able to:																
Outcomes	CO1	Unc	Understanding the architecture and benefits of Dot Net Frame work													k			
	CO2	Ana	Analyze the importance of object oriented features in Dot Net frame w													/ork.			
	CO3	Des	Design dynamic web applications using web Controls and valid													idation			
	CO4	Bui	Build web applications that include database interactivity with													h di	fferent		
		data	databases.																
Contributio		Р	Р	Р	Р	Р	Р	P	0	Р	Р	Р	Р	Р	PS	0	PSO		
n of Course		0	0	0	0	0	0	7		0	0	0	0	0	1		2		
Outcomes		1	2	3	4	5	6			8	9	10	11	12					
towards	CO1	L	Н		L						Н		Н				Н		
of Program	CO2		Н		Н						Н		Н				Н		
Outcomes	CO3		Н		Н	Н					Н		Н				Н		
(L-Low, M-	CO4																Н		
Medium, H-			Н		Н						Н		Η						
High)	TINIT																		
Course		l I: ina at	antad	: : 41	NE	т Б.			1	Dom	fita	fdat	Nat	Anak	itaa	t	of dot		
Content	Not	ing su Frama	work		nnon	I FI onte d	amev of M	ot 1	K: Fra	Delle ma 1	vork		Eest	AICI	of	luie Not	Erame		
	work		WOIN		проп		JI .IN		110	une v	voik,	new	reat	uics	01.	INCL	Tame		
	Intr	oducti	on to	C#	: Ne	ed of	C#.	C#	pr	e-pro	cesso	r Dir	ective	es. No	ew]	Feat	ures of		
	С#,	simple	c Ca	¢ cor	isole	App	licatio	on,	Ic	lentif	iers	and	key	words	s, E	Data	types,		
	Varia	ables a	nd co	nstan	ts: va	lue t	ype,	refe	ere	nce t	ype, j	pointe	er typ	e, Ty	pe c	conv	ersion,		
	Boxi	ng and	unbc	oxing	varia	bles,	Expre	essi	on	s and	oper	ators.							
	Nam	espace	es, C	lasses	s, Ob	jects	and	St	ru	cts:	Nam	lespa	ces, (Classe	es ai	nd c	bjects,		
	const Index	ructors an	s and d Stru	l des lets.	tructo	ors, S	static	cla	ISS	and	ststi	c cla	iss m	embe	ers,	proj	perties,		
	TINIT	г п.																	
	UNI Obie	III:	rionte	d D	roar	amm	ina·	En	0.00	ncula	tion	Inh	oriton	<u></u>	Polv	mor	nhism		
	Ahst	raction	Inte	rface	i ugra	a111111	ing.	цц	uca	psula		11110	Jinall	UU, 1	i ory	1101	pinsin,		
	Poin	ters. I)eleg	ates	and	Even	ts: Po	oin	ter	s, De	elegat	es. E	vents	. Flo	wc	ontr	ol and		
	Exce	ption I	Handl	ing: (Contro	ol Flo	w Sta	ater	nei	nts, I	Excep	tion	Hand	ling.	-				

17IT4604C-DOT NET TECHNOLOGIES

	UNIT III:
	ASP.NET Essentials: Introduction to Features of ASP.NET, ASP.NET Life cycle,
	creating a sample ASP.NET web application.
	Web Forms: Standard Controls: The Control Class, Web Control class, CSS in web
	Applications, Label Control, Button Control, TextBox Control, Literal Control,
	Place Holder Control, Hidden Field control, File Upload Control, Image Control,
	Image Button Control, Image Map Control, List Box Control, Drop Down List
	Control, Bulleted List Control, Drop Down List Control, Bullet List Control, Hyper
	Link Control, Link Button, Check Box Control, Radio Button Control, Table
	Control, user Control and ustom Control.
	Validation controls: Base Validator Class, Required Field validator Control, Range
	validator Control, Regular Expression validator Control, Compare validator Control,
	ustom Validator validator Control.
	UNIT IV:
	Data Access with ADO.NET: Understanding Databases, Features of ADO.NET,
	Architecture of ADO.NET, Types Vs. Untyped DataSets, Data Reader, Connection
	String, Connecting to a Data base: SQL Server DataBase, OLEDB Data Base,
	ODBC Data Source, Command Object, Data Adapter : DataSet and Data Adapter,
	paging with Data Adapter, updating with Data Adapter, Adding Multiple Tables to
	a DataSet, Creating a Data View, Data Reader to work with databases
Text books	
and	[1] Kogent Learning Solutions, "NE14.5 PROGRAMMING" Black Book, dream
Reference	tech press, 2013.
books	
	[1] Herbert Schildt, "C# 4.0:complete reference", McGrawHill, 2010.
	[2]Matthew MacDonald, "ASP.NE1: The complete Reference", McGrawHill,
	2002. [2] Chair Hart Islan Karfform, Deer German, Chaire Hillman, "ACD Net 2.0 with
	[5] Chris Harl, John Kauliman, Dave Sussman, Chriss Uliman ASP.Net 2.0 with
Г	C# WIOX, 2000.
E-	[1] Gerry O Brien, Introduction to C #, <u>https://www.edx.org/course/introduction-</u>
and other	10-0-2 [2] Gerry O Brien "Object Oriented Programming in C#"
digital	https://www.edv.org/course/programming_c_microsoft_dev204v_1
material	[3] Dr. Tim. Dr. T. Chamillard. "Introduction to C# programming and Unity"
111411141	https://www.coursera.org/specializations/programming-unity-game-development
	[4] Tiberiu Covaci "ASP NET Web Forms Essential Training"
	https://www.lvnda.com/ASP-NET-training-tutorials/157-0.html

Course Cat	egory:	Prog	ramm	ne El	ective	e-II			Credits: 3								
Course Typ	e:	Theo	ory						Lec	ture-	Tuto	rial-Prac	ctice:	3-0-0			
Prerequisite	es:	17IT	3501	:Sof	tware	e Engine	eerin	g	Con	tinu	ous E	valuatio	n:	30			
									Sem	lester	· end	Evaluat	ion:	70			
									Tota	al Ma	arks:			100			
Course	Upon su	iccess	sful co	ompl	etion	of the c	cours	se, the	e stud	ent w	ill be	able to:					
Outcomes	CO1	Und	lersta	nd th	e diff	ferences	s bet	ween	testir	ng and	d debi	ugging					
	CO2	Ana	lyze	the t	esting	g techni	ques	s for	perfo	rming	g Trai	nsaction-	Flow	and Da	ta-Flow		
		testi	sting														
	CO3	Imp	leme	nt tra	nsact	tion flow	v tes	ting,	doma	in tes	sting a	and state	testin	g for a g	given		
		app	licatio	on an	d app	oly in co	omm	ercia	l envi	ronm	ents.						
	CO4	Inte	atterpret the control flow graph and identify the path products, path sums and oth expressions														
		path	ath expressions. P PO P PO P PO P PO														
Contributio		P	P		P	PO 5	P	P	P	P	P	POTI	PO	PSO	PSO		
Outcomes			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$												Ζ		
towards	COL	T	<u>1</u> <u>2</u> <u>4</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u> <u>M</u> <u>T</u>														
achievement	CO^2	M	$ \underline{\ } M L L M M M M$												T		
of Program	CO_2	H	L	M	L					М	М	11/1			M		
Outcomes	CO4	M	L	H	L					L	191			L	141		
(L-LOW, M-	001	101			Ľ									Ľ			
Medium,																	
H- High)																	
Course	UNIT I	:															
Content	Introdu	iction	e: Pur	pose	of te	sting, I	Dicho	otomi	es, m	odel	for te	sting, co	nsequ	ences of	f bugs,		
	taxonon	ny of	bugs.				Б				0						
	Flow g	raph	s and		th t	esting:	Bas	SICS	conce	pts of	of pa	th testin	g, pr	edicates	, path		
	predicat	es an	a ach	ievat	ne pa	ths, pat	n sei	ISITIZ	ing, p	ath ir	istrun	nentation	, appi	ication (or path		
	UNIT I	T.															
	Transa	1. ction	Flow	Tes	ting	Transa	ction	flow	ys tra	nsact	ion fl	ow testin	g tech	niques			
	Domair	n Test	ting:	Dom	ains	and pat	hs. 1	Nice	and I	Jglv (lomai	ins. dom	ain tes	sting. do	omains		
	and inte	rfaces	s testi	ng, d	lomai	n and i	nterf	ace te	esting	, dom	nains	and testa	bility.	0,			
	UNIT I	II:		U /					U	-			2				
	Dataflo	w tes	ting:	Basi	cs of	dataflo	w te	sting,	strat	egies	in da	taflow te	sting,	applica	tion of		
	dataflov	v testi	ing.														
	Paths,	path	proc	lucts	and	Regu	lar	expre	ession	is: Pa	ath p	roducts	& Pa	th expr	ession,		
	reductio	n pro	cedur	e, ap	plica	tions ar	nd flo	ow an	omal	y det	ection	l.					
		V:	n		•	. <u>C</u> t. t	C	1.	1		. 1 .	4 1	_				
	State, S	tate (Grap	ns T) a: at	esting	g: State	Gra	pns, g	good a	and b	ad sta	te graphs	s, iona a	nd Evta	nsions		
	testabili	ty tin	csun S.	g. 51		sung, II	npa		bugs,	1 1 1 1 1 1	libies	, Liiiiial	10115 a		.11510115		

17IT4604D - SOFTWARE TESTING METHODOLOGIES

Content	Software Metrics, Test Suit Management.
Beyond	
Syllabus	
Text	Text Book(s):
books and	[1]. B. Beizer, Software Testing Techniques, Second Edition, International Thomson
Reference	Computer Press, 2009
books	Reference Books:
	[1] B. Marick, The craft of software testing: Prentice Hall series in innovative
	technology.
	[2] Dr.K.V.K.K.Prasad, Software Testing Tools: Dreamtech.
	[3] E. Kit, Software Testing in the Real World: Pearson.
	[4] Software Testing Techniques: SPD (Oreille).
E-	[1]. Prof. Rajib Mall, IIT Kharagpur, NPTEL SOFWARE Testing video.
resources	Available: https://nptel.ac.in/courses/106105150/
and other	[2]. Software testing MIT.
digital	Available: http://ocw.mit.edu/courses/electrical- engineering-and-computer-
material	science/6-912-introduction-to-copyright-law-january- iap-2006/video-
	lectures/lecture-4-software-licensing/
	[3]. http://www.nptelvideos.in/2012/11/software-engineering.html

Course Cat	egory:	Op	en El	lectiv	e-IV					Cred	its:				3
Course Typ	e:	Th	eory							Lectu	ire-Tut	orial-	-Practi	ce:	3-0-0
Prerequisit	es:	17	IT35()3- C	ompu	iter N	etwo	rks		Cont	inuous	Evalı	uation:		30
										Seme	ster en	d Eva	luation	1:	70
	1									Tota	Marks	5:			100
Course	Upon s	ucces	<u>ssful</u>	comp	letior	<u>n of th</u>	ne con	urse, 1	the s	studen	t will be	<u>e able</u>	to:		
Outcomes	COl	Ider	apply data leakage, protection and security policies on digital systems												
	CO2	App	$\frac{1}{1}$	ta lea	akage	, prot	ectio	n and	sec	<u>urity p</u>	olicies	on di	gital sy	stems	1
	003	Ana	nvironment.												
	CO4	Im	Implement the issues in handling web vulnerabilities.												
Contributi	04	D D	P P P P P P P P P P P PO1 P PO1 PS												
on of		$\hat{0}$	$\begin{bmatrix} 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 & 1 $												
Course		1	2 3 4 5 6 7 8 9 11 1												2
Outcomes	CO1	L	2 3 4 3 0 7 8 9 11 1 H H I I I III IIII IIII IIII												Н
towards	CO2														М
achieveme	CO3	L													М
Program															
Outcomes			L M H L L H												
(L-Low,	CO4	L													L
M-	001	-													~
Medium,															
n- nigii) Course	UNIT	· Inf	forme	ation	Secu	rity (and T	Chrea	ts						
Content	Introdu	ction	– I	nform	nation	n Sec	uritv	Info	orma	ation	Assets	& Tł	reats -	Thre	eats to
Content	Informa	ation	Asse	ets. T	vpes	of A	ttack	s. Tv	pes	of Vi	rus. Tvi	bes of	f Worn	ns. Ty	pes of
	Trojans	, Net	work	: Átta	cks, (Comr	non V	/ulne	rabi	lities a	ind Exp	osure	s (CVE). 	1
	Funda	ment	als o	of Ir	form	natio	1 Se	curit	y:]	Eleme	nts of	infor	mation	secu	ırity –
	Networ	k Se	curity	y, Ap	plica	tion	Secu	rity, (Con	nmuni	cations	Secu	rity. Pr	incipl	es and
	concept	ts — (data	secur	ity –	Criti	cal I	nform	natic	on Cha	aracteris	stics,	Inform	ation	States,
	Prevent	10n V	s De	etectio	on, Ty	ypes	of con	ntrols	– A	ccess	Control	l Mod	lels.		
		u: D	ata I	Leaka	age a	nd P	reven	ition		1 D		.: C			1
	Introdu	ction	to .	Data	Leak	tage,	Orga	anizat	liona	al Dat is Too	ta Class		tion, L	ocation	on and
	r auiwa Networ	ys, C •k Sr	iffer	n An s and	I Inie	ctors		iffers	1 0 v	is icc	Ten d	, Dau	Wires	hark	
	UNIT			Corre	elatio	n an	1 M a	nade	mer	nt	, icp u	unp	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	nurk.	
	Event I	Logs	- Co	ncept	ts, Lo	g M	anage	ement	an	d its n	eed. La	og Ma	anagem	ent P	rocess.
	IIS Log	File	s, Lo	g Ana	alysis	and	Resp	onse.			, 20	0			,
	Data E	Backı	up :	Data	Bacl	kup -	Over	view,	, Ту	pes o	f Backı	up, B	ackup	Proce	dures.,
	Types of	of Sto	orage	,		-			2			-	-		
	UNIT	V:													
	Web A	Appli	catio	n Ha	ackin	g : \$	Scanr	ning t	for	web v	ulnerat	oilities	s : Nik	tto, ,	HTTP
	utilities	- C	url, (Open	SSL,	, Stu	nnel,	Appl	licat	ion Ir	spectio	n –	Zed A	ttack	Proxy,

17IT2605A - CYBER SECURITY

	Sqlmap.																
Content	Handling Network Security Incidents																
Beyond	Network Reconnaissance Incidents ,Denial of Service Incidents, Unauthorized																
Syllabus	Access Incidents, Inappropriate usage incident, Multiple component incident																
Text	Text Book(s):																
books and	[1]. Student Handbook – Security Analyst, NASSCOM																
Reference	[2]. Anti-Hacker Tool Kit (Indian Edition) Fourth Edition by Mike Shema,																
books	Publication McGraw Hill,2014																
	Reference Books:																
	[1]. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal																
	Perspectives by Nina Godbole and SunitBelpure, Publication Wiley																
	[2]. Nelson Phillips and EnfingerSteuart, "Computer Forensics and																
	Investigations", Cengage Learning, New Delhi, 2009.																
	[3]. Robert M Slade," Software Forensics", Tata McGraw - Hill, New Delhi, 2005																
	[4].Kevin Mandia, Chris Prosise, Matt Pepe, "Incident Response and Computer																
	Forensics ", Tata McGraw -Hill, New Delhi, 2006.																
	[5].McClure, Stuart, Saumil Shah, and Shreeraj Shah. Web Hacking:attacks and																
	defense. Addison Wesley. 2003.																
Е-	[1]. Hacker HighSchool																
resources	http://www.hackerhighschool.org/lessons.html																
and other	[2]. E.Rahul Naidu, "Importance of Cyber Security"																
digital	Available at : https://www.youtube.com/watch?v=MvK3lIDR3ms																
material	[3]. <u>https://nptel.ac.in/courses/106/105/106105031/</u>																
	[4]. https://www.youtube.com/watch?v=_mxufDbcK5A																
Course Cat	egory:	Open Elective - IV Credits:												3			
------------------	----------	-----------------------------	---	----------------	------------------	--------	--------------	---------------	----------	--------	---------------	------------	--------	-----------------	----------------	------	----------
Course Typ	be:	The	eory						L	lectu	re-Tu	utoria	al-Pra	actice	:	3-0	-0
Prerequisit	es:	171	T460	94A -	Big I	Data			0	Conti	nuou	s Eva	luati	on:		30	
									S	emes	ster E	End E	valu	ation	:	70	
									T	otal	Mar	ks:				100)
Course	Upon s	ucces	sful c	ompl	etion	of the	e cou	rse,	th	e stu	dent v	vill b	e able	e to:			
Outcomes	CO1	Illus	ustrate visualizations that represent the relationships contained in complex														
		data	ata sets and their interpretation.											_			
	CO2	Ana	nalyze and select appropriate data that can be used in order to create a isualization														
		visu															
		that	nat answers a particular research application														
	CO3	Iden	dentify the statistical analysis needed to validate the trends present in data														
		visu	isualizations.														
	CO4	Cho	hoose leading open source software packages to create and publish														
		visu	isualizations that enable clear interpretations of big, complex and real														
Contributi		WOR		a.	D	D	D	DC	`	D	п	D	п	п	DC		DSO
on of		PO 1	P O	P	P O	P O	P		,	P O	P	P	P	P	P5 1	0	PSU 2
Course		1	$\frac{1}{2}$	$\frac{0}{3}$		5	6	/		8	0	10	11	12	1		2
Outcomes	CO1	м	2 I	M	7	5	0			0	,	10	T	12	T		
towards	CO^2	IVI I.	L	M									L			_	
achieveme	CO3	Ľ	M	111													L
nt of Program		т		т									T		т		
Outcomes	CO4	L		L									L			-	
(L-Low,																	
M -																	
Medium,																	
H- High)		r.															
Course		l:	t of T	lata 1	Vieno	lizoti	on ·	Via	101	lizati	an 0.0	o dia	001/01	av too	1 TI	o h	odroak
Content	of visu	alizati	ion k	nowle	v isua edge	Defi	ning	v isi data	iai v	visual	izatic	a uis	isuali	y 100 zatior	1, 11 1 ski	10 U	for the
	masses	The	data y	visual	lizatic	on me	thode	olog	v	ISuui	izatic	, v	isuaii	Zatioi	I SKI	115	ior the
	Setting	the	Pur	pose	and	Ider	ntifvi	ng	J. K	ev F	actor	rs: E	stabli	shing	int	ent	– the
	visualiz	ation	's fur	iction	n, Est	ablisł	ning	inter	nt	- th	e vis	ualiz	ation'	s ton	, K	ey	factors
	surroun	ding	a vist	ializa	tion p	orojec	t, The	e " e	ig	ht ha	ts" of	f data	visua	ılizati	on d	esig	'n
	UNIT I	I :		Б						P		•		D .			
	Concei	ving	and	Rea	sonin	ig Vi	isuali		or	1 De	sign	Opt	ions:	Data	1 V15	sual	ization
	aesign	is all	abol	ut ch	olces,	, ine	VISU	allza	ati	on a	naton	ny –	data	repre	sent	110	n, ine
	Taxona	my a	anat(of Do	nny - ta Vi	- uata isuali	restin	n Ma	oll otho	de	• Da	ta vic	maliz	ation	meth	ode	Ch	oosing
	the appr	ronria	ite ch	art tv	ne A	SSess	ing hi	erar	us cł	nies a	nd ng	rt-to-	whol	e rela	tions,	shin	s
	and upp	opin		arriy	r ~ , 11		<u>5</u> III	erul	~1	u	na pe		,, 101	- 101a		mp	

17IT2605B - DATA VISUALIZATION

	 UNIT III: Constructing and Evaluating Your Design Solution: For constructing visualizations, technology matters, The construction process, Approaching the finishing line, Post-launch evaluation, Case Studies on real-time applications. UNIT IV: An Introduction to Connecting to Data: An Introduction to Connecting to Data in Tableau, Shaping Data for Use with Tableau, Getting a Lay of the Land: Tableau Terminology, View the Underlying Data, View the Number of Records, Dimension Versus Measure, What Is a Measure? What Is a Dimension? Discrete Versus Continuous
	Five Ways to Make a Bar Chart/An Introduction to Aggregation : Five Ways to Create a Bar Chart in Tableau An Introduction to Aggregation in Tableau, Line Graphs, Independent Axes, and Date Hierarchies, How to Make a Line Graph in Tableau, Independent Axes in Tableau, Date Hierarchies in Tableau, Marks Cards, Encoding, and Level of Detail, An Explanation of Level of Detail, An Introduction to Encoding, Label and Tooltip Marks Cards, Case studies.
Text books and Reference books	 Text Book(s): [1] Andy Kirk, "Data Visualization: a successful design process", Packt Publishing (26 December 2012) [2] Ryan Sleeper, Practical Tableau, O'Reilly Media, Inc.April2018. Reference Books: [1]. Chakrabarti, S,"Mining the web: Discovering knowledge from hypertext data ",Morgan Kaufman Publishers, 2003. [2]. Fry ,Vilisualizing data, Sebastopo,O'Reily, 2007.
E- resources and other digital material	 [1].Dr. Gaurav Dixit,Department of Management Studies, Indian Institute of Technology, Roorkee: https://nptel.ac.in/courses/110107092/7,2017 [2].P Adam Marcus, and Eugene Wu. RES.6-009 How to Process, Analyze and Visualize Data. January IAP 2012. Massachusetts Institute of Technology: MIT Open Courseware, https://ocw.mit.edu.,2012 [3] Prof.Shankar Narasimhan,Ragunatha Rengasamy,IIT Madras, Data Visualization in R Basic graphics, 2016 https://nptel.ac.in/courses/106106179/11, [4] Dr. Ed Vul, Dr. Mike Frank, Massachusetts Institute of Technology, "Statistics and Visualization for Data Analysis and Inference", 2009. https://ocw.mit.edu/resources/res-9-0002-statistics-and-visualization-for-data- analysis-and-inference-january-iap-2009/.

17IT2605 C - M COMMERCE

Course Cate	gory:	Ope	n Ele	ctive	- IV			C	redit		3						
Course Type	e:	The	ory					L	ectur	e-Tut	torial	-Prac	ctice:		3-0-0		
Prerequisite	s:							C	ontin	uous	Eval	uatio	n:		30		
								S	emest	er Ei	ıd Ev	aluat	tion:		70		
								Т	Total Marks: 100								
Course	Upon	succe	ssful	comp	oletion	n of tl	he cou	urse,	the st	udent	will	be ab	le to:				
Outcomes	CO1	Und	nderstand the application of tools and services to the development of small														
		scal	cale E-Commerce applications.														
	CO2	Iden	lentify the benefits and limitations of M-Commerce to support mobile														
	000	mar	harketing												<u> </u>		
	CO3	Rec	tecognize the impact of technology advances in Wireless devices for M-												s for M-		
	CO4	Con Ano	ommerce														
	004	Alla M_C	Maryze the factors influencing the adoption of Mobile Gaming Services and M-Commerce Business Models.														
Contributio		P	P	P	P	P	P	PO	Р	Р	Р	Р	Р	PSO	PSO		
n of Course		0	0	0	0	0	0	7	0	0	0	0	0	1	2		
Outcomes		1	2	3	4	5	6		8	9	10	11	12				
towards	CO1	М	L	Μ								L		L			
achievement	CO2	L	L	Μ								L		L			
Outcomes	CO3		Μ									L			L		
(L-Low,	CO4	L		L								L		L			
M-Medium,																	
H- High)	LINUT	т															
Course	UNII FIFC	і Трс	MIC	CON	ллғ	DCF											
Content	Traditi	ional	com	nerce		E-co	mmer	ce –	Inter	net ar	nd W	ww	-Ro	le of '	WWW _		
	Value	Chai	ins –	Stra	tegic	Bus	iness	And	l Indi	ıstrv	Valu	e Ch	ains	- Ro	le of E-		
	comm	erce.	Pack	et Sw	vitche	d Ne	twork	as —	ТСР/І	P Pro	otocol	Scri	pt – 1	[nterno	et Utility		
	Progra	imme	s – 1	SGM	L, H	TML	And	XN	1L –	Web	Clie	ent A	nd S	ervers	– Web		
	Client	Serve	er Ar	chite	cture	– In	tranet	An	d Ext	ranets	5 – V	Veb E	Based	Tool	s For E-		
	comm	erce -	- Seci	urity													
	UNIT	II	~~		~-												
	MOB	ILE (COM	MEF	RCE .		C 14	C			т	C	N 7 1	.1 0			
	Introd		1 — 1 Taabr	infras		ure o	oI M-	-Con Duci	imerc	e – Don	1 ype	S OI	MOD	tiona	Support		
	Mobil	cs – 2 Mai	l ecili Vetin	$\alpha \mathcal{X}$	ICS OI	tiser	eless ent l	Dusi Non-	Itess – Inter	- DCII net Λ	nnlie	allu L	IIIIIta In M	tions, I_Con	support,		
	Wirele	$\frac{1}{2}$ ss/W	ired (g œ 1 Comr	nerce	Com	nariso	ons	men	net A	ppne	ations) 111 IV.				
	UNIT III																
	MOB	ILĒ (COM	MEF	RCE:	TEC	HNO	LO	GΥ								
	A Fra	mewo	ork F	or Tł	ne Stu	idy C)f Mo	obile	Com	merce	e – N	TT E	Docon	no's I	-Mode –		
	Wirele	ess D	evice	s For	· Moł	oile C	Comm	erce	– To	wards	5 A (Classi	ficati	on Fra	amework		
	For M	obile	Loca	tion 1	Based	l Serv	vices -	- Wi	reless	Perso	nal A	nd L	ocal	Area N	Jetworks		

	The Impact Of Technology Advances On Strategy Formulation In Mobile Communications Networks.											
	UNIT IV											
	MOBILE COMMERCE: THEORY AND APPLICATIONS											
	Ine Ecology OI Mobile Commerce – The Wireless Application Protocol – Mobile Business Services – Mobile Portal – Factors Influencing The Adoption of Mobile											
	Gaming Services – Mobile Data Technologies And Small Business Adoption And											
	Diffusion – E–commerce in The Automotive Industry – Location– Based Services:											
	Criteria For Adoption And Solution Deployment – The Role of Mobile Advertising											
	In Building A Brand – M–commerce Business Models											
Text books	TEXT BOOKS											
and	[1].E.BrianMennecke, J.TroyStrader, "Mobile Commerce: Technology, Theory											
Reference	and Applications", Idea Group Inc., IRM press, 2003.											
books	[2].Ravi Kalakota, B.AndrewWhinston, "Frontiers of Electronic Commerce",											
	Pearson Education, 2003.											
	REFERENCES											
	[1].P. J. Louis, "M-Commerce Crash Course", McGraw- Hill Companies											
	February 2001.											
	[2].Paul May, "Mobile Commerce: Opportunities, Applications, and											
	Technologies of Wireless Business" Cambridge University Press March											
F	2001. [1] Dr GaurayDivit Department of Management Studies Indian Institute of											
L- resources	Technology Roorkee											
and other	https://nptel.ac.in/courses/110107092/7											
digital	[2] P Adam Marcus, and Eugene Wu, RES.6-009 How to Process. Analyze and											
material	Visualize Data. January IAP 2012. Massachusetts Institute of Technology:											
	MIT OpenCourseWare, https://ocw.mit.edu.											
	[3]. https://www.datacamp.com/courses/topic:data_visualization											

17TP1606 - QUANTITATIVE APTITUDE

Course Cat	egory:		Soft Sl	kills -	IV		C	edits:]	1					
Course Typ	e:]	Learni	ng by	Doing	3	Le	cture	-Tuto	rial-P	ractic	e:	() - 0 -	2
Prerequisit	es:						Co	ontinu	ous E	valua	tion:		1	100	
-							Se	meste	r End	Eval	uatio	1:	()	
							To	tal M	arks:				1	100	
Course	Upon	succe	ssful c	omple	etion o	f the c	ourse	, the s	tudent	will l	be able	e to:			
Outcomes	CO1	Solv	e vario	ous Ba	sic M	athem	atics 1	oroble	ms by	follov	wing d	liffere	ent m	ethod	5
	CO2	Follo	ollow strategies in minimizing time consumption in problem solving Apply hortcut methods to solve problems confidently solve any mathematical problems and utilize these mathematical kills both in their professional as well as personal life.												
		shor													
	CO3	Cont													tical
		skills													
	CO4	Anal													
	00.	table	able, graphs and formulas												
Contributi		PO	D PO P P PS P												
on of		1	2	3	4	5	6	7	8	9	10	0	0	01	02
Course				_			-		_	-		11	12		
Outcomes	CO1	М													L
towards	CO2		М											L	L
achieveme	CO3	М	M L M M												
llt 01 Program	<u> </u>														
Outcomes	CO4														L
(L-Low,															
M -															
Medium,															
H- High)															
Course	UNIT	Ι													
Content	Nu	meric	al abi	lity I:		F 0	1 01 1			a.	1.0		D		
		Num	iber s	ystem	, HC	F&	LCM	, Ave	rage,	Simp	lificat	10n,	Pro	blems	on
	nur	nbers													
	Nu	Det		lity II	: Jon D	ontroom	hin	Danaa	atagaa	Drof	4 θ. Τ				
		Kat	0 & P	горон	.1011, P	arther	smp,	Percer	mages	, PI01	ΠαL	oss			
	UNIT	TT													
		11 ithma	tical c	hility	1										
		Proh	lems c	in age	s Tim	ne & W	Jork 1	Dines	& Cist	ern ('hain I	Rule			
	Ar	ithme	tical a	hilitv			, ork, i	ip c s (, c	/11411111	cuiv.			
	1 1 1	Time	e & Di	stance	e Proł	olems	on bo	ats &S	Steams	a Proł	olems	on Tr	ains		
				~	., . 100					., . 100		1			
	UNIT	III													
	Arith	metic	al abil	ity III:	:										
		Allegation, Simple interest and compound interest, Races & Games of skills,													
	Ca	Calendar and Clock,													
	Lo	gical a	bility	:											
		Pern	nutatio	ns and	d Com	nbinati	on an	d Prob	ability	y					

	UNIT IV
	Mensuration:
	Geometry, Areas, Volumes,
	Data interpretation:
	Tabulation, Bar graphs, Pie charts, line graphs
Text	[1].R. S. Aggarwal "Quantitative Aptitude", Revised ed., S Chand publication,
books and	2017 ISBN:8121924987
Reference	
books	
Е-	[1]. <u>https://blog.feedspot.com/aptitude_youtube_channels/</u>
resources	[2]. <u>https://www.tutorialspoint.com/quantitative_aptitude/</u>
and other	[3]. <u>https://www.careerbless.com/aptitude/qa/home.php</u>
digital	
material	

Course		Prog	gram I	Electi	ve - Il	[C	redits	:				1				
Category:																	
Course Ty	pe:	Lab					L	ectur	e-Tut	orial	-Pract	ice:	0-	0-2			
Prerequisi	tes:	17I7	3402	- DB	MS,		C	ontin	uous	Evalı	lation	:	30	30			
		17I7	[3502	-Data	a Min	ing											
							Se	emest	er en	d Eva	luatio	n:	70	70			
							T	Total Marks:							100		
Course	Upon	succ	essful	comp	oletion	n of th	ne cou	rse, th	ne stu	dent v	vill be	able to	o:				
Outcome	CO1	U	nders	tand t	he co	ncepts	s and c	challe	nges i	in ana	lyzing	; big da	ata.				
S	CO2	L	earn to	o wor	<u>k wit</u> l	n ecos	ystem	is ava	ilable	in Ha	adoop.						
	CO3	U	nders	tand t	he im	pact c	of big	data f	or bus	siness	strate	gies &	decisi	ons.			
Contribut		PO	O PO										PO1	PS	PS		
1011 01 Course	~ ~	1	2	3	4	5	6	/	8	9	10	11	2	01	02		
Outcomes	CO	Н	Н		L	Н				L				L	М		
towards	I																
achieveme	CO	н												М			
nt of	$\frac{1}{2}$	11												L	141		
Program	2	тт										т		T			
(L-Low	$\frac{1}{2}$	п												L			
(L-Low, M-	3																
Medium,																	
H-High)																	
Course	Weel	x 1															
Content	•	Intr	oduct	tion to	big I	Data											
	•	Ap	plicati	ions o	f Big	Data											
	•	Cha	alleng	es of	Big D)ata											
	•	Cha	aracte	ristics	s of B	ig Dat	ta										
	•	Toc	ols														
	Weel	\mathbf{x}^{2}															
	wys		ueries	•													
	Weel	3	-f C	امتعام													
	Instal	ation		loude	ıd.												
	Weel	κ 4	UDEC	T int		C C 1	a		ما: مد: م		~						
	Explo	oring	HDFS	b. List	ing o	r mes	, explo	oring	aictio	naries	5.						
	Hdfe	N J Oner	ations	using	vari		mmar	nds									
	Waa		10115	using	, van	Jus Cl	,11111dl	145.									
	Hive	x u archit	ectur	e Cre	atino	hive t	ables	usino	hive	ıl lanı	סוומספ						
	Week 7																
	Load	Loading data into Hive warehouse Apply aggregate operations on data															
	Weel	<u>x 8</u>					<u>r</u>										
	Imple	ement	partit	ionin	g of d	ata in	Hive	Ware	house	usin	g Hive	QL.					

17IT4651A- BIG DATA LAB

	Week 9
	Implement the concepts of pig.
	Week 10
	Implement the concept of map reduce for various examples.
	Week 11
	Case Study on Hive.
	Week 12
	Case Study on Map Reduce.
Text	Text Book(s)
books and	[1].Dirk deRoos, Chris Eaton, George Lapis, Paul Zikopoulos, Tom
reference	Deutsch,"Understanding Big Data Analytics for Enterprise Class Hadoop and
books	Streaming Data",1st Edition, TMH,2012.
	[2].Tom White, Hadoop, "The Definitive Guide", 3rd Edition, O'Reilly Publications,
	Keterence Book(s)
	[1]. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
	[2].David Losnin, BigDataAnalytics. From Strategic Planning to Enterprise
	Publishers 2013
	[3] Hadoon in Practice by Alex Holmes, MANNING Publ
	[4] Hadoon in Action by Chuck Lam, MANNING Publ
E-	[1].An overview of "Big Data": Available http://www.jbonneau.com/doc/2012-04-27-
resources	big data lecture 1.pdf
and other	[2].Hadoop Tutorial: Developing Big-Data Applications with Apache Hadoop:
digital	Available http://www.coreservlets.com/hadoop-tutorial/
material	[3].Random notes on big data – SlideShare: Available
	www.slideshare.net/yiranpang/random-notes-on-big-data-26439474
	[4].http://www.cloudera.com/content/cloudera-
	content/clouderadocs/HadoopTutorial/CDH4/Hadoop -Tutorial.html
	[5]. <u>https://www.ibm.com/developerworks/community/blogs</u> Susan Visser
	Editionntry/flash book understanding big data analytics for enterprise class hadoop
	and streaming data? lang en

Course		Progra	ım Ele	ective	- II			Credits:							1	
Category:																
Course Typ	e:	Lab						Lectu	ıre-T	utoria	al-Pr	actio	ce:	(0-0-2	
Prerequisit	es:	17IT3	503- (Comp	uter N	letwoi	ks	Continuous Evaluation: 3								
		17CS	1203-	Prog	ramm	ing in	С	~								
							Ļ	Seme	ĺ	70						
	* *		0.1			0.1		Iotal Marks:							100	
Course	Upc	n succ	essful	comp	letion	of the	e cour	$\frac{se, the}{\cdot}$	e stud	ent wi	$\frac{111}{1}$ be	able	to:			
Outcomes	CO		nalyz	e the a	archite	ecture	of var	rious e	embec	ided p	blatte	orms	1.	.1	1 /	
	CO		nplem	ient ba		ol app	olicatio	ons on	n emb	edded	plat	form	read	ng tr	ne data	
Contributi			$\frac{\text{om ar}}{\text{PO}}$	alog	and di	Igital s	sensor	S DO	DO	DO	D	D	D	DC	DC	
Contributi on of			$\begin{array}{c ccccccccccccccccccccccccccccccccccc$												PS 02	
Course		1													02	
Outcomes											0	1	12			
towards	CO	L		L							0	1	Н	L	М	
achieveme	1	2												2	1.1	
nt of Program																
Outcomes		-		-										-		
(L-Low,	CO	L		L									Н	L	Μ	
M -	2															
Medium,																
H-High)																
Course	We	eek 1&2:														
Content		• Select any one development board(Ex Arduino, Node MCU, Raspberry pi)														
		and	contr	OI LE	D us	ing the	e boar	d.	D' 1	1	1	1 /	c			
		• By	using	g the	Ardu	1110/	Raspb	erry I	P1 D	oard	read	dat	a froi	n a	sensor.	
			ito on		ino n	n anai	og and	u uigi ontrol	lai sci	1501. ED 1	icht	naina	nuck	. h	ton and	
		• wi	ne an	Aluu	of bu	tton a	nd I F	D on a	all L	moni	tor	using	g pusi	i but	lion and	
		pm		status	01 00	uon a		D UII	seriar	mom						
	We	ek 3														
		• Wr	ite an	Ardu	ino pr	ogran	n for i	nterfa	cing t	he A	rduin	o bo	ard w	ith t	he LDR	
		sen	sor an	d prir	t outr	out on	Seria	al mor	nitor.							
		• Ar	duino	board	d inte	rfacin	g witł	n the	tempe	erature	e and	1 hui	nidity	sen	sor and	
		prir	nts the	outpu	ut on I	LCD /	serial	moni	tor				2			
	We	ek 4														
		• Cor	ntrol a	iny tw	o acti	uators	which	n are c	conne	cted t	o dev	velop	ment	boar	rd using	
		Blu	etootl	ı												
		• Write an Arduino program for interfacing the Arduino board with the LDR														
	sensor and activate the LED based on threshold value and print output on															
		LC	D.													
	11 7	als E :														
	we	ек 5:	ita -	A 1		14 1- 2 -	ſ		int	a 41.	、 L -		•••- 1 • -		otion :-	
		• wr	ite ar	l Ard	uino	progr	am fo	or act	ivatin	ig the	e bu	zzer	wher	n mo	otion is	

17IT4651B - IOT LAB

	detected using relay
	• Write an Arduino program for interfacing Arduino board with the
	Ultrasonic sound sensor and printthe output on Serial monitor
	Week 6:
	• Write an Arduino program for interfacing Arduino board with the IR sensor
	and print output on Serial monitor
	• Write an Arduino program for interfacing Arduino board with the Gas
	sensor and activate the buzzer if the value is greater than threshold value
	and print output on Serial monitor
	Week 7:
	• Write a Python program to control an LED light using switch with
	Raspberry Pi board
	• Write a Python program to blink an LED using Raspberry Pi board
	Week 8:
	• Write a Python program to interface LDR sensor with Raspberry Pi board.
	• Write a Python program to interface IR sensor with Raspberry Pi board and
	display the distance of the object.
	Week 9:
	• Write a Python program to interface Ultrasonic sensor with Raspberry Pi
	board and display the values of the sensor
	• Develop a Python program to interface temperature and humidity sensor
	with Raspberry Pi board and display the DHT values on LCD
	week 10: Case Study
	• Create any cloud platform account. Explore for Services. Register a thing in the platform and much the concern date to cloud using MOTT protocol
Tort	Tast Book(a)
lext	[1] Vijov Madisatti and ArchdoonDahaa "Internet of Things (A Hands on
books and	(A find Annihild Anni
books	[2] Charalampos Doukas "Building Internet of Things with the Arduino"
DUUKS	Reference Books.
	[1] Francis daCosta "Rethinking the Internet of Things: AScalableApproach to
	Connecting Everything", 1 st Edition Apress Publications 2013
	[2] Jan Holler, VlasiosTsiatsis, Catherine Mulligan, Stefan Avesand.
	StamatisKarnouskos, David Boyle, "From Machine-to-Machine to the
	Internet of Things: Introduction to a New Age of Intelligence". 1 st
	Edition, Academic Press, 2014.
Е-	[1]. Raspberryt Pi3 Tutorial, Edureka, December 2017.
resources	https://www.youtube.com/watch?v=QlApoEKGfU4
and other	[2]. Sudip Mishra, IIT, Kharagpur, "Introduction to IoT", NPTEL,
digital	https://nptel.ac.in/courses/106105166/
material	

Course Category:		Pro	ogram	n Elec	tive -	II			(Credit		1					
Course Typ	e:	Lal	b]	Lectur	∙e-Tu	toria	l-Pra	ctice	:	0-0)-2
Prerequisite	es:	171 Pro	T330 (T330))8 - O mine	bject	Orie	nted		(Contir	nuous	Eva	luatio	on:		30	
			0	C	,				5	Semes	ter E	nd E	valua	tion:		70	
									7	Total Marks:						100	0
Course	Upo	pon successful completion of the course, the student will be able to															
Outcomes	CO	CO1 Develop applications that make use of data types and control strutur											ires				
	CO	2 Implement object oriented features in Dot Net frame work.															
	CO	3	Design dynamic web applications using web Controls and validat												idation		
			controls.														
	CO	4 Build web applications that include database interactivity with differ												fferent			
		databases.															
Contributi			Р	Р	Р	Р	Р	Р	PO	Р	Р	Р	Р	Р	PS	0	PSO
on of			0	0	0	0	0	0	7	0	0	0	0	0	1		2
Course			1	2	3	4	5	6		8	9	10	11	12			
Outcomes	CC)1	L	Η		L					Η		Η		N	1	Н
towarus	CC)2		Н		Н					Н		Н		N	1	Н
nt of	CO	3		Н		H H H H		Ν	1	Н							
Program	CO	<u>CO4</u>															
Outcomes		-															
(L-Low,				н		н					н		н		N	1	Н
M-				11		11					11		11		14	1	11
Mealum, H- High)																	
Course	We	ek 1															
Content	** C		Imnle	ement	t a cŧ	t class	s conf	ainin	σvai	riahles	met	hods	with 1	naran	neter	S	
Content			with	out pa	arame	eters	and i	ivoki	ng th	ne met	hods	with	the he	eln of	obie	ect	
	We	ek 2	,	ourp			unu n			10 11100	110 45	** 1011			ooje		
			C# ar	oplica	tions	that	make	use o	f lo	ops, de	efault	and	parar	neteri	zed		
			const	ructo	rs					1 /			•				
	We	ek 3															
			C# ap	oplica	tions	that	make	use o	f pol	ymor	ohism	conc	epts.				
	We	ek 4															
			C# ap	oplica	tions	that i	imple	ments	s inh	eritanc	ce.						
	We	ek 5															
			C# ap	plica	tions	that i	imple	ments	s abs	tract c	lass a	ind e	excep	tion h	and	ing	
	techniques.																
	Week 6																
		1 7	Desig	gn an	ASP.	NET	appl	icatio	ns th	hat dis	splay	the va	arious	s We	b Co	ntro	DIS.
	we	ек /	Deal	an ci		hone	light		th th	0 0010	ndor	wah	oont-	<u>_1</u>			
			Desi	gii ai	ı we	u app	ncati)11 W1	ui th	e cale	nuar	web	contr	01.			

17IT4651C - DOT NET TECHNOLOGIES LAB

	Week 8:
	Design web applications with different web controls using ASP.net
	Week 9
	Design web applications with different validation controls using ASP.net
	Week 10
	Design interactive web application with ADO.net
Text	Text Book(s):
books and	[1] Kogent Learning Solutions, "NET4.5 PROGRAMMING" Black Book, dream
Reference	tech press, 2013.
books	
	Reference Books:
	[1] Herbert Schildt, "C# 4.0:complete reference", McGrawHill, 2010.
	[2]Matthew MacDonald "ASP NET. The complete Reference" McGrawHill
	2002
	[3] Chris Hart John Kauffman Dave Sussman Chriss Ullman "ASP Net 2.0 with
	c#" Wrox 2006
	en wiek, 2000.
Е-	[1] Gerry O Brien "Introduction to C #"
resources	https://www.edx.org/course/introduction-to-c-?
and other	[2] Gerry O Brien "Object Oriented Programming in C#"
digital	https://www.edx.org/course/programming-c-microsoft-dev204x-1
material	[3] Dr. Tim. Dr. T. Chamillard "Introduction to C# programming and Unity"
material	https://www.coursera.org/specializations/programming_unity_game_development
	[4] Tiberiu Covaci ASP NET Web Forms Essential Training
	https://www.lunda.com/ASP_NET_training_tutorials/157_0.html
	https://www.iynua.com/ASF-INE1-nannig-tutoriais/157-0.num

Course		Programme Elective - IICredits:1														
Category:																
Course Ty	pe:	Lab						Le	ecture	-Tu	torial	Pra	ctice:	0-0)-2	
Prerequisi	tes:	17IT35	501 So	oftwar	re Eng	gineerin	g	Co	ontinu	ious	Evalu	ıatio	n:	30		
								Se	meste	er en	d Eva	luat	ion:	70		
								To	otal M	lark	s:			10	0	
Course	Upon	succes	sful c	omple	etion of	of the co	ours	e, th	ne stud	lent	will b	e abl	e to:			
Outcome	CO1	Dev	elop t	est su	its for	applica	atior	IS.								
S	CO2	Und	erstan	d the	JUnit	tool to	perf	form	n testi	ng.						
	CO3	Und	erstan	d Sel	enium	tool to	per	forn	n testi	ng.						
	CO4	Ana	lyze b	ug tra	acking	and Q	ΓP t	ool.								
Contribut		PO	PO	PO	PO	PO5	PC)6	PO	Р	PO	Р	PO	PO1	Р	PS
ion of		1	2	3	4				7	0	9	0	11	2	S	02
Course										8		10			0	
Outcomes															1	
achieveme	CO1	L	L M L L M M M M M													Н
nt of	CO2	Μ	M M M M H I M M												Μ	Н
Program	CO3	Η	H L M L M M M												Μ	Н
Outcomes	CO4	Μ	M L H L L													Н
(L-Low,																
M-																
Medium,																
H- High)	Waal															
Content	Week Intro	$1 \propto 2$.	to vo	rious	coftu	vora tas	tina	mot	thada	logic						
Content	Imple	montat	$\frac{1}{100}$ va	F Dath	Tecti	vale les	ung	me	mouo	logic	28					
	a Stat	tement	Testi	n o	resu	iig										
	b Bra	nch Te	esting	115												
	c Cvo	clomati	c Cor	nplex	itv											
	Week	3&4:			,											
	Write	the tes	t case	s for .	ATM	Applica	atior	1.								
	Write	the tes	t case	s for 1	Banki	ng App	licat	tion	-							
						~ 11										
	Week	5:														
	Introd	luction	to JU	nit												
	To ch	eck wh	ether	given	no is	palind	ome	e or	not.							
	To ch	eck giv	ven nu	mber	is eve	en or od	ld									
	To ch	eck wh	ether	given	ı numl	ber is pi	rime	or	not							
	Week	6&7:														
	To ch	eck giv	en nu	mber	is fac	torial o	r no	t.								
	To ch	eck wh	ether	given	num	ber is A	rms	tron	g or r	not.						
	Week	8&9:														
	Introd	luction	to Se	leniur	n											
	Testin	ig of oi	nline l	Mortg	age C	alculate	or ap	oplic	cation							

17IT4651D - SOFTWARE TESTING METHODOLOGIES LAB

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

	Week 10:
	Testing of online pressure conversion application using Selenium
	Week 11:
	a) Introduction to QTP
	b) Login Page of flight application.
	c) Insertion of order in flight application.
Text	Text Book(s):
books	[1]. B. Beizer, Software Testing Techniques, second edition ed.: International
and	Thomson Computer Press.
Referenc	
e books	Reference Books:
	[1] B. Marick, The craft of software testing: Prentice Hall series in innovative
	technology.
	[2] Dr.K.V.K.K.Prasad, Software Testing Tools: Dreamtech.
	[3] E. Kit, Software Testing in the Real World: Pearson.
	[4] Software Testing Techniques: SPD (Oreille).
Е-	[1]. Prof. Rajib Mall, IIT Kharagpur, NPTEL SOFWARE Testing video.
resources	Available: https://nptel.ac.in/courses/106105150/
and other	[2]. Software testing MIT.
digital	Available: http://ocw.mit.edu/courses/electrical- engineering-and-computer-
material	science/6-912-introduction-to-copyright-law-january- iap-2006/video-lectures/lecture-
	4-software-licensing/

Course Cate	gory:	Progr	amm	ing	Core	0	Credi	ts:			1				
Course Type	:	Lab				Ι	ectu	re-Tu	itoria	l-Pra	octice	:	0-	-0-2	
Prerequisites	s:					(Conti	nuou	s Eva	luati	on:		30	C	
						S	emes	ter e	nd Ev	valua	tion:		70	0	
						Т	otal	Marl	ks:				10	00	
Course	Upon	succes	sful c	omp	oletion	n of tl	ne con	urse, ⁻	the st	udent	will	be ab	le to:		
Outcomes	CO1	Dev	elop	secu	re an	d dyn	amic	web	pages	using	g Java	aScrip	and .	Angular	
	CO2	Imp	leme	nt th	e bas	ics of	XMI	l and	JDB	C Obj	ects				
	CO3	Dev	elop	and	deplo	y Ser	vlets,	JSP	techn	ologi	es				
Contributio		Р	Р	Р	Р	PO	Р	Р	Р	Р	Р	Р	PO	PSO	PSO
n of Course		0	0	0	0	5	0	0	0	0	0	0	12	1	2
Outcomes		1	2	3	4		6	7	8	9	10	11			
towards	CO1	L				L								Μ	М
achievement	CO2											М		Н	Μ
of Program	CO3	D3 M M H M													М
Outcomes		D3 M M M M													
(L-Low,															
M-															
Medium,															
H- High)	XX 7 I														
Course	Week	Veek 1													
Content	Create	AML	aocu	mer	its for	vario	ous ap	opiica	utons	with	ANIL) and	AML 5	cnema
	Wool	2													
	Devel	∠ on IDE	QC an	nlic	ation	to int	eract	with	a rela	tiona	1 Date	hace	ucina		
	Deven	אר אר גע	MS MS	S A c	cess	to mi	cract	wittii	aicia	uona	Data	ibase	using		
	Week	3) IVIC) AC	0035										
	Create	a Jav	a ani	olica	tion	that v	vill in	nterac	t wit	h dat	abase	and	make	es use o	f three
	statem	ent int	eface	s	uioii	tildt v	,	norac		ii uut	uoube	unu	mane	5 u 5 c 0	i unce
	Week	4 & 5													
	Deploy	y serv	lets	for s	tuden	t deta	ils ap	plica	tion						
	Craata	ond d	onla	0.00	ulata	for all	onta		onnli	ontion	•				
	Devel	anu u	denl	SUL OV S	vicis i ervlet	i UI UI s that	inter	acte v	appil vith d	ataba	1. Se 119	ing II			
	Devel	sp and	uepi	oy s		s indi	muel		viui u	ataba	se us	ing JI	JUC		
	Week	6&7													
	Devel	op a JS	P pag	ge th	nat ha	ndles	objec	ets							
	Develo	op JSP	page	s th	at ma	kes us	se of	comp	onent	s - S	cripti	ng an	d Dire	ectives	
	Create	a JSP	page	for	passi	ng the	e para	mete	rs.	-	1	C			
	Create	a JSP	page	usi	- 1g use	e Bea	n.								

17IT3652 - WEB PROGRAMMING AND DEVELOPMENT LAB

	Week 8
	Create a JSP page for an application using JDBC
	Week 9
	Design web applications that uses angular component, decorators and directives
	Case Studies:
	1. Create an interactive website for online systems
	2. Design a website that provides online examination. Users must register to
	take exam. It stores results regarding the previous exams taken by users. It
	provides all the common operations related to users such as registration,
	login, change password and forgot password.
Text books	Text Book(s):
and	[1]. James Keogh, "J2Ee: The Complete Reference", 1st Edition, Mcgraw Hill
Reference	Education, 2002
books	[2]. Paul J. Deitel, Harvey M. Deitel, Abbey Deitel, "Internet & World Wide
	Web How to Program", 5 th Edition, Pearson Education, 2011
	[3]. ShyamSeshadri, "Angular: Up and Running", O'Relly Media, Inc., First
	Edition, 2018
	Reference Books:
	[4]. Chris Bates, "Web Programming, building internet applications", 2nd
	Eedition, WILEY Dreamtech, 2006
	[5]. Hans Bergsen, "Java Server Pages", SPD O'Reilly, 2nd edition, 2002
	[6]. Matt Frisbie, Angular 2 Cookbook, 1st Edition, Kindle Edition, 2017
Е-	[1]. Patrick Royal, Java EE Essentials: Servlets and JavaServer Faces, 20-11-
resources	2018, Available: <u>https://www.lynda.com/Java-tutorials/Java-EE-Essentials-</u>
and other	Servlets-JavaServer-Faces/124399-2.html
digital	[2]. Advanced Java Programming by Infinite Skills, 20-11-2018 Available:
material	https://www.udemy.com/advanced-java-programming/
	[3]. Programming Tutorials by Rose India, 20-11-2018 Available:
	http://www.roseindia.net/
	[4]. Front-End JavaScript Frameworks: Angular, The Hong Kong University of
	Science and Technology, 28-11-2018 Available
	https://www.coursera.org/learn/angular,

Course	F	rogra	mmin	ig Co	ore				C	credit	s:				1	
Category:																
Course Type	e: I	Lab							L	ectur	·e-Tu	toria	l-Prae	ctice:	0-0-2	
Prerequisite	s: 1	7C12	03 P	rogr	amm	ing in	n C		C	Contir	luous	Eval	luatio	n:	30	
	1	7IT33	303 E	Data	Struc	tures										
]	Pythoi	n Prog	gram	nming	5										
	1	7IT35	509 J	ava j	progr	ammi	ng									
	1	7IT35	552 A	Adva	nced	Prog	ramm	ing								
	Ι	Lab I														
									S	emest	ter en	d Eva	luatio	on:	70	
									Т	'otal N	Aarks				100	
Course	Upon	succe	ssful	com	pletic	on of t	the co	urse,	the s	ne student will be able to:						
Outcomes	CO1	Den	nonst	rate	the k	nowle	edge 1	to fin	d solı	utions	that	uses :	structi	ured and	d object	
		oriented languages														
	CO2	2 Implement data structures linear, non-linear and python structures to												to solve		
		real world problems													1	
Contribution		P P P P P P PO P P P P SO												PSO		
of Course		0	0	0	0	0	0	0	8	0	0	0	0	1	2	
Outcomes		1	2	3	4	5	6	7		9	10	11	12			
achievement	CO1	Н					Н					Н	Н	Н	M	
of Program	CO2	Η					Н					Н	Н	Н	Μ	
Outcomes																
(L-Low, M-																
Medium,																
H- High)	G 1										1.			<u> </u>		
Course	Stude	nts ha	ve to	sol	ve th	e pro	blem	s fror	n var	lous	online	e por	tals li	ke hacl	kerrank,	
Content	hacke	rearth,	, code	chei	t etc.,	on th	le con	struc	ts of y	varioi	is pro	gram	ming	languag	jes.	
	Thom			11 + 0	at the	offic		fata	Jant 1		adaa					
	and y	bioh	ns wi	II le	st the		acy (a Stu	idont	a oro	ovno	on pi	to sol		ig skills	
	and w	me fr	om th	8 II e no	onn c rtale	asy u and n	o nai ortici	u. Su nate i	n onli	s alt	expe	cieu	10 501	ve alou	ina 100	
				c po	1 (115)	anu p	artici	pare I			515.					
Text books	Text	Book(s):	1	"	а · 1			, . ,.	ъ		• ,,	1 St	1		
and		J. Antt	1 Laa	kson	ien, "	Guide	2017	ompe	etitive	e Prog	ramn	ung'',	1° ec	aition, S	pringer	
Keterence	Defe	Inter	natio	nai I	ublis	sning,	2017	,								
DOOKS	Keier		500K	s: 	and	Ualim	• Eal		mna	titivo	Drocr	0 100 100	ina 2	2012		
		ј. Паш 1 – Л ћи	iii, St nad S	even Shor	allu	rafin	1, Fel Art	IX, U of Dr	ogra	nmin	riogi 1 Con	aiiiiii tost	mgэ, лсм	2013. Solver	Second	
	L ² .	J. AIII Editi	$\frac{100}{100}$	012	isul P	10110	, AII	01 11	ograf		5 CON	uest,	AUM	Solvel,	Second	
		Luit	ion, 2	012												

17IT3654 - ADVANCED PROGRAMMING LAB II

Е-	[1]. Hacker Rank, 10-05-2019 Available https://www.hackerrank.com/
resources	[2]. Hacker Earth, 10-05-2019 Available https://www.hackerearth.com/
and other	[3]. Topcoder, 10-05-2019 Available https://www.topcoder.com/challenges/
digital	[4]. Coder Byte, 10-05-2019 Available <u>https://www.coderbyte.com/</u>
material	[5]. Code wars, 10-05-2019 Available <u>https://www.codewars.com/</u>
	[6]. Code Signals, 10-05-2019 Available https://codesignal.com/
	Code Chef, 10-05-2019 Available https://www.codechef.com/

Course	Projec	et				Cr	edits	:		2	2						
Category:																	
Course Type:	Practi	cal				Le	cture	-Tuto	orial-	Pract	ice:		0-1	-2			
Prerequisites:						Co	ontinu	ious I	Evalu	ation	:		30				
						Se	meste	er end	l Eva	luatio	on:		70				
						To	tal M	[arks:	:				100	100			
Course	Upon	succe	essful	com	pletic	on of	the co	urse,	the st	udent	t will	be ab	le to:				
Outcomes	CO1	Iden	tify	socie	etal p	roble	m fr	om tl	ne vi	llages	s or	town	s wit	h well-	defined		
		obje	ctives	5.													
	CO2	O2 Build a model for the problem chosen using modern tools and technology.															
	CO3	Organize the Technical report effectively.															
Contribution of		PO PO<															
Course		1	2	3	4	5	6	7	8	9	10	11	12				
Outcomes	CO1	L	Н	1	Μ	Μ	Н	Н	Н	Н		L	Μ	L	Μ		
towards	CO2	Μ	Μ	Μ	Μ	Н	L		Μ	Μ		L	L	М	L		
Program	CO3						L		Н	Μ	Н	Μ	L	L	Μ		
Outcomes																	
(L-Low,																	
M – Medium,																	
H- High)																	
	Guide	elines															
	•	Stu	dents	need	l to id	entify	the p	oroble	m go	ing to	socie	ety (V	fillage	es / Tow	ns)		
	•	Stu	dents	shou	ild su	rvey t	he lite	eratur	e for	the pr	obler	n ider	ntified	l for a			
		feas	sible s	soluti	ion.												
	•	Wo	rk wi	ll be	carrie	ed out	durir	ng sur	nmer	vacat	tion at	fter IV	/ sem	ester			
	•	Stu	dents	need	l to ta	ke up	a rea	l life j	proble	em lea	ading	to in	novati	ive mod	el		
		buil	ding.			_					_						

17IT5653 – ENGINEERING PROJECT FOR COMMUNITY SERVICES

SEMESTER VII

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

Course Cate	gory: Program Core							(Credits:						4	
Course Type	e:	Theo	ry]	Lectu	ire-T	utor	al-P	ractic	e:	3-1-0	
Prerequisite	es:	17IT	3503 -	- Con	ipute	r Net	worł	KS (Cont	inuou	ıs Ev	alua	tion:		30	
					•				Seme	ster	end H	Evalu	ation	:	70	
								,	Total	Mar	·ks:			-	100	
Course	Upon s	success	sful co	mplet	ion of	f the	cours	e, the	e stud	ent w	ill be	able	to:			
Outcomes	CO1	Anal	yze the	e arch	itectu	re, se	rvice	s and	l mod	els of	f clou	d cor	nputi	ng		
	CO2	Depl	oy ap	plicat	ions f	for st	toring	g dat	a and	d acc	essib	ility	in di	fferen	t cloud	
		ecosy	/stems				-									
	CO3	Inter	erpret local cloud and virtualization techniques based on application													
		requi	equirements lentify real time cloud applications in different scenarios appropriate to													
	CO4	Ident													oriate to	
		socie	ty						T							
Contributio		PO	PO	PO	PO	Р	Р	Р	Р	Р	Р	Р	PO	PSO	PSO	
n of Course		1	$\frac{10}{2}$	3	4	0	0	0	0	0	0	0	12	1	$\frac{150}{2}$	
towards	~ ~ .	-	2 3 4 5 6 7 8 9 10 11 12 1 I												_	
achievemen	COl	L	L L H L M H L M H L M													
t of	CO2															
Program	CO3															
Outcomes																
(L-Low, M-	CO4			L			Н							L	М	
Medium,																
n- nigii)	UNIT	ι. Ι. ΙΝΊ														
Content	Cloud		nutino	J Rae		Cloud	d Co	mnut	ting (Over	view	– C	loud	Comr	onents	
Content	Infrast	ructure	e Clou	d Ser	vices	App	licati	ons –	- Stor	age I	Datah	ase s	ervice	eom	, onenes,	
	Organ	izing	the Cl	oud c	ompu	iting	: Wh	en Y	ou ca	n use	e Cloi	id Co	mput	ting. B	Benefits.	
	Limita	tions,	Secur	ity Co	ncern	IS.							1	0)	,	
	Hardv	vare a	nd Inf	rastr	uctur	e: Cl	ients,	Secu	ırity,	Netw	ork.					
	UNIT	II: CI	LOUD	CON	APUT	ING	TEC	CHN	OLO	GY						
	Access	ing th	e Clou	ıd: Pl	atforr	ns, W	/eb A	pplic	cation	s, Wo	eb AI	PIs, a	nd W	eb Bro	owsers.	
	Cloud	Stora	ge: Ov	vervie	w, Cl	oud S	Storag	ge Pr	ovide	ers – A	Amaz	zon S	3, Go	ogle I	Bigtable	
	Dataste	ore, M	lobile	Me, L	iveMe	esh.			~							
	Standa	ards: A	Applic	ation,	Clien	it, Inf	rastru	icture	e, Ser	vice.						
		III: C	LOUI) ECO	USYS	TEN	1		D		г		1	0	CC	
	Softwa	are as	a serv	ice :	Overv	view,	Adva	intag	es, D	riving	g For	ces, C	Compa	any O	fferings	
	- Intui Softwo	l, G00 ro n li	gie, M	icros		viou	Drog		na Va	ndor	с Ма	hila	Davia	o Into	aration	
	Provid	ers-A	is serv Johe A	IR M	licros	oft O	, 1 103 nline	s, co	115, v t	nuor	5, IVIC		Devic	e me	granon,	
	Develo	ning	Annlic	n, n estion	s Go	on O	Micr	osofi	ŀ							
	DUVIN	'P'''5 '	-hhu	auton	J• UU	·510,	171101	0501								
	UNIT	IV: V	IRTU	ALIZ	ATI	DN										
	Local	cloue	ls an	d T	hin	Clien	its:	Virtu	ıaliza	tion	in a	an c	organi	zation	, Why	
	Virtua	lizatio	n, Hov	v to v	virtual	ize,	Serv	er So	olutio	ns- N	/icro	soft l	Hyper	V, VI	MWare,	
	Thin C	lients.														

17IT3701 - CLOUD COMPUTING

	Cloud Applications: Scientific applications : Healthcare, Geoscience, Business and
	consumer applications : CRM, Salesforce.com, Productivity : Dropbox and icloud,
	Cloud desktops: EyeOS and XIOS/3, Social Networking : Facebook.
Text	Text Book(s):
books and	[1]. Velte T. Antony, Velte J. Toby., Elsenpeter Robert, "Cloud Computing: A
Reference	Practical Approach", Tata McGraw-Hill, 2010
books	[2] Rajkumar Buyya, Christian Vecchiola, S Tamarai Selvi "Mastering Cloud
	Computing Foundations And Applications Programming", McGraw Hill
	Education, 2016.
	Reference Books:
	[1].Barrie Sosinsky, "Cloud Computing Bible", Wiley Publishers, 2012
	[2]. Miller Michael, "Cloud Computing: Web-Based Applications That Change
	the Way You Work and Collaborate Online", Que Publishing, 2008.
Е-	[1]. Sanjay Pathak, "Cloud Concepts",
resources	https://www.youtube.com/watch?v=vv16c3BazSs
and other	[2]. MaciejArkit, "GoogleAppEngine",
digital	https://www.youtube.com/watch?v=UBa4ZsEAvP4
material	[3]. Prof. Sowmya Kanti Ghosh, IIT Kharagpur, "Cloud Computing Benefits,
	services, models, applications"
	https://nptel.ac.in/courses/106/105/106105167/
	[4]. Suresh S, Udemy, "Server Virtualization",
	https://www.udemy.com/tutorial/cloud-computing-the-technical-
	essentials/basics-of-virtualization/

Course Cate	egory:	Prog	ramme	Elect	tive II	Ι			Credits:						3	
Course Typ	e:	Theo	ry					-	Lectu	ire-T	'utori	ial-P	ractic	e: 3	3-0-0	
Prerequisite	es:	-							Conti	inuot	us Ev	alua	tion:		30	
								;	Seme	ster	end I	Evalu	ation	:	70	
								,	Total	Mai	rks:				100	
Course	Upon s	success	sful co	mplet	ion o	f the	cours	e, the	e stud	ent w	vill be	e able	e to:			
Outcomes	CO1	Unde	erstand	the b	asics	and I	Life c	ycle	of D	ata A	naly	tics				
	CO2	Appl	y prob	abilit	y and	Samp	oling	distr	ibutio	ns fo	r data	a moo	deling	•		
	CO3	Deve	lop fo	recast	ing aı	nd Me	onte	Carlo	simu	latio	n mo	dels				
	CO4	Solve	e linea	r optii	nizati	on ar	nd D	ecisio	on pro	oblen	ıs					
Contributio		PO	PO	PO	PO	Р	Р	Р	Р	Р	Р	Р	PO	PSO	PSO	
n of Course		1	2	3	4	0	0	0	0	0	0	0	12	1	2	
towards		-	_	-	-	5	6	7	8	9	10	11		-		
achievemen			т		т										т	
t of	CO_2	M	A L													
Program	003	L														
Outcomes																
(L-Low, M- Medium	CO4	М														
H- High)																
Course	UNIT	I:										1				
Content	Introd	UNIT I: Introduction to Data Analytics														
	Introd	Introduction to Big Data Analytics: Big Data Overview, Data Structures, Analyst														
	perspe	ctive	on Da	ata R	eposi	tories	, Sta	ite o	of the	e Pra	ctice	in	Analy	rtics,	Current	
	Analyt	ical A	rchited	ture,	Emer	ging	Bış	g Dat	a eco	osyste	em a	nd a	New	Appro	bach to	
	Analyt	ICS		:c. (7 I	0			1	1	Dias		. Dl.		Data	
	Data	Analy	Dhase		Jycie. Mode		annir	W, L	Dhase	1- 1	Mod	overy	/, Pff uildin	ase 2	- Dala	
	Comm	unicat	i nasc e Resu	ilts Pl	hase f	$51 ext{ 11}$	amm	ng, 1 Snali	1145C	4-	WIOU		unum	ig, 11	lase J-	
	UNIT	II:	0 10050	110, 11		, op c	urun	Jiiuii	20							
	Descri	ptive .	Analy	tics												
	Proba	bility	Distri	ibutio	ns a	nd D	Data	Mod	leling	: Ba	sic c	once	pts of	f prob	ability,	
	Rando	m var	iables	and p	oroba	bility	dist	ibuti	on, I	Discre	ete P	robat	oility	Distrib	outions,	
	Contin	uous F	robab	ility E	Distrib	oution	IS.									
	Sampl	ing ar	nd Est	imati	on: S	tatisti	ical S	ampl	ling, l	Estim	nating	g Pop	ulatio	n para	meters,	
	Sample	ing Er	ror, S	amplu	ng Di	Istribi	ution	5, Int	erval	Esti Duad	mates	5, CO	nfidei	nce In	tervals,	
	Using	conno	sampl	nterv	als lo	or dec	:15101	mai	cing,	Pred	iction	inte	ervais,	Con	Indence	
		115 anu 111.	sampi													
	Predic	tive A	nalvti	cs												
	Foreca	asting	Tech	nique	es: C	Dualit	ative	and	Jud	lgme	ntal	Fore	castin	g, Sta	atistical	
	Foreca	sting	Model	s, Fo	recast	ing 1	Mode	ls fo	r Sta	tiona	ry T	ime	Series	, Fore	casting	
	Model	s for	Time	Serie	es wi	tha	Line	ear 🛛	Frend	, Fo	recas	ting	Time	Serie	es with	
	Seasor	ality,	Select	ing ap	oprop	riate '	Time	-Seri	es-Ba	sed I	Forec	asting	g mod	els		

17IT4702 A – DATA ANALYTICS

	Monte Carlo Simulation and Risk Analysis: Spreadsheet Models with Random
	Variables, New-Product Development Model, Newsvendor Model
	UNIT IV:
	Prescriptive Analytics
	Linear Optimization: Building Linear Optimization Models
	Applications of Linear Optimization: Types of constraints in Optimization models,
	Process Selection Models, Blending Models, Portfolio Investment Models,
	Transportation Models
	Decision Analysis: Formulating Decision Problems, Decision Strategies without
	Outcome Probabilities, Decision Strategies with Outcome Probabilities, Decision
	trees, The value of information, Utility and decision making
Text books	Text Book(s):
and	[1]. <u>EMC Education Services (Editor)</u> , "Data Science and Big Data Analytics:
Reference	Discovering, Analyzing, Visualizing and Presenting Data", Wiley, March
books	2015.
	[2]. James Evans, "Business Analytics, Second Edition, Pearson Publications,
	2017.
	D. C
	Kelerence Books:
	[1]. Hastie, Trevor, et al. The elements of statistical learning. Vol. 2. No. 1. New York: springer 2000
	121 Montgomery Douglas C and George C Runger Applied statistics and
	probability for engineers John Wiley & Sons 2010
	[3] Seema A charva R N Prasad "Fundamentals of Business Analytics" 2 nd
	Edition Wiley Publications 2016
E-	[1] Ingo Mierswa CTO & Co-Founder at RapidMiner "From Predictive to
E- resources	Prescriptive Analytics" Ian 26, 2016
and other	https://www.youtube.com/watch?v=IXdCnOOCCAE
digital	[2]. Rahul CEO Treasury Consulting LLP "Data Analytics - Descriptive
material	Predictive and Prescriptive Analytics" Dec 3 2018
	https://www.voutube.com/watch?v=aYdNFaWHKOA

Course	Programme Elective -III Credits:													3	
Category:	8														
Course Type:	Theory	7					Ι	lectu	re-T	utori	ial-P	racti	ce:	3-0)-0
Prerequisites:							0	Conti	nuou	ıs Ev	alua	tion:		30	
	I						S	eme	ster e	end F	Evalu	atio	n:	70	
							Τ	otal	Mar	ks:			-	10	0
Course	Upon s	uccessf	ul com	pletic	on of	the c	ours	e, the	e stuc	lent v	will b	e ab	le to:		
Outcomes	CO1	Under	stand t	he ba	sic co	once	ots a	nd m	etho	ls in	com	outer	visic	n	
	CO2	Analy	ze vari	ous fe	eatur	e ext	racti	on ar	nd im	age s	egme	entat	ion te	chnic	ues.
	CO3	Apply	vario	us cl	uster	ing	and	class	sifica	tion	techi	nique	es fo	r diff	erent
		applic	ations.												
	CO4	Explo	re vide	o pro	cessi	ng m	etho	ds in	com	puter	visi	on.			
Contribution of		PO 1	PO	PO	Р	Р	Р	Р	Р	Р	Р	Р	Р	PS	PS
Course			2	3	0	0	0	0	0	0	0	0	0	01	O2
Outcomes		4 5 6 7 8 9 10 11 12													
cowarus achievement of	CO1	D1 H M L I													Μ
Program	CO2	M		L											М
Outcomes(CO3		M				Н						L	M	Н
L-Low,	CO4	H		Н		Μ							L	L	Μ
M-Medium,															
H- High)	TINIT	<u> </u>													
Course	UNII Introd	l: tian.	Com	utor 1	inior	1	riaf	histo	101 7						
Content	Introu	forme	tion	Geor	15101	I, A I	miti		ny.	trang	form	ation	D	hotor	otric
	image	formatic	uon.	Geon		, pn	IIIItI	vc5 (anu	uans	101111	ation	15, 1		
	Image	proce	ssing:	Poin	t on	erato	ors	Line	ar fi	lterir	ng N	More	nei	ghbor	hood
	operato	ors. Fou	rier tra	nsfor	ms. P	vran	nids	and y	vave	lets.	-8, -			5110 01	1100 a
	UNIT	II:			~)	5									
	Featur	e detec	tion aı	nd ma	atchi	ng:									
	Points	and	patches	s, Aj	pplic	ation	: P	erfor	mano	ce-dr	iven	ani	matic	n E	dges,
	Applic	ation: I	Edge e	editing	g ano	d en	hanc	emei	nt, L	ines,	App	plicat	tion:	Recta	angle
	detecti	on.													
	UNIT	III:													
	Image	Segme	ntation	1 	G	1 a	1. C		~ NT-		1		Casa	1	d
	Split al	ha merg	e, Mee	in sni	n_{100}	1 mo	ue n Ma	naing	g, NO	ormai	izea	cuis,	Grap	on cut	s and
	Footur	-Dascu I	l align	ns, Ap mont	•	uon.	IVICO	lical	iiiiag	c seg	ginen	latio	1.		
	Pose es	c-based	n Ann	licati	• on· A	nom	ente	d rea	lity						
	UNIT	IV:	<u>n, 11</u> pp	neun	011. 1	ugin	Unite	u icu	ney						
	Dense	motion	estim	ation											
	Parame	etric mo	tion, A	Applic	atior	i: Vi	deo s	stabil	izatio	on, C)ptica	ıl flo	w, A	pplica	tion:
	Video	de-noisi	ng, Ĺa	yered	mot	ion, 4	Appl	icatio	on: F	rame	inter	pola	tion.		
Text books and	Text B	ook(s):	-				- •								
Reference	[1]	Richard	d Szel	liski,	Con	npute	er V	visior	n: A	lgori	thms	anc	l Ap	plicat	ions,

17IT4702B- COMPUTER VISION

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

books	Springer-Verlag London Limited 2011.										
	Reference Books:										
	[1].Computer Vision: A Modern Approach, D. A. Forsyth, J. Ponce,										
	Pearson Education, 2003.										
	[2].K. Fukunaga; Introduction to Statistical Pattern Recognition, Second										
	Edition, Academic Press, Morgan Kaufmann, 1990.										
	[3].R.C. Gonzalez and R.E. Woods, Digital Image Processing, Addison-										
	Wesley, 1992.										
E-resources	[1].Dr. Mubarak Shah, (13, 08, 2019). UCF Computer Vision Video										
and other	Lectures, <u>https://www.youtube.com/watch?v=715uLCHt4jE&list=PLd3h</u>										
digital material	<u>lSJsX_ImKP68wfKZJVIPTd8Ie5u-9</u>										
	[2]. Stanford University School of Engineering, Introduction to										
	Convolutional Neural Networks for Visual Recognition,2020										
	https://www.youtube.com/watch?v=vT1JzLTH4G4&list=PLf7L7Kg8_F										
	NxHATtLwDceyh72QQL9pvpQ										

	Credits:											
Course Type: Theory Lecture-Tutorial-Pract	Lecture-Tutorial-Practice:											
Prerequisites: 17IT3503 :Computer Networks Continuous Evaluation	Continuous Evaluation:											
Semester end Evaluation	Semester end Evaluation:											
Total Marks:	Total Marks:											
Course Upon successful completion of the course, the student will be able to	uccessful completion of the course, the student will be able to:											
Outcomes CO1 Determine the role of dynamic routing protocols in the con	Determine the role of dynamic routing protocols in the context of modern											
network design.	network design.											
CO2 Apply the configuration steps for static and dynamic	Apply the configuration steps for static and dynamic routing i											
topology.	topology.											
CO3 Compare the working of various routing protocols.	Compare the working of various routing protocols.											
CO4 Apply distance routing protocols in network communication.												
Contribution PO PO PO PO P P P P P P P P	DSC											
of Course 10 10 10 10 10 <th< th=""><th>1</th><th>$\begin{array}{c} 130\\2\end{array}$</th></th<>	1	$\begin{array}{c} 130\\2\end{array}$										
Outcomes 1 2 3 4 5 6 7 8 9 10 11 12 towards	1	-										
achievement CO1 L L L L L L	L	L										
of Program CO2 H M	L	M										
Outcomes CO3 L L L H L		L										
(L-Low, M L M	L	L										
M- Medium, CO4												
H-High)												
Course UNIT I: Content Inside the router, CLL configuration and addressing. Duilding the router	ting to	hla Dath										
determination and switching	ing ta	uie, raui										
UNIT II: Static Douting Doutors and the naturally router configuration rev	ion	wnlaring										
directly connected networks, static router "with next" hop address	icw, c s stat	ric router										
with exit interfaces	s, stat											
UNIT III: Introduction to dynamic routing protocols, classifying dynamic rou	ting n	rotocols										
metrics administrative distance	ung p	10100013,										
UNIT IV:												
Introduction to distance vector routing protocols, network discove	ry, ro	ute table										
maintenance, routing loops, RIPv1: Distance Vector, Classful Ro	uting	Protocol,										
Basic RIPv1 configuration, verification and trouble shooti	ng ,a	utomatic										
summarization, default route and RIPv1												
Text books Text Book(s):		1										
and [1]. Rick Graziani, "Routing Protocols and Concepts"; CCN	A Ex	ploration										
Reference Companion Guide, Pearson Education, 2011												
DOOKS KEIEFERICE BOOKS: [1] Diana Barratt & Todd Ving "Computer Naturates Illuminat	ad" I	ones and										
Bartlett Publishers (2005)	cu , J	ones and										
[2]. Wayne Lewis, "LAN Switching and Wireless: CCN	A Ex	ploration										
Companion Guide", Pearson Education, 2014	2.1	r										

17IT4702C-ROUTING AND SWITCHING ESSENTIALS

E-resources	[1]. <u>https://www.youtube.com/watch?v=zvfjHIBV814</u>
and other	[2]. <u>https://study-ccna.com/</u>
digital	[3]. <u>https://www.udemy.com/course/cisco-ccna-video-training/</u>
material	

Course Categ	gory:	Prog	ram El	ective	IV				Credits:						3	
Course Type	:	Theo	Theory							Lecture-Tutorial-Practice:						
Prerequisites	:	17IT	3601 -	Mach	nine L	earni	ng		Cont		30					
					Seme	•	70									
								Total Marks.						100		
Course	Upon	succe	ssful c	omple	etion	of the	cou	se. tł	ne stu	dent	will h	be abl	e to:			
Outcomes	CO1	Und	Understand linear and non linear activation functions, over fitting, different													
	001	neur	neural network architectures, dimensionality reduction													
	CO2	Ana	Analyze feed forward neural network and auto encoder architecture for													
		vari	various applications													
	CO3	App	Apply convolution, pooling operations in convolution neural networks and													
		cho	choose various encoding frameworks for a given application													
	CO4	Iden	Identify a suitable RNN architecture for the given sequence modeling												ng.	
Contribution		DC			DC	Р	Р	Р	P	P	P	P	DC	DCC		
of Course		PO	PO	PO	PO	0	0	0	0	0	0	0	PO	PSO	PSO	
Outcomes			2	3	4	5	6	7	8	9	10	11	12	1	2	
towards	CO1	L							İ					L	L	
achievement	CO2		М		М							М		Μ	М	
Outcomos	CO3	Н				М						М	Н	Н	Н	
(L-Low.			М										Н	Μ	М	
M- Medium.	CO4															
H- High)																
Course	UNIT	ΓΙ:														
Content	The I	Neura	l Netv	vork :	Buil	ding	Intell	igent	Mac	hines	s, T	he Li	mits (of Tra	ditional	
	Comp	outer 1	Progra	ms,	The	Mec	hanic	s of	Mac	hine	Lear	ming	, Th	ne Ne	uron ,	
	Expre	essing	Linea	r Per	ceptro	ons a	is Ne	euron	s,	Feed	l-Forv	ward	Neur	al Ne	etworks,	
	Linea	r Neu	rons ar	nd The	eir Lii	nitati	ons,	Sign	noid,	Tanh	, and	ReL	U	_		
	Train	ing F	eed-F	orwa	rd Ne	ural	Netv	vork	: Gra	adien	t Des	cent	, Th	ne De	Ita Rule	
	and I	Learn	ng Ra	ites	, 	Gra	adien	t De	scent	with	1 Sig	moid	lal No	euron	s, The	
	Васкр	propag	ation	Algor		, Sto		tic a	nd M	iniba	tch C	Jradie	ent D	escent	, lest	
	Sets,	v allaa	ition S	ets, ai	na Ov	erntt	ing,		Prev	entir	ig Ov	ernu	ing ir	i Deep) Neurai	
	INCLW															
		. 11; olutio	nal N	ourol	Notu	orke	· No	uron	a in L	Jumo	n Via	ion	Tha	Short	ominas	
	of Fee	ature S	Selecti	on V	nilla	Deer	. Ive Neu	ral N	etwo	rks F	ilters	and	, i ne Featu	ire Ma	ns Full	
	Descr	intion	of the	Conv	olutio	onal I	aver	N	Aax P	oolin	g	, und	1 Cutu		.ps, 1 un	
	Full A	Archit	tectur	al Des	cript	ion o	of Co	nvoli	ution	Netv	s vorks	s : C	losing	g the I	Loop on	
	MNIS	ST wi	th Co	nvolu	tional	Net	work	s. I	mage	Pre	proce	ssing	Pipe	elines	Enable	
	More	Robu	st Mod	lels,	Acc	elerat	ing T	raini	ng w	ith Ba	atch N	Norm	alizat	ion		
	UNIT	· III:		,					<u> </u>							
	Embe	edding	g and	Re	prese	ntati	on I	Jearr	ning	: L	earni	ng I	Lower	-Dime	ensional	
	Repre	esentat	ions,	Princi	pal C	omp	onent	Ana	alysis	,	Moti	vatin	g the	Auto	encoder	
	Archi	tectur	е,	Imp	lemer	ting	an A	utoe	ncode	er,	Den	oisin	g to	Force	Robust	
	Repre	esentat	ions,	Spa	rsity	in A	utoe	ncod	ers,	Tł	ne W	ord2	Vec	Frame	ework ,	
	Imple	menti	ng the	Skip-	Gram	Arcl	nitect	ure								

17IT4703A -DEEP LEARNING

	UNIT IV:
	Sequence Modeling: Recurrent and Recursive nets: Unfolding Computational
	Graphs, Recurrent neural networks, Bidirectional RNNS, Encoder-Decoder
	sequence-to -sequence architectures, Deep Recurrent networks, Recursive neural
	networks
	The Challenge of Long-Term Dependencies: Echo State Networks, Leaky Units
	& Other strategies for multiple timescales, The Long Short-Term memory and other
	Gated RNNs, Optimization for Long-Term Dependencies.
Text books	Text Book(s):
and	[2]. Nikhil Buduma, Nicholas Locascio, "Fundamentals of Deep Learning:
Reference	Designing Next-Generation Machine Intelligence Algorithms", O'Reilly
books	Media, 2017
	[3] Ian Goodfellow, Yoshua Bengio, Aaron Courville, "Deep Learning
	(Adaptive Computation and Machine Learning series", MIT Press, 2017
	Defenence Decker
	[1] Li Dong and Dong Vu "Doon loorning Mathada and Applications" Now
	[1]. Li Deng and Dong Tu, Deep learning methods and Applications, Now
	[2] Michael Nielsen "Neural Networks and Deen Learning" Determination
	Press 2015
	11055 2015
E-resources	[1] Mitesh Khapra "Deep Learning" Sep 20 2018
and other	https://www.voutube.com/watch?v=4TC5s_xNKSs&list=PLH-
digital	xYrxifO2VsvvOXfBvsOsufAzvlgdg9
material	[2]. AfshineAmidi and ShervineAmidi, "Deep Learning cheat sheets for
	Stanford's CS 230", 2018, https://github.com/afshinea/stanford-cs-230-
	deep-learning
	[3]. YoshuaBengio, Deep learning: "Theoretical Motivations, Canadian Institute
	for Advanced Research", 2015
	http://videolectures.net/deeplearning2015_bengio_theoretical_motivations/
	[4]. Geoffrey Hinton's GoogleTech Talk,"Recent developments on Deep
	Learning" March 2010, https://www.youtube.com/watch?v=VdIURAu1-aU

Course Category:	Progra	ım Ele	ctive	: – IV	1			Cree	lits:			3			
Course Type:	Theory	V						Lect	ure-T	utor	3-0-0)			
Prerequisites:	-	/						Con	tinuoi	is Ex		30			
		Samestar and Evaluation.											70		
		Total Marks.											100		
Course	Upon	succes	sful	com	oletion	n of th	e cou	irse, tł	ne stud	lent v	vill b	e able	to:		
Outcomes	CO1	Unde	Understand blockchain terminologies and its properties and the emerging models for												
		bloc	blockchain technology												
	CO2	Fam	Familiarize with the functional/operational aspects of crypto currency ecosystem.												
	CO3	Desi	gn, c	ode.	deplo	v and	exec	ute a	smart	cont	ract –	the co	mputa	ational	element of the
		bloc	kchai	n teo	chnolo	gy us	ing S	olidity	and l	Remi	x IDE	Ξ	1		
	CO4	Buile	d pi	rivat	e-pern	nissio	ned	block	chain-	base	d ap	plicati	ons	for en	nterprises and
		busir	nesse	S	_					-					
Contribution of		PO	Р	Р	PO	PO	Р	PO	PO	Р	Р	РО	PO	PS	PSO2
Course		1	0	0	4	5	0	7	8	0	0	11	12	01	
Outcomes	~ ~ .		2	3			6			9	10				
achievement of	COl	L	Ŧ	L										L	L
Program	CO2	L					Ŧ							L	L
Outcomes	CO3	M	M	Μ		H	L							M	M
(L-Low,															
M-Medium,															
H- Hign)	CO4	Н	М	М		М	L							М	М
Course	UNIT	I:	•	ы		. т	. 1		C.		C	- D1	1 -	NI I	
Content	Under	stand	Ing	BIOC	kcha	n: ln	trodu	Dlast	– Sti	uctu	re of		ock, E	Slock	Header, Block
	Diagla	hoin	BIO	ж н Пат	rader	Hash	and	Bloc	K Heig	gni, i	Genes	SIS BIC	OCK, L		Blocks in the
	and I i	mitati	ons	f Rl	nees,	ain	and	l ypes		OCKCI	iam, i	eature	s of a	BIOCK	cham, Benefits
		muun			JUKUI	um									
	UNIT	II:		_	_		_								
	Crypt	ocurr	ency	: In	trodu	ction	– h	listory	v of	Bitco	oin a	and it	s Use	es, Ha	ash Functions,
	Transa	ictions	5, BI		, M11	nıng,	Keys	s, Ad	dresse	s, D	igital	Signa	atures	, Wal	lets, Types of
		nsus, l	BITCO	in Ir	uprov	ement	Prop	osais	(RIL2)), Alt	coins				
	Ethor	111; oum	and	Sm	art (ontre	note:	The	Rint	h of	· Eth	areum	Stag	er of	Development
	Comp	onents	of	Ethe	reum	Dev	elonn	nent 7	, Dirt Fools	and	Fram	ework	s Tol	kens o	n Ethereum –
	ERC2	0 Tok	en V	Vhat	is a S	Smart	conti	ract I	ife C	vcle	ofas	Smart	Contra	act. Ef	hereum Virtual
	Machi	ne and	l Gas	B, Bu	ilding	a Sm	art C	ontrac	t with	Soli	ditv.	Ethere	um In	prove	ment Proposals
	(EIPs)			,	0	,					59			1	- r

17IT4703B- BLOCKCHAIN TECHNOLOGIES

	UNIT IV:									
	Decentralized Applications and Hyperledger: DApp and its Full Ecosystem, Operations of									
	a DApp, Hyperledger Architecture, Projects under Hyperledger, Consensus and Transaction									
	Life Cycle in Hyperledger Fabric									
	Application of Blockchain Technology: Introduction to major Blockchain platforms -									
	Government - Border Control, Voting, Identity Management - Health Finance - Insurance,									
	Post-Trade Settlement, Financial Crime Prevention - Media and Miscellaneous									
Text books	Text Book(s):									
and Reference	[1]. Mastering Bitcoin: Antonopoulos, Andreas M.									
books	[2]. Mastering Blockchain: Distributed Ledgers, Decentralization and Smart Contracts									
	Explained by Bashir, Imran.									
	[3]. Mastering Ethereum: Building Smart Contracts and DApps.									
	Reference Books:									
	[1]. Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction, Arvind									
	Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller and Steven Goldfeder.									
	[2]. Bitcoin: A Peer-to-Peer Electronic Cash System. Satoshi Nakamoto.									
E-resources	[1]. Blockchain Demo https://tools.superdatascience.com/blockchain/hash/									
and other	[2]. Bitcons Monetary Policy https://www.blockchain.com/explorer									
digital	[3]. Blockchain & Web3.0 Why the Web 3.0 Matters and you should know about it									
material	[4]. Ethereum Virtual Machine & Gas Calculating Costs in Ethereum Contracts									
	[5]. Mempools : An in-depth guide into how the mempool works									

Course	Prog	gramn	ne Ele	ective	-IV		Credits:							3		
Category:	The						Laa	4	T+	2	0.0					
Droroquisitos	17IT3502 Data Mining							Continuous Evoluation.								
r rerequisites:	1/11	5502	. Data		iiiig		Continuous Evaluation:							70		
							Semester end Evaluation:							/0		
							100	al IVIa	arks:				1	00		
G	TT		<u> </u>		1	C (1			1 /	1 /	.11.1	1.1				
Course	Upon	I successful completion of the course, the student will be able to:														
Outcomes	COI	Inte	Interpret the functional processes and effectiveness of information storage													
	000	and	and retrieval systems													
	CO2	Util	ize te	chniq	ues a	nd arc	chitec	tures	neces	sary	to spe	ed up	the r	etrieva	.1	
	~ ~ ~	proc	ess to	or inte	ormat	tion re	etrieva	al sys	tems							
	CO3	App	ly me	etadat	a org	anizat	<u>10n fé</u>	or eff	ective	info	matio	on aco	cess.			
	CO4	Eva	luate	and u	se dif	feren	t info	rmati	on ret	rieva	l tech	nique	s in v	arious		
		appl	licatic	n are	as	-	-	-	-	-	-	-	-			
Contribution		Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	PS	PS	
of Course		0	0	0	0	0	0	0	0	0	0	0	0	01	O 2	
towards		1	2	3	4	5	6	7	8	9	10	11	12			
achievement	CO1		L	L											L	
of Program	CO2		L		M									L	M	
Outcomes	CO3	L	Μ	Μ			Н							L	M	
(L-Low, M-	CO4	L	Μ	М	Μ		Η							Н	Н	
Medium, H-																
High)																
Course	UNIT	Ι		_												
Content	Intro	luctio	on: In	form	ation	Retri	eval,	Early	Deve	elopm	ent, I	nforn	nation	Retrie	val in	
	Librar	ies ar	nd Dig	gital I	lbrai	ies, I	R at t	he Ce	enter o	of the	Stage	e. The	e IR P	roblem	n, The	
	IR Pro	oblem	i, The	Use	r's Ta	sk, Ir	torm	ation	vers	us Da	ata Ro	etriev	al Th	e IR S	ystem	
	,Softw	are A	rchit	ecture	e of th	ne IR	Syste	em ,T	he Re	trieva	al and	Ran	king F	rocess	es	
	Mode	ling:	Intro		on, A	Taxo	nomy	of Ir	itorm	ation	Retri	eval I	Mode	ls, Retr	ieval:	
	Ad Ho	be and	l Filte	ering,	A Fo	rmal	Chara	icteriz	zation	of IF	k Moo	dels.				
	UNIT				.		л ·	C		D 1		x 1 1	т		1	
		c Inf		tion	Ketri	eval:	Basic	c Con	cepts,	B00	ean N	lodel	, I err	n weig	nting,	
	IF-ID		eights	, Do	cume	nt lei	ngth	norm	alizat	10n,	vecto	r mc	odel,	Probab	ollistic	
		I, Brie	Errolu	npari	SON O	I Clas	SSIC IV	10del	S. Cronf	5.1.4 1	Dorrod		A D		atom	
	Retrie	eval 1		ation	I. IIIU	otrio	uon,	The Actric				igiii, nd T	,A D		story,	
	Collor	tiona	The		C C d	lootio	al N	leuro	:s, PI	ecisio	on a	na r	Cecan	, Rele	erence	
			, i ne	IKE												
		III monto	• • • •	nauc	and	P. D.	nont	loce I	ntrad	ation	Da		nt Dra	nroaa	ina	
	Lovio	nents	olugio	ingua Lof ti	iges a		pert.	les: 1			i, Do	Stor	nt Pie	v V or	sing,	
	Select	ion '	a1y818 These	uri		л, г	1111111	iatiol	1 01 3	oopw	orus	, stel	1111111	5, rey	yworu	
	Ouer	1011, 7 I 61	ngues	.ull 105•	Kenn	ord I	Sacad	O_{124}	rvino	R A	vond	Kow	worda	Stru	ctural	
	Queri	n La Ps Or	ierv P	sus. Protoc	nie Pole	voru-1	Jaseu	Qui	JI Y III E	,, БС	yonu	ксу	worus	, ouu	Ciurai	
	Zuern	, Yı	<i></i> y 1	10100	.010.											

17IT4703C - INFORMATION RETRIEVAL SYSTEM

	Query Properties: Characterizing Web Queries, User Search behavior, Query
	Intent, Query Topic, Query Sessions and missions, Query Difficulty
	UNIT IV
	Text Classification: Introduction, A Characterization of Text Classification,
	Machine Learning , The Text Classification Problem , Text Classification
	Algorithms
	Indexing and Searching: Introduction, Inverted Indexes, Basic Concepts, Full
	Inverted Indexes, Searching, Ranking, Construction, Compressed Inverted
	Indexes, Structural Queries, Signature Files, Suffix Trees and Suffix, Structure:
	Tries and Suffix Trees, Searching for Simple Strings.
Text books	Text Books:
and	[1] Ricardo Baeza-Yaets and Berthier Ribeiro-Neto, Modern Information
Reference	Retrieval: The Concept and Technology behind Search, 2nd Edition, Addison-
books	Wesley, 2011.
	Reference Books:
	[1].G. G. Chowdhurry, Introduction to Modern Information Retrieval, Neal-
	Schuman Publishers; Third edition, 2010
	[2]. Christopher D. Manning, Prabhakar Raghavan and Hinrich Schütze,
	Introduction to Information Retrieval, Cambridge University Press. 2008
E-resources	[1] Information Retrieval, Prof. Pabitra Mitra, IIT Kharagpur,
and other	http://cse.iitkgp.ac.in/~pabitra/course/ir06/ir06.html
digital	[2] Information Retrieval, Prof. Pawan Goyal, IIT Kharagpur,
material	http://cse.iitkgp.ac.in/~pawang/courses/IR16/lec1.html
	[3] Natural Language Processing by Prof. Pushpak Bhattacharyya, Department of
	Computer science & Engineering, IIT Bombay,
	https://www.youtube.com/watch?v=m0oiAOgSQFw
	[4] Introduction to Information Retrieval
	https://www.youtube.com/watch?v=yluvahNq3wk

Course Categ	gory:	Prog	ram E		Credits:						3				
Course Type	•	Theo	ory		Lecture-Tutorial-Practice:						3-0-0				
Prerequisites	•	Continuous Evaluation:										30			
			Semester end Evaluation:										:	70	
			Total Marks:												100
Course	Upon	succe	ssful c	ompl	etion	of the	e coui	se, tł	ne stu	dent	will ł	be abl	e to:		
Outcomes	CO1	Con	Comprehend the concepts of natural language processing, its applications and												
		lang	anguage modeling techniques												
	CO2	Eval	Evaluate probabilistic language models and Solve NLP sub problems using												
	001	toke	tokenizing and tagging												
	003	Ana	lyze lii	iguist	ic stru	cture	in te	xt usi	ng pa	rsing	and (CFG			
	CO4	Inter	rpret M	lethoc	ls to re	ecogn	ize sy	vntac	tic an	d sem	antic	s stru	ctures	sofa	sentence
Contribution		PO	РО	PO	PO	P	P	P	P	P	P	P	PO	PSC) PSO
Outcomes		1	2	3	4	5	6		0 °	0	10		12	1	2
towards	CO1	T		T	T	5	0	/	0	7	10	11		T	М
achievement	CO^{2}	H		Ľ	H	М				T.				L	M
of Program	CO3	M	М		M					12				L	M
Outcomes (L-Low	000														
M- Medium.	CO4	Н	М	М		М				М				L	М
H- High)															
Course	UNIT] I:													
Content	Intro	ductio	on–Mo	dels a	and A	lgorit	hms								
	Regu	lar F	Expres	sions	and	Au	toma	ita -	- Re	gular	Ex	press	ions,	Finit	e State
	Autor	nata, I	Regula	r Lan	guage	s and	l FSA	.s		1. 1	N	1	1	ъ.	·
	Word	is ar hologi	ia I	ranso	ucers	: D	urvey	01 of o	En	giisn	IVI(ato I	orpno	logy,	Fin: Aorob	Ite-State
	narsir	noiogi a with	n EST	ai silig Tran	, COI	isu uc	d orth	01 a	nhic	rules	Cor	nhini	uii, N na an	логрп ЕСТ	Levicon
	and R	ules	1151,	1 I an	suuce		1 OI UI		ipine	Tuics	, coi	nonn	ing an	151	LUXICOII
	UNIT	<u>II:</u>													
	N-gra	nms-C	ountin	g Wo	ords in	n Coi	rpora	, Uns	smoot	thed]	N-gra	ams,	Train	ing ar	nd Test
	sets,	Smoot	thing,	Back	off, I	nterp	olatic	on, E	ntrop	y-Cr	oss e	entrop	by for	c con	nparing
	mode	ls.													
	Class	es and	d Part	-of-Sj	peech	Tag	ging-	Engl	ish W	/ord (Class	es, T	ag set	s for	English,
	Part o	of Spee	ech Ta	gging	, Kule	e-Bas	ed Pa	irt of	Spee	ch Ta	aggin	g, HN	MM P	art of	Speech
	Taggi Hidd	ng, 11 on Ma	ansior	matio	n-Bas Movi		aggin Ent	ig. ronv	Mo	ماماد	Mar	kov (hain	The	hiddon
	Mark	ov Mo	al KUV	anu	νιαλι	mum		тору	WIU	ucis.	Iviai		Inams	s, 110	
	UNIT														
	Auto	omatio	c Spee	ch Re	cogn	ition	: Spe	ech R	lecog	nitior	1 Arc	hitec	ture, l	IMM	applied
	to Sp	beech.	-		5		-		2						
	For	nal G	Framn	nars	of Er	nglisł	n- Co	onstit	uency	7, Co	ntext	-Free	Gra	mmar	s, Some
	Gran	nmar l	Rules f	or En	glısh,	Gran	nmar	equi	valen	ce an	d No	rmal	form		

17IT4704 A- NATURAL LANGUAGE PROCESSING

	Syntactic Parsing-Parsing as Search, ambiguity, Search in the face of														
	Ambiguity, The Earley Algorithm.														
	UNIT IV:														
	Representing Meaning -Computational Desiderata for Representations, First														
	Order Logic, Event and State Representations.														
	Computational Semantics-Syntax Driven Semantic Analysis-Semantic														
	augmentations to Syntactic rules.														
Text books	Text Book(s):														
and	[1]. D.JurafskyandJ.Martin, "SpeechandLanguageProcessing:AnIntroduction														
Reference	To Natural Language Processing, Computational Linguistics, and Speech														
books	Recognition", Second Edition, PearsonEducation, 2009.														
	Reference Books:														
	[1]. C. Manning and H. Schutze, "Foundations of Statistical Natural														
	Language Processing", MIT Press, 1999.														
	[2]. Nitin Indurkhya, Fred J. Damerau, "Handbook of Natural Language														
	Processing", 2nd Edition, Chapman and Hall/CRC Press, 2010.														
	[3]. Tanveer Siddiqui, U.S. Tiwary, "Natural Language Processing and														
	Information Retrieval", Oxford University Press, 2008.														
E-resources	[1] Dan Jurafsky and Christopher Manning, Natural Language Processig														
and other	Course,Stanford,26thJun2019,														
digital	https://web.stanford.edu/~jurafsky/NLPCourseraSlides.html														
material	[2] Dan Jurafsky and Christopher Manning, Natural Language Processig														
	Course, 10thJun2018,														
	https://www.youtube.com/watch?v=3Dt_yh1mf_U&list=PLQiyVNMpDLKn														
	ZYBTUOISI9mi9wAErFtFm														
	[3] Prof. Sudeshna Sarkar and Prof. Anupam Basu, Lecture Series on Artificial														
	Intelligence Department of CSE, I.I.T, Kharagpur, NPTEL, 2008, Oct														
	http://nptel.iitm.ac.in														
Course Categ	gory:	Program Elective V						(Credits:						
-----------------------	--------	--------------------	--	---------	----------------	--------	------------	--------	----------------------------	--------	-------------	-----------	---------	---------------	---------
Course Type	:	Theo	ry]	Lecture-Tutorial-Practice:						-0-0
Prerequisites	:								Cont	inuou	us Ev	alua	tion:	3	0
_								;	Seme	ster	end I	Evalu	ation	: 7	0
								'	Total	Mai	rks:			1	00
Course	Upon	succe	ssful c	omple	etion (of the	cour	se, th	ne stu	dent	will t	be abl	e to:		
Outcomes	CO1	Und	erstan	d the l	oasic	conce	epts a	nd fr	amew	vork o	of sal	esfor	ce pla	tform.	
	CO2	Exp	xplore data modelling and management techniques.												
	CO3	Ana	lyze va	arious	level	s to c	ontro	ol dat	a acc	ess ai	nd iss	ues i	n ligh	tining f	flow &
		apex	progr	ammi	ng										
	CO4	App	pply testing for various functionalities of applications.												
Contribution		PO	PO PO PO P P P P P P P P P PO PSO PSO												
of Course		1	$\frac{10}{2}$	3	4	0	0	0	0	0	0	0	12	1	2
Outcomes		1	-	5		5	6	7	8	9	10	11	12	1	-
achievement	CO1	L												L	L
of Program	CO2			L	М							L		L	Μ
Outcomes	CO2	ц	T							м				т	т
(L-Low,	003	11	L							IVI				L	L
M-Mealum, H- High)	CO4	Η				L							М	М	Μ
Course	UNIT	' I: Sa	Salesforce Platform Basics												
Content	Introd	luction	ction: Salesforce Platform												
	Term	s Use	Used in Salesforce: Objects, Records, Fields, App, Database, Org.												
	Custo	mize	the Sa	lesfo	rce Pl	atfor	m w	ith si	mple	exar	nple:	Dec	larativ	/e	
	develo	opmen	it, Prog	gramn	natic	devel	opme	ent,							
	Salest	force	Archit	ectur	e Bri	ef, Na	aviga	te Se	etup:	Tell	s how	v to n	aviga	te to Se	etup
	page v	where	we wi	ll setu	ip our	appl	icatio	n.							
	Devel	oper	Begin	ner : (Get St	arted	with	SF P	Platfo	rm, D	ecla	rativ	e	TT 7 1	a
	Progr	amm	ing: (bject	s, Fie	lds, K	lecor	ds, Ta	ab, R	ecord	l deta	il pag	ge etc,	Work	tlow
	Rules	, Proc	ess Bi	illder,	App	roval	Proc	esses	5, :		Tia	h turi in	~	Com	nonont
	Frame	amma	Ano		evelo malfo	pmel	11	B	rief:		LIG	uum	g	Com	ponent
	IINIT	' II •	, Ape	x, v13	Juarro										
	Data	Mode	lling:	Ohie	cts (B	oth S	tands	ard/C	uston	n) C	ustor	n Fie	ld tvn	es Oh	iect
	Relati	onshi	os (Lo	okup/	Maste	er-De	tail) v	with s	simple	e exa	mple	, Sch	iema l	Builder	
	(Creat	te Data	a mod	el witl	h sche	ema b	uilde	r)	1		1	,			
	Data	Mana	gemei	nt: D	ata Ir	npor	t: Da	ta Im	port	Wiza	rd, E)ata I	loade	r, Impo	ort
	simple	e data				-			-					-	
	Expo	rt Dat	a: Dat	a Exp	ort W	izarc	l, Dat	a Loa	ader,	Sche	edule	Data	Expo	ort	
	UNIT	III:													
	Data	Secu	rity: V	Vhat i	is data	a seci	urity,	Acc	ess t	o Or	g: M	anage	e Use	rs, Tru	sted IP
	Range	es for t	s for the Org, Restrict Login IP Ranges At Profiles, Login Access by Time.												
	Acces	s to O	to Objects, Fields: Profiles, View All, Modify All, Permission Sets												
	Acces	s to F	cecore	is: Or	g W1	ae Do	etault	s, R	ole F	iierar	chy,	Shar	ing R	ules, N	lanual
	Sharii	ıg													

17IT4704B - CLOUD BASED CRM PLATFORM (SALESFORCE)

	Formulas & Validations: Formula fields with example, Roll-up Summary fields
	with example, Validation rules
	UNIT IV:
	Lightning Flow: Choose appropriate Automation Tool, Process Builder, Flow
	Builder, Workflow Rule, Approval Process
	Apex Programming: Uses, Objects, Manipulate Data with DML, SOQL, SOSL
	queries,
	Apex Triggers: Trigger on Single and Multiple records
	Apex Testing: Test Data, Coverage, Test Classes
	Visual Force Basics, Usage of Developer Console, VS Code for Development,
	Search Functionality
Content	What is Salesforce.com: Sales Cloud, Service Cloud, Collaboration Cloud,
Beyond	Force.com Custom Cloud, Custom Application Development, VMforce
Syllabus	Force.com Database: Standard Field Types, Relationship Fields, System Fields
Text books	Text Book(s):
and	[1]. <u>https://trailhead.salesforce.com/en/content/learn/trails/force_com_dev_beginner</u>
Reference	Reference book:
books	[1] file:///C:/Users/admin/Downloads/salesforce-crm-admin-cookbook.pdf
E-resources	[1].https://drive.google.com/file/d/1sWalwbzwfTMkfhFKquAkku1vI_6y305/view
and other	[2].file:///C:/Users/admin/Downloads/119655699slaesforce.pdf
digital	[3]. https://trailhead.salesforce.com/
material	[4]. https://www.salesforce.com/products/sales-cloud/resources/
	[5]. https://www.salesforce.com/in/services/resources/

Course Cate	egory:	Prog	Program Elective V							Credits:						
Course Typ	e:	Theo	ory						Lecture-Tutorial-Practice:						3-0-0	
Prerequisite	es:	17IT	3501:	Softv	vare I	Engin	leerin	ıg	Conti	inuo	ıs Ev	alua	tion:		30	
_									Semester end Evaluation: 70							
									Total Marks:100							
Course	Upon s	succes	sful co	mplet	tion o	f the	cours	e, the	e stud	ent w	ill be	able	to:			
Outcomes	CO1	Unde	Understand the basic concepts of Devops, Kubernetes and trends of													
		micro	microservices.													
	CO2	Appl	Apply Docker file syntax for developing a Dockerfile.													
	CO3	Anal	yze K	ubern	etes	resou	rces,	obje	ects, 1	name	space	es wl	nich i	sap	portable,	
		exter	sible o	open-s	source	e plat	form	for n	nanag	ing.						
	CO4	Creat	te ku	berne	tes n	ames	paces	s fo	r mo	onito	ring	and	logg	ing	external	
		resou	irces.	r	r	D		-				D	r			
Contributio		PO	PO	PO	PO	P	P	P	P	P	P	P	PO	PSC) PSO	
II OI COUrse Outcomes		1	2	3	4	0	0	0	0 °	0		0	12	1	2	
towards						3	0	/	0	9	10	11				
achievemen	CO1	М												M	L	
t of Program	CO2	L		Н		L								Μ	L	
Outcomes	CO3				Н							L		М	L	
(L-Low, M- Medium,	CO4			м		и				т				Т	ч	
H- High)				101		11				L				L	11	
Course	UNII Introd	1: Inction	to I	Jovor	. S	ftwa	ra da	liva	ry ch	allan	aac	Wate	rfall	and	nhysical	
Content	deliver	$\nabla \Delta \sigma$	ile and	d elec	trical	delix	ie uc	softv	vare (deliv/	erv o	n the		d coi	ntinuous	
	Integra	tion (Contin	uous l	Delive	erv (Config	urat	ion m	anag	emen	t Inf	rastru	cture	as code	
	Orches	stration	1			,, c	2	,			•••••	•, •••		••••••••		
	Trend	of N	Aicros	ervic	es: N	Iodul	ar pi	ogra	mmir	ng, p	acka	ge m	nanago	ement	t, MVC	
	design	patter	rn, Mo	onolit	hic aj	pplica	ation,	Rer	note	Proc	edure	call	, RĔS	STful	design,	
	Micros	service	s.												_	
	UNIT	II:														
	DevO	ps wi	th Co	ontain	er: 1	under	stand	ing	conta	iner,	Res	ource	e isol	ation	, Linux	
	contair	ner co	oncept,	Cor	taine	rized	deliv	very,	gett	ing	starte	d co	ontain	er, li	nstalling	
	Docke	r tor	∪bunti	ı, Ins	talling	g Doe	cker	tor (JentO	S, It	istalli	ng L	vockei	r tor	macOS.	
	distrib	iner i	magas	ycie.	Dock	ntair	asics	, Là	iyer,	Imag	ge, c	ontai	ner,	and	volume,	
	Worki	ing w	ith D	, com	rfile•	writ	ing y	vour	first	Do	ekerfi	ile 1	Docke	orfile	syntax	
	Organi	izing a	Dock	erfile		vv 1 1 l		your	11151	00	CACIT	,	DUCK		symax,	
	UNIT	III:		<u></u>												
	Under	standi	ing K	uberr	netes:	Und	erstar	nding	g Kub	erne	tes. k	Kubei	netes	com	ponents.	
	Master	comp	onents	s, AP	l serv	er, C	ontro	ller,	Schee	luler	Nod	e coi	npone	ents, İ	Kubelet,	
	Proxy,	Docker, Interaction between kubernets master and nodes.														
	Gettin	g star	ted w	ith K	uberi	netes	:Prep	barin	g the	envi	ronm	ent, l	cubec	tl, ku	bernetes	
	resourc	ces, ki	ıberne	ts ob	jects,	Nam	espac	e, N	Jame,	Lab	el an	id se	lector	, Anı	notation,	

17IT4704C- DEVOPS ESSENTIALS

	Pods, ReplicaSet(RS) and Replication Controller (RC), Deployments, Services,
	volumes, Secrets, Control Map, Using ConfigMap via volume, Using ConfigMap via
	environment variables
	UNIT IV:
	Monitoring and Logging: Inspecting a container, Kubernetes dashboard, Montoring
	in Kubernetes, Application, Host, External resources, container, Kubernetes, Getting
	monitoring essentials for Kubernetes,
	Cluster Administration: Kubernetes namespaces, Default namespaces, Create a
-	new namespace.
Text books	Text Book(s):
and	[1] DevOps with Kubernetes: Accelerating software delivery with container by
Reference	Hideto Saito, Hui-Chuan Chloe Lee, Cheng-Yang Wu, O' Reilly
books	publications, 2017.
	Reference Books:
	Reference Books: [1].Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by
	Reference Books: [1].Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017
Е-	Reference Books: [1].Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017
E- resources	Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018,
E- resources and other	Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs
E- resources and other digital	Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019
E- resources and other digital material	 Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE
E- resources and other digital material	Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE [3] https://www.threatstack.com/blog/50-best-online-devops-training-
E- resources and other digital material	 Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE [3] https://www.threatstack.com/blog/50-best-online-devops-training-resources
E- resources and other digital material	 Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE [3] https://www.threatstack.com/blog/50-best-online-devops-training-resources [4] https://geekflare.com/learn-devops/
E- resources and other digital material	Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE [3] https://www.threatstack.com/blog/50-best-online-devops-training-resources [4] https://geekflare.com/learn-devops/http://www.scmgalaxy.com/tutorials/top-10-devops-online-resources-to-
E- resources and other digital material	 Reference Books: [1]. Managing Kubernetes:Operating Kubernetes Clusters in the Real Worls by Brendan Burns, Craig Tracey, O'Reilly publications, 2017 [1]. Introduction to DevOps Tools, Edureka, April, 2018, https://www.youtube.com/watch?v=lpWjKXa_4Hs [2]. Hitesh Choudary, What is DevOps? Easy way, Aug 16, 2019 https://www.youtube.com/watch?v=_Gpe1Zn-1fE [3] https://www.threatstack.com/blog/50-best-online-devops-training-resources [4] https://geekflare.com/learn-devops/ http://www.scmgalaxy.com/tutorials/top-10-devops-online-resources-to-learn-share-and-practice/

Course Cate	egory:	HS	HS							Credits:						
Course Typ	e:	Theo	ory						Lecture-Tutorial-Practice:						-0-0	
Prerequisite	es:	-							Cont	inuou	us Ev	aluat	tion:	3	0	
								;	Seme	Semester end Evaluation: 70						
								,	Total	al Marks:						
Course	Upon s	success	sful co	mplet	ion of	f the	cours	e, the	e stud	ent w	ill be	e able	to:			
Outcomes	CO1	Unde	erstand	l varic	ous for	rms o	of org	aniza	tions	and	princi	iples	of ma	nagem	ent.	
	CO2	Unde	Inderstand the various aspects of business economics													
	CO3	Acqu	Acquire knowledge on Human resources and Marketing functions													
	CO4	Unde	Inderstand different methods used in calculating depreciation and													
		evalu	valuating alternatives economically										1			
Contributio		РО	РО	РО	РО	P	P	P	P	P	P	P	РО	PSO	PSO	
II OI COUrse		1	2	3	4	O 5	0	\mathbf{O}_{7}	O o	O O	$\begin{bmatrix} 0\\10 \end{bmatrix}$	0	12	1	2	
towards	CO1	М				3	0	/	8	9	10	11	М		М	
achievemen	C01	M				Ц							M		M	
t of	CO_2	M				11							M		M	
Program	005	111											111		171	
(L-Low, M-	CO4	м				тт							м		M	
Medium,	CO4	IVI				п							IVI		IVI	
H- High)																
Course	UNIT	I:														
Content	Forms	of	Busin	ess ()rgan	izati	on:	Salie	ent F	eatur	es o	of Sc	ole P	ropriet	orship,	
	Partner	rship, .	Joint S	tock (Comp	any,	Co-o	perat	ive So	ociety	y and	Publ	ic Sec	tor.	1	
	Manag of Soic	gemen	It: Inu Monoc	oduci	101 t) Ma	Dring	nent,	, Fun	cuon	s 01 1	viana	geme	ni, Prii	ncipies	
	UNIT		Ivialia	gemen	it, IVIO	uem	1 1 1110	ipies		lanag	emen	ιι.				
	Introd	uctior	ı to F	Econo	mics:	Intr	oduc	tion	to B	asic	Econ	omic	Con	cepts.	Utility	
	Analys	sis: Ma	arginal	Utili	ty and	d Tot	al Ut	ility,	Law	of E	Dimin	ishin	g Ma	rginal	Utility,	
	Law of	f Equi	Margi	nal U	tility.									U		
	Dema	nd Ar	nalysis	: The	eory	of D	eman	d: D)emar	nd Fi	unctio	on, F	actors	s Influ	encing	
	Demar	nd, De	mand	Sche	dule	and 1	Dema	and (Curve	e, Shi	ift in	Den	nand,	Elasti	city of	
	Demar	id: Ela	stic an	d Ine	lastic	Dem	and,	Type	s of E	lastic	City.	ana T		aina C	· · · · · · · · · · · · · · · · · · ·	
	Supply	y Ana	iysis: 1	Suppi	y Sch	leaule	e and	Sup	piy C	urve,	, Faci	OIS I	nnuer	icing S	suppiy,	
	UNIT	III·	1011.													
	Huma	n Re	source	Ma	nagei	ment	: Me	eanin	g an	d di	fferer	nce h	oetwee	en Per	sonnel	
	Manag	ement	and	Huma	n Re	sourc	e Ma	anage	ement	t, Fu	nction	ns of	Hun	nan Re	source	
	Manag	ement	•					U								
	Marke	eting	Mana	geme	nt: (Conce	ept o	f Se	lling	And	l Ma	rketi	ng –	Diffe	rences,	
	Function	ons o	ons of Marketing, Product Life Cycle, Concept of Advertising, Sales													
	Promo	tion,	on, Types of Distribution Channels, Marketing Research, Break-Even													
	Analys	515.														

17HS1705- ENGINEERING ECONOMICS AND FINANCE

	UNIT IV:
	Financial Management: Functions of Financial Management, Time value of money
	with cash flow diagrams, Concept of Simple and Compound Interest.
	Depreciation: Causes of depreciation, Factors influencing depreciation, common
	methods of Depreciation: Straight Line Method, Declining Balance Method, Sum of
	Year's Digits Method – Problems.
	Economic Alternatives: Methods of Evaluating Alternatives under Present worth
	method, Future worth method, Annual Equivalent method - Problems.
Text books	Text Book(s):
and	[1]. M. Mahajan Industrial Engineering and Production Management Dhanpat
Reference	Rai Publications 2 nd Edition.
books	[2].Martand Telsang" Industrial & Business Management" S.Chand publications
	Reference Books:
	[1]. R. Paneer selvam "Production and Operations Management" PHI
	[2]. Philip Kotler & Gary Armstrong "Principles of Marketing", pearson
	prentice Hall, New Delhi, 2012 Edition.
	[3]. IM Pandey, "Financial Management" Vikas Publications 11 th Edition
	[4].B.B Mahapatro, "Human Resource Management"., New Age International
	,2011
E -	[1]. <u>https://www.toppr.com/guides/fundamentals-of-economics-and-</u>
resources	management/supply/supply-function/
and other	[2]. https://keydifferences.com/difference-between-personnel-management-and-
digital	human-resource-management.html
material	[3]. <u>http://productlifecyclestages.com/</u>
	[4]. <u>https://speechfoodie.com/cash-flow-diagrams/</u>

Course	I	Progra	um Co	ore					Credits:						1.5
Category:															
Course Type	e: I	Lab							Lectu	re-Tu	atoria	al-Pr	actice:	()-0-3
Prerequisite	s: (Comp	uter N	Vetwo	orks				Conti		30				
									Semester end Evaluation:						70
								-	Total Marks:						100
Course	Upon	succe	essful	com	pletic	on of	the co	ourse	$\frac{1}{2}$ the s	stude	nt wil	l be a	ble to		
Outcomes	CO1	Ana	Analyze the applications in cloud environment												
	CO2	Dev	Develop applications in IaaS, PaaS and SaaS cloud models.												
	CO3	Dev	Develop applications in different cloud ecosystems												
Contributio	005	P	P P P P P P P P P P P P P P P P P P P										PSO		
n of Course		0										2			
Outcomes		1	$\frac{1}{2}$	3	4	5	6	7	8	9	10	11	-	1	-
towards	CO1	L	L	-	-	-	-		-	-	H			L	М
achievement	CO2		L	Н		L							М	L	L
of Program		1		···							1		M	M	
Outcomes													1.11	1,11	
(L-LOW, M- Modium H	CO3				Н				L						М
High)															
Course	Week	//													
Content	Cloud	Cloud Simulation													
	Deve	vevelop applications in Google Cloud Platform													
	Wee	k 2 :]	PaaS			0									
	Host	a web	site a	pplic	ation	in G	oogle	Apr	o Engi	ne					
	Host	a php	app i	n GC	P wit	th clo	ud II	DE as	s cloud	d sdk					
	Week	x 3 : (CLOU	JD A	NAL	YST	TOO	L							
	Simu	late tl	he cl	oud e	enviro	onme	nt of	thre	ee dat	a cer	nters	in di	fferent	geogr	aphical
	locati	ons a	nd a	dd vi	irtual	mac	hines	to	them	along	g wit	h res	ources	like s	storage,
	comp	ute ar	nd bar	ndwic	lth us	ing C	Cloud	Ana	lyst.						
	Case	studie	s												
	Week	4 : S	laaS												
	Creat	e war	ehous	se app	olicati	ion in	Sale	sfor	ce.con	n plat	form				
	Week	5 : Ia	aaS												
	Imple	ment	virtu	alizat	ion u	sing	Virtu	alBo	x and	confi	gure	with	any OS		
	Imple	ment	virtu	ıaliza	tion	using	g Vn	iwar	e hyp	ervis	or, c	reate	virtual	insta	nce and
	instal	l mult	tiple g	guest	opera	ating	syste	ms u	sing F	ESXI					
	Week	x 6 : A	AWS	a					•				ID		
	Confi	gure	web	Serve	r on L	Amaz	zon L	inux	Instar	nce w	ith E	lastic	IP		
	Mana	Manage Elastic Block Storage(EBS) for usage													
	Week														
	Creat		1 usei D_{a1}	r, Ma	nage	IAM	User	, wit	n Gro	ups a	na Po	licies	5		
		Woole 9 t													
	week	ίð:	Wal		000	. 60	۸D ۲-		17 A A	nnlie	otion	-			
	imple	inent	web	servi	ces II	1 201	4P I0	IT JA	VAA	ppiic	ations	5			

17IT3751-CLOUD COMPUTING LAB

	Week 9 :								
	Case studies on Facebook, Amazon S3								
Text books	Text Book(s):								
	[1] Enterprise Cloud Computing by Gautam Shroff, Cambridge,2010								
Reference	Reference Books:								
books	[1] Getting Started with OwnCloud by Aditya Patawar , Packt Publishing Ltd, 2013								
	[2]Barrie Sosinsky, "Cloud Computing Bible", Wiley Publishers, 2012								
	[3]Miller Michael, "Cloud Computing: Web-Based Applications That Change the								
	Way You Work and Collaborate Online", Que Publishing, 2008.								
Е-	[1]Sanjay Pathak, "Cloud Concepts",								
resources	https://www.youtube.com/watch?v=vv16c3BazSs								
and other	[2] MaciejArkit,"GoogleAppEngine",								
digital	https://www.youtube.com/watch?v=UBa4ZsEAvP4								
material	[3]. Prof.Sowmya Kanti Ghosh,IIT Kharagpur, "Cloud Computing Benefits,								
	services, models, applications" https://nptel.ac.in/courses/106/105/106105167/								
	[4]. Suresh S, Udemy, "Server Virtualization",								
	https://www.udemy.com/tutorial/cloud-computing-the-technical-essentials/basics-								
	of-virtualization/								

Course Cate	gory:	Prog	Program Elective							Credits:					
Course Type	e:	Labo	ratory]	Lecture-Tutorial-Practice:						0-0-3
Prerequisite	s:	Pytho	on pro	gramn	ning			(Conti	inuou	ıs Ev	alua	tion:		30
_								;	Semester end Evaluation:						70
								,	Total Marks:100						
Course	Upon	succes	sful co	mplet	tion o	f the	cours	e, the	he student will be able to:						
Outcomes	CO1	Unde	erstand	l the in	nstalla	ation	proce	ess an	nd bas	sics o	f tens	or flo	OW		
	CO2	Cons	onstruct a Multi Layer Neural Network												
	CO3	Build	uild a convolution neural network model for image classification												
	CO4	Imple	nplement a sentiment analysis model using LSTM												
Contributio		PO	PO PO PO PO P P P P P P P PO PSO PS										PSO		
n of Course		1	$\begin{array}{c c c c c c c c c c c c c c c c c c c $										2		
towards		-	_	-		5	6	7	8	9	10	11		-	
achievemen		м	т		M	M								м	M
t of	C02	M	L		M									M	M
Program	005		M		L M									L M	
Outcomes		11	11/1		101									11/1	11/1
Medium H-	CO4														
High)															
Course	Week	1													
Content	Install	Tenso	r flow	in yo	ur loc	cal de	velop	omen	t envi	ironn	nent u	ising	pytho	n. Cre	eate and
	manip	ulate tensor flow variables and implement mathematical, array and matrix													
	operat	ions.													
	Week	2					C .	0			• •				
	Test va	ariable	scopi	ng me	chani	sms (of ten	sor f	low b	y cor	isidei	ing y	our o	wn ex	amples
	Week Build	3 a sim	nla la	aistia	raara	action	mo	dal t	o tac	la N		T da	to cot	+ Tha	model
	should	identi	fv har	d writ	tten d	igits			0 tac	KIC P		i ua		. The	model
	Week	4	ij nai	a wiii		<u>-9-10-</u>									
	Constr	uct a f	eed-fc	rward	l mod	el wi	th two	o hid	den la	ayers	, each	n with	256	Relu	
	neuror	ns to c	reate	MNIS	ST di	git re	ader.	Con	npare	acci	ıracy	mod	lel of	the v	with the
	logisti	c regre	ession	model	l.										
	Week	5					_								
	Build	a cor	ivoluti	on no	eural	netw	ork	with	two	poo	ling	and	two (convo	lutional
	interie	avea,	IOIIOW	ed by	уаг	ully (conne	road	laye	r (Wi sobler	ith di	topou	it, p =	= 0.5) and a
	with a	ar son hove ti	max.u	thods		101	uigit	Teau	iei pi	00101			lipare	uic a	couracy
	Week	<u>6</u>		mous	•										
	Consid	nsider some noisy images and apply various image preprocessing techniques													
	using	Tensor	Flow	5	0		r r '	5			U 11	1		0	1
	Week	7													
	Build a	a conv	olutio	n neur	al net	work	mod	el foi	r CIF	AR-1	0 cha	alleng	ge wit	h and	without
	using l	oatch r	<u>iorm</u> al	izatio	n										

17IT4752 A- DEEP LEARNING LAB

	Week 8
	Apply dimensionality reduction techniques using PCA and Autoencoder on MNIST
	dataset
	Week 9
	Implement parts-of -speech (POS) tagger by considering your own lines of text.
	Week 10
	Implement a sentiment analysis model using LSTM. Analyze the sentiment of
	movie reviews taken from the Large Movie Review Dataset
Text books	Text Book(s):
and	[1].Nikhil Buduma, Nicholas Locascio, "Fundamentals of Deep Learning:
Reference	Designing Next-Generation Machine Intelligence Algorithms", O'Reilly
books	Media, 2017
	[2]. Ian Goodfellow, YoshuaBengio, Aaron Courville, "Deep Learning(Adaptive
	Computation and Machine Learning series", MIT Press, 2017
	Defense a Destau
	[1] Li Dana and Dana Va. "Dana lasming Mathedrand Anglingtions?" New
	[1]. Li Deng and Dong Yu, Deep learning Methods and Applications, Now
	[2] Michael Nielsen "Neural Networks and Deep Learning" Determination
	Press 2015
E-	[1] Mitesh Khanra "Deen Learning" Sen 20 2018
resources	https://www.youtube.com/watch?y=4TC5s_xNKSs&list=PLH-
and other	xYrxifO2VsvvOXfBvsOsufAzvladg9
digital	[2]. AfshineAmidi and ShervineAmidi, "Deep Learning cheat sheets for Stanford's
material	CS 230", 2018, https://github.com/afshinea/stanford-cs-230-deep-learning
	[3]. YoshuaBengio, Deep learning: "Theoretical Motivations, Canadian Institute for
	Advanced Research", 2015
	http://videolectures.net/deeplearning2015_bengio_theoretical_motivations/
	[4]. Geoffrey Hinton's GoogleTech Talk,"Recent developments on Deep Learning"

Course Categ	gory:	Pr	Program Elective							Credits:						
Course Type	•	La	ıb						Lectu	ıre-T	utori	i <mark>al-P</mark> r	actic	e:	0-3-0	
Prerequisites	:	-							Cont	inuot	ıs Ev	aluat	ion:		30	
									Seme	ster	end H	Evalu	ation	:	70	
									Total Marks:100							
Course	Upon s	succe	ssful	comp	letion	n of tl	ne cou	urse,	the st	udent	will	be ab	le to:			
Outcomes	CO1	Buil	ld sm	art c	ontra	cts us	ing I	Remiz	x IDE	E, Gai	nache	e and	Mye	ther W	allet in	
		Ethe	ereun	n Plat	form.											
	CO2	Bui	and private-permissioned blockchain-based applications for enter										erprises			
		and	busir	nesses	6. C1							1				
	CO3	Dev	evelop IPFS file system using peer to peer networks											DCO		
contribution		P	P P <th>PSO</th>									PSO				
Outcomes		1	$\frac{0}{2}$	3		5	6	7	8	0	10	11	12	1	2	
towards	CO1	T	I I	5	-	5	0	/	0	,	10	11	14	н		
achievement	CO_1	Ľ	L	Н		L								11		
of Program	002		12													
Cutcomes (L-Low	CO 2									т						
M-Medium,	003				Н					L						
H- High)																
Course	Week	1 :Prasanth is an instructor for Blockchain and Cryptocurrency, as part of the														
Content	course	e, Prasanth wants to set the environment to deploy smart contract help														
	Prasan	th to	to deploy a smart contract.													
	Week	2:	Shine	chan 1	ls a s	tuder	it in .	Kasu	kabey	city	scho	ol in	Japa	n, His	teacher	
	gave n Help S	im no hinch	omew nan to	ork t solv	o che	ск w. probl	nethe em	r a ni	umbe	r is Ir	icrem	ientin	g or	Decren	nenting.	
	Week	3:	Aka	ish st	arted	learı	ning	solid	ity la	ngua	ge, H	le co	mple	ted his	theory	
	classes	now	it is	time	for p	ractic	al ses	sion.	Akas	sh wa	s giv	en a p	proble	em to p	print the	
	string '	"VRS	SE Co	ollege	<u>". Не</u>	lp Ak	ash te	o prir	nt the	String	g .					
	Week	4 :	How	to to	write	a sr	nart	contr	act t	o ins	ert v	value	into	the et	thereum	
	Wool	11ain	using Vou	had a	inask a fri≏	 Ind in	the	I Init	ed St	ates	of A	merio	an u	vho'e e	tudving	
	Compi	iter S	cienc	e Eng	zinee	ring a	t Stai	1ford	Univ	ersitu	' Cal	iforni	a He	asked	vou for	
	help fo	or trai	nsferi	ing E	Ethers	throu	igh o	nline	so h	e can	, our	a fee	to th	e colle	ge. Use	
	Metam	ask f	or tra	nsfer	ring t	he Et	hers t	o you	ır frie	nd.	r				0	
	Week	6 : B	uildii	ng a b	lock	chain	raffle	usin	g Sol	idity	progi	amm	ing la	inguage	e. Apart	
	from a	coin	toss,	the n	10st s	traigh	tforv	vard e	examp	ole of	gam	bling	is pro	obably	a raffle.	
	Let's b	uild c	one to	see v	who v	vins t	he ga	me.		_						
	Week	7:A	finar	ice co	ompa	ny w	ishes	to u	se Et	hereu	ım pl	latfor	n to	speed	up and	
	simplif	ty pa	y payments deposits. You are an Ethereum developer and have been asked													
	by the Smart	Cont	Contract for a banking application in solidity which allows users to do the													
	follow	ing.	ig:													
			a. N	/lint n	noney	/ into	your	acco	unt							

17IT4752 B - BLOCKCHAIN TECHNOLOGIES LAB

	b. Withdraw money from your account
	c. Send money from your account to smart contract
	address
	d. Check balance
	After a contract is created, deploy the contract on
	Ethereum Testnet network
	Week 8 To design an electronic voting system using the ethereum blockchain
	(smart contracts) and more precisely the RPC test which enables account generation
	with a private and publicKey Blockchain electronic voting system using smart
	contracts
	Weak 0 Duilding on improved D2D file system to provide originality and
	week 9 : Dunding an improved FZF the system to provide originality and
	authenticity of published and posted free online digital content such as books,
	music, and movies. Our solution utilizes a blend of the fatest emerging technologies
	that include IPFS and blockchain smart contracts.
	Week 10: Smart cities and smart houses are in fashion and thus all this can be
	blockchained. The student can focus on building system which can manage all the
	real estate related contracts through blockchain technology using IPFS which will
	enhance security and will provide more efficiency.
	Week 11: How to write a smart contract to insert a value into the ethereum
	blockchain using Ganache (using intranet)
	Week 12: Hyperledger Composer Demo
	Text Book(s):
	[1]. Mastering Bitcoin: Antonopoulos, Andreas M.
	[2] Mastering Blockchain: Distributed Ledgers, Decentralization and Smart
	Contracts Explained by Bashir, Imran.
	[3] Mastering Ethereum: Building Smart Contracts and DApps
	Reference Books:
	[1] Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction
	Arvind Naravanan Joseph Bonneau Edward Felten Andrew Miller and
	Steven Goldfeder
	[2] Bitcoin: A Peer-to-Peer Electronic Cash System Satoshi Nakamoto
F rosourcos	[1] Prof Sandeen Shukla Department of CSE IIT Kharagnur "Introduction to
and other	[1]. FIOI Sandeep Shukia, Department of CSD, 117, Kharagpur, Introduction to Blockshain technology and Applications? 2010
digital	https://mptol.ao.in/courses/106104220/
uigitai	101 Prof. Son din Chalmaharter, Department of CSE, HT, Khamamar
material	[2]. PTOL Sancip Unakraborty, Department of USE, III, Knaragpur, "Disababain Analytestum Design and Use Grass" 2019
	Biockenain Architecture Design and Use Cases", 2018
	nttps://www.youtube.com/watch?v=l2mJazpVtCo

Course Catego	ry:	P	rogram	n Electi	ve			Cred	lits:				1.5		
Course Type:		L	ah					Lect	ure-Tu	torial-	Practi	ce:	0-0-3		
Prerequisites:		1'	7IT350)2 : Da	ta Mini	ing		Cont	inuous	s Evalu	iation:		30		
								Seme	ester ei	nd Eva	luatio	1:	70		
								Tota	l Mark	s:		-	100		
Course	Upo	n s	uccess	ful cor	npletio	n of th	e cours	e, the s	student	will be	e able t	0:			
Outcomes	CO1		Demo	onstrate	e genes	sis and	divers	ity of i	informa	ation re	etrieval	situati	ons for		
			text a	ext and hyper media.											
	CO2	,	Analy	alyze the usage of different data/file structures in buildin											
			comp	mputational search engines											
	CO3		Imple	nplement applications for the performance of information retri											
			using	sing classification, clustering, and filtering over multimedia.											
Contribution			PO	PO	PO	PO	PO	PO	PO						
Outcomes	CO	1	T	2	3	4	5	6	/	8	9	10	11		
towards		ן ר	L		п		т					Н			
achievement of	0.	2		L	п										
Program															
Outcomes	CO	3				н				T					
(L-LOW, M Modium	00.	<i>J</i>				11				Ľ					
H-High)															
Course	Wee	/eek 1 :													
Content	Impl	len	nent T	okeniz	ation	breakir	ng a s	tream	of tex	t up i	into w	ords, p	ohrases,		
	sym	bol	ls, or o	ther me	eaning	ful eler	nents c	alled to	okens	-					
	We	ek	2:												
	Perf	orn	n stop	word	remov	al for	filterii	ng out	prior	to, or	after,	proces	sing of		
	natu	ral	langua	ige dat	a (text)).									
	Waa	J. (2.												
	Impl	CK .	5: nont St	ommir	ng for	raduci	ng infl	acted (or son	natima	doriv	ad) wa	rds to		
	their	· ste	em ha	se or ro	ng 101 Not form	noei	ng min nerally	a writt	en wor	d form			105 10		
	Case	e st	udies	50 01 10	000 1011	n 50	leruny	<i>a wiitt</i>		u 101111	•				
	Wee	ek 4	4:												
	Impl	len	nent da	tabase	index	to imp	prove tl	he spee	ed of d	ata retr	rieval o	peratio	ns on a		
	data	bas	se table	e at the	cost of	f slowe	r write	s and in	ncrease	ed stora	ige spa	ce			
	Wee	ek (5:												
	Perf	orn	n searc	hing ir	n the in	dexed	data in	databa	ise						
	Wee	ek (6:												
	Cont	fig	ure and	t run E	clipse	Intellig	gent Inf	ormati	on Ret	rieval a	and We	b Searc	ch		
	Wee	ek '	7 :		.1.					11					
	Extr	act	aata u	sing w	eb scra	iping a	na web	crawl	ing wit	n pytho	on				
	Ruil	κ≀ d ο		e of lor	10110.000	data a	nd anal	uza thi	e tovt	and wie	maliza	the roc	ulte		
	Dull	u ä	i corpu	s of lat	iguage	uata al	uu allal	yze till	s iexi,	anu vis	sualize	une rest	u115.		

17IT4752C - INFORMATION RETRIEVAL SYSTEM LAB

	Week 9 :
	Case studies on Sentiment Analysis, image query processing
Text books	Text Book(s):
	[1] G. G. Chowdhury, Introduction to Modern Information Retrieval, 3rd edition,
	Face publishing, 2010.
Reference	Reference Books:
books	[1] Gerald J Kowalski, Mark T Maybury Information Storage and Retrieval
	Systems: Theory and Implementation, Springer, 2004.
	[2] Soumen Chakrabarti, Mining the Web : Discovering Knowledge from
	Hypertext Data, Morgan – Kaufmann Publishers, 2002.
	[3] Christopher D Manning, PrabhakarRaghavan, HinrichSchutze, An
	Introduction to Information Retrieval By Cambridge University Press, England,
	2009
E-resources	[1] Pabitra Mitra, Professor, CSE Department, IIT Khargapur, Information
and other	Retrieval, https://cse.iitkgp.ac.in/~pabitra/course/ir06/ir06.html
digital	[2] Shehzaad Dhuliawala Maulik achhani, Information Retrieval,
material	http://www.cfilt.iitb.ac.in/viva_workshop/Day4-Information_Retrieval-
	ShehzaadDhuliawala

Course Category:		Project							Cred	its:					2
Course Type		Practic	al						Lectu	ıre-T	utor	ial-P	ractio	ce:	0-0-4
Prerequisites	s: -	-							Cont	inuou	us Ev	alua	tion:		30
									Seme	i:	70				
									Tota	Mai	rks:				100
Course	Upo	on succ	essful c	omple	tion o	of the	cour	se, tł	ne stu	dent v	will b	e abl	e to:		
Outcomes	CO	D1 Identify the problem, define objectives and scope of the project.													
	CO	2 Ana	Analyse the problem from state of the art for arriving at feasible solution												tions.
	CO	3 Pre	Prepare an organized report employing elements of technical writ											iting &	
		critical thinking.													
	CO	4 Sur	ummarize and communicate the content to audience in an effective manner.											nanner.	
Contributio		PO	PO	PO	Р	Р	Р	Р	Р	Р	Р	Р	Р	DSO	DSO
n of Course				2	0	0	0	Ο	0	0	0	0	0	1	2
Outcomes		1	2	5	4	5	6	7	8	9	10	11	12	1	2
towards	CO	1 M	L					Μ	Η	М		L	L		L
achievement	CO	2	Η	М	Μ							Μ	М	М	М
Outcomes	CO	3					Η	Μ	Η	М	Μ	Μ	L	L	М
(L-Low, M-															
Medium, H-	CO	4					L	Μ	Μ	Н	Η		М	L	L
High)															
Course															
Content															
	Mir	ni Proje	ct cou	ld be d	lone i	in gro	oup o	f stu	dents;	invo	lves	work	ing u	nder a	faculty
	mer	nber ar	d carry	ing ou	t a de	etaile	d feas	sibili	ty stu	dy, li	teratu	ire su	rvey	and pr	reparing
	a w	ork pla	n for m	ajor pr	oject					-			2	-	-

17IT5753 - MINI PROJECT

17IT6754 – A: INTERNSHIP / B: INDUSTRY OFFERED COURSE / C: GLOBAL PROFESSIONAL CERTIFICATION

Course Category:	Internship	Credits:	2
Course Type:	Practical	Lecture-Tutorial-Practice:	0-0-0
Prerequisites:	-	Continuous Evaluation:	-
		Semester end Evaluation:	100
		Total Marks:	100

As per the regulations of VR17 the students can register for any one of the following

a) Internships

The students may undergo internship of minimum 3 weeks duration in the industry approved by respective head of the department

b) Industry offered courses

The student can opt for the courses under this category offered by the industry experts whose minimum academic qualification is Bachelor or Engineering or equivalent.

c) Global Professional Certification

The students can complete the global professional certification under this category.

SEMESTER VIII

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

Course	Pro	Programme Elective VI						s:				3	3			
Category:																
Course Type	: The	eory				Ι	Lectur	re-Tu	itoria	l-Pra	ictice	: 3	-0-0			
Prerequisites	: 17I	T350	2 - Da	ita M	ining	(Contir	nuous	s Eva	3	30					
						S	Semes	ter e	nd Ev	7	70					
]	[otal]	Marl	ks:			1	00			
Course	Upon	succe	ssful	comp	oletion	n of t	he cou	irse, t	the st	udent	will	be ab	le to:			
Outcomes	CO1	Des	cribe	the c	oncep	ots an	d con	npone	ents o	f busi	ness	intelli	igence	e		
	CO2	Eva	luate	the u	se of	BI fo	r supp	oortin	g dec	ision	maki	ing in	an or	ganiza	tion.	
	CO3	Dise	cover	the r	equire	emen	ts nee	d to c	lesigr	ı a bu	sines	s inte	lligen	ce mo	del.	
	CO4	Imp	lemei	nt a b	ehavi	oural	l mode	el to a	assess	s the b	oehav	iour c	of the	custon	ner.	
Contribution		P P P P P P P P P P P P P P P P P										PS				
of Course		0	0	0	0	0	0	0	0	0	0	0	0	O 1	O 2	
Outcomes		1	2	3	4	5	6	7	8	9	10	11	12			
towards	CO1		L	L											L	
achievement	CO2		L		Μ									L	Μ	
Outcomos	CO3	L	Μ	Μ		Н								L	М	
(L-Low, M-	CO4	L	Μ	Μ	Μ	Н								Н	Н	
Medium, H-																
High)																
Course	UNIT	I														
Content	Busin	ess I	ntellig	gence	and	Info	ormat	ion 1	Explo	oitatio	on-Im	provi	ing th	e Dec	ision-	
	Makin	Aaking Process, Why a Business Intelligence Program, Business Intelligence and														
	Progra	ım Su	ccess	, The	Anal	ytics	Spect	trum,	Tam	ing th	e Infe	ormat	ion E	xplosi	on.	
	The	Value	e of	Busi	ness	Inte	elligen	ce-V	alue	Driv	ers a	and I	Inform	nation	Use,	
	Perfor	manc	e M	etrics	anc	ł Ko	ey Po	erfori	nance	e Ine	dicato	or, U	sing	Actio	nable	
	Know	ledge	, Hor	izonta	al Us	e Cas	ses for	r Bus	iness	Intel	ligen	ce, V	ertica	l Use	Cases	
	for Bu	sines	s Inte	lliger	ice											
	UNIT	II														
	Plann	ing f	or Su	icces	s- Int	rodu	ction,	Orga	anizat	tional	Prep	aredr	ness f	for Bu	siness	
	Intelli	gence	and	Ana	lytics	s, In	itial S	Steps	in S	Startii	ng a	Busi	ness	Intelli	gence	
	Progra	ım, B	ridgir	ng the	e Gap	os be	tween	Info	rmati	on T	echno	ology	and t	he Bu	siness	
	Users,	Kno	wing	the	Diffe	rent	Types	of l	Busin	ess I	ntellig	gence	Use	rs, Bu	siness	
	Intelli	gence	Suce	cess	Facto	rs: A	Dee	per I	Dive,	Mor	e on	Build	ling `	Your 7	Гeam,	
	Strateg	gic Vo	ersus	Tacti	cal Pl	annii	ng									
	Devel	oping	g You	ir B	usine	ss Ir	ntellig	ence	Roa	dmaj	р- А	Busi	ness	Intelli	gence	
	Strateg	gy: V	vision	to 1	Bluep	rint,	The	Busii	ness	Intell	igenc	e Ro	adma	p: Exa	ample	
	Phasir	ıg, Pla	anning	g the	Busir	ness I	ntellig	gence	e Plan							
	UNIT	III														
	The B	Busine	ess In	tellig	gence	Env	ironn	nent-	Asp	ects c	of Bu	siness	s Inte	lligenc	e and	
	Analy	tics	Platfo	rm a	and S	Strate	egy, [The	Orga	nizati	onal	Busi	ness	Intelli	gence	
	Frame	work	, Serv	ices a	and S	ysten	n Evo	lutior	1	-					_	
	Busin	ess _. P	roces	ses a	nd I	nforr	natio	n Flo	w- A	nalyt	ical I	nforn	natior	Need	s and	
	Inform	nation	i Flo	ws,	Info	rmati	on P	roces	ssing	and	Inf	ormat	tion	Flow,	The	

17IT4801A - BUSINESS INTELLIGENCE

	Information Flow Model.										
	Data Requirements Analysis- Introduction, Business Uses of Information,										
	Metrics: Facts, Qualifiers and Models, What is Data Requirements Analysis?										
	UNIT IV										
	Data Profiling- Establishing Usability of Candidate Data Sources, Data Profiling										
	Activities, Attribute Analysis, Relationship Analysis										
	Deriving Insight from Collections of Data- Introduction, Customer Profiles and										
	Customer Behaviour, Customer Lifetime Value, Demographics, Psychographics,										
	Geographic's, Geographical Clusters, Behaviour Analysis										
Text books	Text Books:										
and	[1].D. Loshin, Business Intelligence: The savvy manager's guide, Morgan										
Reference	Kaufmann Publishers, 2013.										
books	Reference Books:										
	[1]. Business Intelligence And Analytics Systems For Decision Support by Efraim										
	Turban and Ramesh Sharda, Pearson India, 2018.										
	[2].Business Intelligence and Analytics in Small and Medium Enterprises, Pedro										
	Novo Melo, Carolina Machado, CRC Press, 2019										
E-resources	[1] Need for Data Warehouse & Business Intelligence, Microsoft Business										
and other	Intelligence,										
digital	https://freevideolectures.com/course/3635/microsoft-business-intelligence/11										
material	[2] Business Analytics & Text Mining Modeling Using Python, Prof.Gaurav										
	Dixit, Department of Management, IT Roorkee,										
	https://nptel.ac.in/courses/110/107/110107092/										
	[3] Business Analytics & Intelligence, IIM Bangalore,										
	https://iimb.ac.in/eep/product/259/Business-Analytics-Intelligence										

Course	Progra	m E	lectiv	ve - 1	VI				Cre	edits:					3
Category:	C														
Course Type:	Theory	y							Leo	ture-'	Tutor	ial-Pr	actice	:	3-0-0
Prerequisites:									Co	ntinuo	ous Ev	aluat i	ion:		30
	•								Sen	nester	end l	Evalua	ation:		70
									Tot	al Ma	rks:				100
Course	Upon	succ	essfu	l cor	nple	tion	of th	e co	urse,	the st	udent	will b	e able	to:	
Outcomes	CO1	O1 Understand the concept of mobile computing paradigm, its n											s novel		
		applications and access techniques.													
	CO2	O2 Analyze cellular systems that adapt mobility for wireless												ss data	
	<u> </u>	transmissions													
	CO3	3 Analyze wireless data transmission techniques in mobile communica													
	004	J4 Evaluate mechanisms extended in network layer for mobility and sat												satenne	
Contribution		P P P P P P P P P P P P P P P P P P P											PSO		
of Course		0	0	0	0	0	0	0	0	9	10	11	12	1	2
Outcomes		1	2	3	4	5	6	7	8						
towards	CO1					Μ		Μ			Н		L	М	L
achievement of Program	CO2		Η		L			Μ					М		М
Outcomes	CO3				Н					Μ			Μ		М
(L-Low, M-	~ ~ .														
Moderate, H-	CO4	L				Μ						Μ	Н	Н	Н
High)	LINUT	T.													
Course			and	مامد	cific	otior	∙ of	mok	مان	omm	unica	tion s	ustom	s. Intro	duction
Content	Paging	J SV	stem	s V	Virel	ess	telen	hon	ν T	ruckir	unica 19 svs	stems	Cellı	ılar tel	enhony
	Person	al s	atelli	ite c	omn	nunio	catio	n sv	, stem	is. W	ireless	acce	ss to	the loc	al area
	networ	rks.						- 5		- ,					
	Eleme	ents	of di	igita	l coi	nmu	nica	tion	syst	tems 1	theory	: Mul	ltiple a	access r	nethods
	used in	n mo	bile	com	mun	icatio	ons,	Metl	nods	of du	plex ti	ransmi	ssion,	Compe	ting for
	channe	el aco	cess,	X.25	- a j	proto	col f	for a	pack	cet sw	itching	g netw	ork.		
		II:			11	1	4.1.	. 1		N. T. N. 17	r	1 4 7 7	DC .		
	First	gene		on (Ilulai	r Sv	lar stom		pnon IMT	Δrc	INIVI hiteot		I ANI	rs e	ared by	S: FIISU
	Typics	ation al Ma	hile	Stat	ion A	And]	s, r Rase	Stat	ion l	Design	ure, e i The	Overv	view O	of AMP	S
	GSM	cellu	ilar	telen	hon	$\mathbf{v}:\mathbf{I}$	ntro	duci	tion.	Basic	c GSN	I Arch	itectu	re Basi	c Radio
	Transr	nissi	on F	aran	neter	s Of	f Th	e G	SM	Syster	n, Lo	gical (Chann	el Desc	cription,
	GSM	time	hie	rarch	iy, C	SSM	bur	st st	ructu	ires, I	Descri	ption	Of Th	ne Call	Set-Up
	Procee	lure,	Han	dove	er, Ei	nsuri	ng P	rivac	y A	nd Au	thenti	cation	OfA	User.	-
	UNIT	III:													
	Data	Trai	ısmi	ssior	ı in	GSI	M :(Gene	ral I	Packet	Radi	o Serv	vice –	GPRS	, GPRS
	system	n arc	hitec	ture,	GPI	KS se	ervic	es.	C -		Т. 4		line 1	1 a 4 : 4	ing De
	CDM	A IN		bile			inica	ation 1 N/1	l Sy:	stems	- Int	troduci	tion, I	viotivat	ion For
	Consid	onsidering Cdma As A Potential Multiple Access Method													

17IT4801B – MOBILE COMPUTING

	UNIT IV:
	Mobile Network Layer : Mobile IP, Entities and terminology, IP packet
	delivery, Agent discovery, Registration, tunneling and encapsulation,
	optimization, IPv6.
	Satellite systems : History, Applications, Basics – GEO, LEO, MEO, Routing,
	Localization, Handover.
Text books	Text Book(s):
	[1] Krzysztof Wesolowski, "Mobile Communication Systems", Wiley
	publication, 2002
Reference	[2]Jochen Schilller ,"Mobile Communication ", Addision wisely, Pearson
books	Education, 2003
	Reference Books:
	[1]W. Frank Ableson, Robi sen, Chris King, "Android IN ACTION ",
	ThirdEdition, Dreamtech Press, 2011
	[2] Mobile Computing By Rajkamal (Oxford), 2007
	[3] Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober,
	"Principles of Mobile Computing", Springer, 2006
E-resources	[1] Prof Soumya Kanti Ghosh, IIT Kharagpur, Mobile Computing,
and other	https://www.digimat.in/nptel/courses/video/106105167/L01.html
digital	[2]. Prof. Bikash Kumar Dey, IIT Bombay, "Digital Communication", May 2020,
material	https://freevideolectures.com/course/2311/digital-communication
	[3]. Prof Ranjan Bose, IITDelhi, "Mobile Radio Propagation",
	https://nptel.ac.in/courses/117/102/117102062/

Course Category:		Progran	nme El	ective-	·VI				Cred	its:					3	
Course Type	:	Theory							Lectu	ire-T	utor	ial-P	racti	ce:	3-	-0-0
Prerequisites	s:	17IT36 Develor	02 : We oment	eb Prog	gram	ming	and		Cont	inuou	ıs Ev	alua	tion:		30)
									Seme	ster	end I	Evalu	atio	1:	7()
								ľ	Total Marks:							00
Course	Upo	on succe	essful c	omple	tion o	of the	cours	se, tl	he stu	dent v	will b	e abl	e to:			
Outcomes	CO	1 Bui	uild applications based on XML using Document Object Model and Simp											Simple		
		API	PI for XML											1		
	CO	2 Und	iderstand the basic principles and standards of Service-Oriented													
		Arc	Architecture													
	CO	3 Ana	Analyze web services using technology elements													
	CO	4 Buil	Build SOA-based applications for intra-enterprise and inter-enter										erprise			
		app	ication	s.							1					1
Contributio		DO	DO	DO	Р	Р	Р	Р	Р	Р	Р	Р	Р		2	DSO
n of Course			2		0	0	0	0	0	0	0	0	0	PS(J	PSU
Outcomes		1	2	3	4	5	6	7	8	9	10	11	12	1		2
towards	CO	1 T	н											т		н
of Program	0		11											Ľ		11
Outcomes	CO	2	L	Н								Μ				L
(L-Low, M-	CO	3	М		Н							L				М
Medium, H- High)	CO	4 L	Н		Н							Н	Н	L		Н
Course	UN	IT I B	UILDI	NG X	ML-	BAS	ED A	PPI	LICA	ΓΙΟΝ	NS		•			
Content	Par	sing XN	1L – us	ing D0	OM,	SAX	-XN	1L T	ransfo	ormat	ion a	nd X	SL –	XSL		
	For	matting	– Mod	eling l	Datab	ases	in XN	ΛL.								
	UN	IT II S	ERVIC	CE OR	IEN	TED	ARC	HI	ГЕСТ	URE	1					
	Cha	aracteris	tics of	SOA,	Com	paring	g SO	4 wi	ith Cli	ent-S	erver	and	Distr	ibute	d	
	arch	nitecture	es – Be	nefits	of SC	РА —	Prin	ciple	es of S	ervic	e orie	entati	on –	Servi	ce	
	laye	ers.			CEC											
	UN		VEB S	EKVI	CES	м							d:~~	~	_	
	Ser	vice des	Criptio Evolor	ns - w	SDL	-M	essag	ing rotic	with S	DAP	- Se	rvice		overy	' — ati	UDDI
		TT IV F		INC S		$\frac{1}{\mathbf{R} \mathbf{A} \mathbf{S}}$	FD A		$\frac{m-c}{1C\Lambda}$	FION	jgrap. JS	liy −v	NS 1	1 a115a	cu	0115.
	Ser	vice Ori	ented #	nalvs	is and	d Des	ion _	Ser	vice M	fodel	ing _	Desi	on st	andar	·de	and
		delines -	— Con	nositi	n = 0	WS-F	SPFL	- W	VICC IV	ordin	ation	-W	S-Pol	liev –	. W	unu /S-
	Sec	urity – S	SOA su	ippositi	in J2	EE.		•	10 00	orum	ution	•••	010	ney	•••	5
Text books	Tex	t Book	(s):	FF010												
and		[1].Ror	Schm	elzer e	et al.	"XM	L an	d W	eb Se	rvice	s", Pe	earso	n Ed	ucatio	on,	2008.
Reference		[2].The	mas Ei	l, "Sei	rvice	Orier	nted A	Arch	itectur	e: Co	oncep	ts, Te	echno	ology	, ar	ıd
books		Desi	gn", Po	earson	Educ	cation	, 200	5.			1	-		0,7		
	Ref	ference	Book(s	s):												
		[4]. Frai	nk P.C	oyle, '	'XM	L, W	eb S	ervi	ces an	d the	e Dat	a Re	volut	tion",	P	earson
		Education, 2002														

17IT4801C - SERVICE ORIENTED ARCHITECTURE

DEPARTMENT OF INFORMATION TECHNOLOGY, V.R.SIDDHARTHA ENGINEERING COLLEGE

	 [5]. Eric Newcomer, Greg Lomow, "Understanding SOA with Web Services", Pearson Education, 2005 [6]. Sandeep Chatterjee and James Webber, "Developing Enterprise Web Services: An Architect's Guide", Prentice Hall, 2004. [7]. James McGovern, Sameer Tyagi, Michael E.Stevens, Sunil Mathew, "Java Web Services Architecture", Morgan Kaufmann Publishers, 2011.
E-resources and other digital material	 [1].Prof.Umesh Bellur IIT Bombay, Service Oriented Architectures with web services https://www.youtube.com/watch?v=PZfYM48Gnj8&list=PL_uaeekrhGzK2 FapcTxvuuXOwCPSZvFn3 [2]. Prof Soumya Kanti Ghosh, Cloud Computing Web services Service Oriented Architecture, IIT, Kharagpur http://www.infocobuild.com/education/audio-video-courses/computer- science/CloudComputing-IIT-Kharagpur/lecture-10.html [3]. https://freevideolectures.com/course/3616/java-j2ee-and-soa/45 [4] .https://www.protechtraining.com/service-oriented-architecture-and-web- services-pt15514

Course	Pro	gram	me E	lectiv	e-VI		Credit	s:		3	3				
Category:	Th						Laster		+	1 Duo	ation	. 2	0.0		
Course Type		T250	1.	Sc	fturo		Contin	re-1u		: 3	<u>-0-0</u>				
rrerequisites	Ens	gineer	ing	50	ntwai	C	Contin	luous) Eva	5	50				
	,		0				Semes	ter ei	nd Ev	7	70				
						'	Total 1	Mark	ks:	1	100				
Course	Upon	succe	ssful	comp	oletion	n of	of the course, the student will be able to:								
Outcomes	CO1	CO1 Understand different metrics associated with Software Development												and	
		evaluation													
	CO2	CO2 Apply quality measurement , metrics and quality plan for software													
		projects.													
	CO3	Analyze various SQA standards and software process assessments													
	CO4	O4 Identify quality factors, quality metrics and SQA models and their impact												npact	
		on t	n the final product.											DC	
Contribution		P	P	P	P	P	P	P	P	P	P	P	P	PS 0.1	PS
Outcomes			$\left \begin{array}{c} 0 \\ 2 \end{array} \right $	$\frac{0}{2}$		5	0		0 °	0	10	0	$\begin{vmatrix} 0 \\ 12 \end{vmatrix}$	01	02
towards	COL	1	2	3	4	3	0	/	0	9	10	11 T	12 T	п	т
achievement	C01	М			м							M		M	
of Program	CO_2	I			111							111	I	H	I
Outcomes	CO4	L			I.							Н	L	M	L
(L-LOW, M- Medium H-	001				Ľ										
High)															
Course	UNIT	'I				1					I		I		
Content	Softw	are N	letrio	cs: No	eed of	f So:	ftware	Meas	surem	nent, I	Defini	tion of	of Sof	Ìware	
	Metrie	es, Cla	assifi	catior	n of S	oftw	are M	etrics	, Ent	ities to	be N	Measu	ired, S	Size of	•
	Metrie	CS.													
	Testi	ng m	etric	s foi	r Mo	onit	oring	and	Cor	ntrolli	ing t	the T	festin	ig Pro	pcess:
	Measu	areme	nt Ol	bjecti	ves f	or I	esting	, Att	ribute	es and	1 Cor	respo	nding	g Metr	ICS IN
	Softw Effort	are i	estin	g, A turol		tes,	and I	2Sum Usod	for T	moa Tostini	els lo x Inf	or es	ion E	low M	lotrico
	Used	s, Alt for Ta	estinc	$C_{\rm V}$	clome	tic	Compl	evity	Mea	sures	g, III for T	Cestin	σ Ευ	nction	Point
	Metrie	cs for	Testi	ng T	est Pa	oint	Analy	sis (T	PA)	Suics	101 1	csum	g, 1 u		1 Unit
	UNIT	' II	1 0001					<u>, , , , , , , , , , , , , , , , , , , </u>							
	Produ	ict M	etrics	s: Sof	ftware	e Qu	ality, I	Metri	cs for	analy	/sis m	nodel,	Metr	ics for	
	Desig	n moc	lel, M	letric	s for s	sour	ce cod	e, Me	etrics	for Te	esting	, Met	rics f	or	
	Maint	enanc	e.												
	Metri	cs for	· Pro	cess	and F	Proj	ects: N	Aetric	es in	the Pi	ocess	s and	Proje	ct Dor	nains,
	Software Measurement, Metrics for Software Quality, Integrating metrics within														
	the software process, Metrics for Small Organization, Establishing a Software														
	metric	rrog	ram.												

17IT4801D - SOFTWARE METRICS AND QUALITY MANAGEMENT

	UNIT III
	Quality Management: Quality concepts, Software Quality Assurance, Software
	Reviews, Formal Technical Reviews, Statistical software Quality Assurance,
	Software reliability, The ISO 9000 Quality Standards, The SQA plan.
	UNIT IV
	Software Quality Management: Software Quality, Broadening the concept of
	Quality, Benefits of Investment on Quality, Quality Control and Quality
	Assurance, Quality Management, Quality Factors, Methods of Quality
	Management, Software Quality Metrics, SQA Models
Text books	Text Books:
and	[1]. Naresh Chauhan, Software Testing- Principles and Practices, Oxford Higher
Reference	Education, 2010.
books	[2]. Roger S. Pressman, Software Engineering- A Practitioner's Approach,
	McGraw-Hill international sixth edition, 2005.
	Reference Books:
	[3]. Norman Fenton, James Bieman, Software Metrics – A Rigorous and Practical
	Approach, CRC Press, 2014.
	[4]. Stephen H.Khan, Metrics & Models in Software Quality Engineering, second
	edition, Addison Wisley, 2004
E-resources	Web resources:
and other	[1]. <u>http://aima.cs.berkeley.edu/ai.html</u>
digital	[2]. <u>http://airesources.blogspot.in/</u>
material	[3]. <u>https://www.youtube.com/watch?v=KqDlDubS-OU</u>

Course Category:		Project								Credits:							9	
Course Type: Pr			Practical							Lecture-Tutorial-Practice:						0-5-8		
Prerequisites	Mi	Mini Project							Continuous Evaluation:						30			
										Semester end Evaluation:						70		
										Total Marks:						100		
Course	Upon successful completion of the course, the student will b																	
Outcomes	CC	CO1 Apply appropriate research methodology to provide a solution to the chosen problem														iosen		
	CO2 Design, develop and test software using current techniques.																	
	CC	CO3 Prepare a comprehensive report of the project work using mo											mode	odern tools				
	CC	CO4 Demonstrate and Communicate the project objectives and outcomes in ar effective manner.													in an			
Contributio n of Course Outcomes			PO 1	PO 2	PO 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	PSO 1)]	PSO 2	
towards	CC)1	М	Н	Н	Н	М				Μ			Μ	Μ		М	
of Program	CC)2	L	М	Н	Μ	Н						Μ	Μ	M		М	
Outcomes	CC)3						Н	Μ	Н	Μ	Μ	L	L	L		М	
(L-Low, M- Medium, H- High)	CO)4						L	М	М	Н	Н		М	L		L	
Course Content	Ma the	ajor e wo	Proje ork as j	ct invo per pre	olves o epared	contin worl	nuatio c plar	on of and	` Miı preț	ni Pro pare a	ject. detai	The d	objec oject	tive i repo	s to c rt.	om	plete	

17IT5851 - MAJOR PROJECT