NOIDA INSTITUTE OF ENGGINEERING & TECHNOLOGY, GREATER NOIDA, GAUTAM BUDDH NAGAR (AN AUTONOMOUS INSTITUTE)



Affiliated to

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY, LUCKNOW



For

Master of Computer Applications (Integrated) Third Year

(Effective from the Session: 2024-25)

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA (An Autonomous Institute) Master of Computer Applications MCA-INT <u>Evaluation Scheme</u> SEMESTER V

S.No Subject Codes		Subjects	Type of Subject	Periods		Evaluation Schemes			End Semester		Total	Credit		
	U	y		L	Т	Р	СТ	ТА	Total	PS	ТЕ	PE		
1	AMICA0503	Software Testing and Applications	Mandatory	3	1	0	30	20	50		100		150	4
2	AMICA0502	Web Technology	Mandatory	3	1	0	30	20	50		100		150	4
3		Departmental Elective-I	Departmental Elective	3	0	0	30	20	50		100		150	3
4	AMICA0501	Design and Analysis of Algorithms	Mandatory	3	1	0	30	20	50		100		150	4
5	AMICA0504	Organizational Behavior	Mandatory	4	0	0	30	20	50		100		150	4
6	AMICA0552	Web Technology Lab	Mandatory	0	0	4				50		50	100	2
7	AMICA0551	Design and Analysis of Algorithms Lab	Mandatory	0	0	4				50		50	100	2
8	AMICA0553	Software Testing and Application Lab	Mandatory	0	0	4				50		50	100	2
9	AMICA0559	Internship Assessment-II	Mandatory	0	0	2				50		50	100	1
10	AMICANC0501/ AMICANC0502	Constitution of India, Law and Engineering / Essence of Indian Traditional Knowledge	Compulsory Audit	2	0	0	30	20	50		50		100	NA
		*Massive Open Online Courses	*MOOCs											
		TOTAL											1150	26

* List of MOOCs Based Recommended Courses for Third year (Semester-V) MCA (Int) Students

Sr. No.	Subject Code	Course Name	University / Industry Partner Name	No. of Hours	Credits
1	AMC0314	Testing Fundamentals	Infosys Wingspan (Infosys Springboard)	8h 27m	
2	AMC0315	HTML5 - The Language	Infosys Wingspan (Infosys Springboard)	13h 17m	

PLEASE NOTE: -

- Internship(2-3weeks) shall be conducted during summer break after IV semester and will be assessed during V semester
- Compulsory Audit Courses (Non Credit AMICANC0501/AMICANC0502)
- > All Compulsory Audit Courses (a qualifying exam) has no credit.
- > Total and obtained marks are not added in the Grand Total.

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE:Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

List of Departmental Electives: -

S. No.	Subject Code	Subject Name	Type of Subject
1	AMICA0511	Artificial Intelligence	Departmental Elective-I
2	AMICA0512	Fundamentals of Digital Marketing and Optimization	Departmental Elective-I
3	AMICA0513	CRM Fundamentals	Departmental Elective-I

NOIDA INSTITUTE OF ENGINEERING & TECHNOLOGY, GREATER NOIDA (An Autonomous Institute) Master of Computer Applications MCA-INT <u>Evaluation Scheme</u> SEMESTER VI

				Periods		Evaluation Schemes				End				
							Semester 7					Total	Credit	
S.No	Subject Codes	Subjects	Type of Subject	L	Т	Р	СТ	ТА	Total	PS	TE	PE		
1	AMICA0602	Computer Graphics and Multimedia	Mandatory	4	0	0	30	20	50		100		150	4
2		Departmental Elective-II	Departmental Elective	3	1	0	30	20	50		100		150	4
3	AMICA0603	Computer Networks	Mandatory	3	1	0	30	20	50		100		150	4
4	AMICA0601	Advance Java	Mandatory	3	1	0	30	20	50		100		150	4
5	AMICA0604	Distributed System	Mandatory	4	0	0	30	20	50		100		150	4
6	AMICA0653	Computer Network Lab	Mandatory	0	0	4				50		50	100	2
7	AMICA0652	Computer Graphics and Multimedia Lab	Mandatory	0	0	4				50		50	100	2
8	AMICA0651	Advance Java Lab	Mandatory	0	0	4				50		50	100	2
9	AMICANC0602/ AMICANC0601	Essence of Indian Traditional Knowledge/ Constitution of India, Law and Engineering	Compulsory Audit	2	0	0	30	20	50		50		100	NA
		*Massive Open Online Courses	*MOOCs											
		TOTAL											1050	26

* List of MOOCs Based Recommended Courses for Third year (Semester-VI) MCA (Int) Students

Sr. No.	Subject Code	Course Name	University / Industry Partner Name	No. of Hours	Credits
1	AMC0222	Network Fundamentals	Infosys Wingspan (Infosys Springboard)	37h 57m	
2	AMC0316	Java 11 Beyond Basics	Infosys Wingspan (Infosys Springboard)	33h 13m	

PLEASE NOTE: -

Compulsory Audit Courses (Non Credit – AMICANC0602/AMICANC0601)

- All Compulsory Audit Courses (a qualifying exam) has no credit.
- > Total and obtained marks are not added in the Grand Total.

Abbreviation Used:

L: Lecture, T: Tutorial, P: Practical, CT: Class Test, TA: Teacher Assessment, PS: Practical Sessional, TE: Theory End Semester Exam., CE: Core Elective, OE:Open Elective, DE: Departmental Elective, PE: Practical End Semester Exam, CA: Compulsory Audit, MOOCs: Massive Open Online Courses.

List of Departmental Electives: -

S. No.	Subject Code	Subject Name	Type of Subjects
1	AMICA0611	Machine Learning	Departmental Elective-II
2	AMICA0612	Fundamentals of Digital Marketing and Analytics	Departmental Elective-II
3	AMICA0613	CRM Administration	Departmental Elective-II



NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY GREATER NOIDA-201306 (An Autonomous Institute) School of Computer Applications

Subject Nan	ne: Software T	esting and Applications			L-7	Г-Р [3-1-0]		
Subject Cod	e: AMICA05	03	Appli	icable in D	epartment: MCA	-Integrated		
Pre-requisite	e of Subject: 1	Basic knowledge of Computer Science	е.					
Course Obje strategies, me	ective: Study f	fundamental concepts of software testings.	ng and its application in va	rious scena	rios withthe help d	ifferent testing		
		Course C	Dutcomes (CO)					
Course outc	ome: After con	npletion of this course students will be	able to:			Bloom's Knowledge Level(KL)		
CO1	Describe the concepts of software testing.							
CO2	Demonstrate understanding of how different development and testing practices, and different constraints on testing, may apply in optimizing testing to different Contexts.							
CO3	Apply test mar	nagement principles for resources, strate	egies, planning, project con	trol, and ris	k management.	K3		
CO4	Analyze the pr	oject factors that drive the test prioritie	es and test approach.			K4		
CO5	Design how te	sting activities and work products align	n with project objectives, m	easures, and	d targets.	К5		
		S	yllabus					
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping		
1. Introductio n	Introduction	Introduction: Software Testing, Importance of testing, Roles and Responsibilities Testing Principles	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 1	C01		

		Attributes of Good Test, Test Case, Test Scenario, Bug, Failure , Defect , Fault ,SDLC , STLC.				
2. Types of Testing	Testing Strategies Categorizatio n of testing methods	Testing Strategies:Unit Testing,Integration Testing, System Testing,Smoke,RegressionSmoke,RegressionAcceptanceTesting.CleanRoomSoftwareEngineering.Functional/Non-Functional Testing.Testing ToolsCategorization of testing methods:Manual Testing,Automation TestingandAutomated Testing Vs.ManualTesting.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 2 to 6, 13	CO2
3. Non Functional Testing	Performance Test	Performance Test: -Load testing, Stress testing, Scalability testing, Volume Testing, Configuration Testing, Regression Testing, Compatibility Testing, Recovery Testing, Maintenance Testing, Documentation Testing, Usability Testing, Efficiency Testing , Reliability Testing , Accountability Testing, Security Testing , Portability Testing.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 8 to 10	CO3
4. Software Testing Methodolog ies	Types of Testing	Types of Testing: Validation & Verification, White/Glass Box Testing, Black Box Testing, Grey Box Testing, Statement Coverage Testing, Branch Coverage Testing, Path Coverage Testing, Conditional Coverage Testing, Loop Coverage Testing, Boundary Value Analysis, Equivalence Class Partition, State Based Testing, Cause Effective Graph, Decision Table, Use Case Testing, Exploratory testing and Testing Metrics	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 7, 11	CO4

5. Software Testing Life Cycle & Test Cases	Software Testing Life Cycle Test Cases Design	Requirements Analysis/Design, Traceability Matrix, Test Planning, Objective, Scope of Testing, Schedule, Approach, Roles & Responsibilities, Assumptions, Risks & Mitigations, Entry & Exit Criteria, Test Automation, Deliverables. Write Test cases, Review Test cases, Test Cases Template, Types ofTest Cases, Difference between Test Scenarios and Test Cases. Test Environment setup, Understand the SRS, Hardware and software	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 12	CO5	
		Total		40L+20P			
		Te	xtbooks				
Sr. No		Boo	ok Details				
1.	Roger S.Press	man, Software engineering- A practitio	oner's Approach, McGraw-I	HillInternat	tional 7 Editions, 20)10	
2.	Software Testing: Principles and Practices by Srinivasan Desikan, 2017						
3.	Effective S	Software Testing: A Developer's Guide'	' by Maurício Aniche Editio	on: 1stYear	:: 2022		
		Refere	ence Books:				

Sr. No	Book Details
1.	Modern Software Engineering: Doing What Works to Build Better Software Faster by David Farley Edition: 1st Year: 2021
2.	The Complete Guide to Software Testing: A Complete Guide to Software Testing" by William C. Hetzel Edition: 3rd Year: 2019
3.	Effective Software Testing: A Developer's Guide by Maurício Aniche Edition: 1st Year: 2022
	Link: NPTEL/YouTube/Faculty Video Link:
UNIT 1	https://www.youtube.com/watch?v=sbW4RThXNL8
UNIT 2	https://www.youtube.com/watch?v=T0TynxN77oY&t=46s
UNIT 3	https://www.youtube.com/watch?v=Qc-a0tBpdQQ
UNIT 4	https://www.youtube.com/watch?v=BSjRmiYP7vg
UNIT 5	https://www.youtube.com/watch?v=NiDe8lj-wGs

Subject Name:	Web	Technology
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L-T-P [3-1-0]

Subject Code: AMICA0502

Applicable in Department: MCA-Integrated

Pre-requisite of Subject: Students are expected to be able to open command prompt window or terminal window, edit a text file, download, and install software, and understand basic programming concepts.

Course Objective: To Develop an ability to design and implement static and dynamic website.

		Course O	outcomes (CO)					
Course outco	ome: After com	pletion of this course students will be a	ble to:			Bloom's Knowledge Level(KL)		
CO1	Discuss the co	ncepts of Web Designing.				K1, K2		
CO2	Design a respo	onsive website using HTML and CSS.				K4		
CO3	Implement interactive webpages using HTML, CSS, and JavaScript.							
CO4	Apply web designing concepts by database connectivity with JDBC in the current market place							
CO5	CO5 Analyze and build dynamic web pages using client-side programming JavaScript and also Develop the web application using servlet and JSP.							
		Sy	llabus					
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping		
	Introduction	Web Technology, Web and web Protocols Governing Web, HTTP Protocol: Request and Response, Web browser and Webservers, Features of Web 2.0	Lectures, PPTS, Notes	8L	Assignment	CO1		

1. Introduction	Web Design	Concepts of effective web design, Web design issues including Browser, Bandwidth, display resolution, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation				
2. HTML & CSS	HTML Style sheets	Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, Frames and Framesets. HTML forms. Introduction to CSS, need for CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists Positioning using CSS	Lectures, PPTS, Notes	8L+5P	Experiment/ Program 1-13	CO2
3. Java script & Xml	JavaScript	Client-side scripting with JavaScript, variables, functions, conditions, loops and repetition, Popup boxes.	Lectures, PPTS, Notes	8L+5P	Experiment/ Program 14-29	CO3

	Advance JavaScript	JavaScript and objects, JavaScript toward objects-the DOM and web browser environments, Manipulation using DOM, forms and validations.				
	DHTML	Combining HTML, CSS and JavaScript, Events and buttons.				
	XML	Introduction XML				
4. JDBC & Java Beans	Java Database Connectivity (JDBC)	Introduction to JDBC, JDBC architecture, JDBC Connection steps, Perform JDBC manipulation, Statement, Prepared Statements, Transaction Processing	Lectures, PPTS, Notes	8L+5P	Experiment/ Program 30-35	CO4
	Java Beans	Introduction to Java Beans.				
5. Servlets & JSP	Servlets	Servlet Overview and Architecture, Servlet Life Cycle, Handling HTTP methods, Redirecting Requests to Other Resources, Session Tracking, Cookies, Session Tracking withHttp Session	Lectures, PPTS, Notes	8L+5P	Experiment/ Program 36-40	CO5
	Java Server Pages (JSP)	Introduction, Java Server Pages Overview, A First Java Server Page Example, Implicit Objects, Scripting, Standard Actions, Directives, Custom Tag Libraries.				

	Total	40L+20P						
	Textbooks							
Sr. No	Book Details							
1.	Bayross Ivan, "HTML, DHTML. JavaScript, and PHP", BPB Publications, 4th Edi	ition, 2019						
2.	Xavier, C, "Web Technology and Design", New Age International, Second edition	,2022						
3.	Internet and World Wide Web How to program, P. J. Deitel &H. M. Deitel, Pearso	n, 5thediti	on, 2012					
	Reference Books:							
Sr. No	Book Details							
1.	Margaret Levine Young, "The Complete Reference Internet", TMH, 2022							
2.	Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Web (2018)	Graphics b	y Jennifer Robbins	Edition: 5th,				
3.	Santosh Kumar K "JDBC, Servlets, and JSP Black Book" "Publisher- Dreamtech	Press;" "E	dition- Second Edit	ion", 2016				
	Link: NPTEL/YouTube/Faculty Video Link:							
UNIT 1	https://www.youtube.com/watch?v=JsbxB2l7QGY							
UNIT 2	https://www.youtube.com/watch?v=h_RftxdJTzs							
UNIT 3	https://www.youtube.com/watch?v=uUhOEj4z8Fo							
UNIT 4	https://www.youtube.com/watch?v=eEqPrlu28Sc							
UNIT 5	https://www.youtube.com/watch?v=OuBUUkQfBYM							

Subject Code	: AMICA05	01	App	olicable in Dep	artment: MCA-	Integrated
Pre-requisite	of Subject: E	Basic knowledge of programming, data structur	res and mathematics.			
Course Object Red black Tre	tive : Analyze	e asymptotic performance of algorithms design d Fibonacci heap and learn the concept of comp	ned using different computationation	al model. Study	advanced data st	ructures lik
	,	Course Ou	tcomes (CO)			
Course outco	me: After com	pletion of this course students will be able to:				Bloom's Knowledg e Level (KL)
CO 1	Analyze and u	inderstand the asymptotic performance of algo	orithms and write rigorous corre	ectness proofs f	or algorithms.	K2, K4
CO 2	Apply and use	efficient sorting and searching techniques acc	ording to the problem.			K3
CO 3	Apply divide	and conquer and greedy algorithm approach for	or solving different problems su	ch as Prim's &	Kruskal's etc	K3
CO 4	Apply importa and bound.	ant algorithmic design paradigms and methods	of analysissuch as dynamic prog	gramming, back	ctracking, branch	K3, K5
CO 5	Demonstrate t	ractable and intractable problems and graph alg	gorithms			K3
		Syll	abus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. I.	Fundamental s of Algorithms:	Problem Definition, Algorithm Specification-Simple example of design and analysis of time complexity, Performance Analysis: Space Complexity and Time	Lectures, PPTS, Notes	8L+4P	Assignment	C01

complexity, Asymptotic Notation.

Orders of Magnitude (Asymptotic

notations), Growth rates, Average and

Subject Name: Design And Analysis of Algorithms

Introduction

Analysis of Algorithms:

		worst case analysis, Analyzing control				
		statements, Recurrence Relations-				
		substitution, change of variables.				
2. Sorting and searching	Sorting and searching algorithms:	Selection sort, Bubble sort, Insertion sort, Sorting in linear time: Count sort, Binary search & linear search. Nave String Matching & Rabin-Karp Algorithm. Binary Search Tree Algorithm.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 1-5	CO2
3.Divide and Conquer and Greedy Methods	Divide and Conquer and Greedy Methods	Divide and Conquer concepts with Examples Such as Quick sort, Merge sort, Strassen's Matrix Multiplication, ConvexHull, Searching. Greedy Methods with Examples Such as Activity Selection, Task scheduling, Knapsack (Fractional), Minimum Spanning Trees – Prim's and Kruskal's, Algorithms, Single Source Shortest Paths - Dijkstra's and Bellman Ford Algorithms, Huffmancodes	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 6-8	CO3
4. Dynamic Programmin g, Branch and Bound	Dynamic Programmin g	Dynamic Programming concepts, Examples Such as All Pair Shortest Paths – Warshal's and Floyd's Algorithms, 0/1 Knapsack, Longest Common Sub Sequence, Matrix Chain Multiplication, Resource Allocation Problem.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 9-11	CO4
	Branch and Bound	Branch and Bound with Examples Such as Travelling Salesman Problem, Graph Coloring.				
5.Graph Algorithm	Graph Algorithms:	An introduction using graphs and games, Traversing Trees–Pre conditioning, Depth First Search, Undirected Graph, Directed		8L+4P	Experiment/ Program 12	

ano Backtra	d ackin]	Graph, Breath First Search. Balanced, m-way and RB-Tree.	Height	Lectures, PPTS, Notes			CO5
g	I	, Backtracking ;	The Knapsack Problem, the 4/ problem, Sum of Subsets.	8/n-queens				
			Total			40L+20P		
				Tex	tbooks			
Sr.			Boo	ok Details				
1.	Thom	as H. Coreman	n, Charles E. Leiserson and Rona	ld L. Rivest	, "Introduction to Algorithms", MIT	Press, 4th	Edition, 2022	
2.	Anany Algori	y Levitin, "Intr ithm Design ar	oduction to the Design and Anal nd Applications" by Michael T. (ysis of Algo Goodrich and	orithms", Pearson Publication, 3rd Ed d Roberto Tamassia Wiley Publicati	dition, 2012 on. 1st Edit	2 ion. 2015	
3.	3. Thomas H. Coreman, Charles E. Leiserson and Ronald L. Rivest, "Introduction to Algorithms", MIT Press, 4th Edition, 2022							
	Reference Books:							
Sr. No			Boo	ok Details				
1.	Design	n and Analysis	s of Algorithms, S. Sridhar, 2014					
2.	Jon K	leinberg and É	avaTardos, Algorithm Design, Pe	arson, 2013.				
3.	Micha	el T Goodrich	and Roberto Tamassia, Algorith	m Design: F	Foundations, Analysis, and Internet l	Examples, S	Second Edition, Wi	ley, 2014
Link: NPTEL/YouTube/Faculty Video Link:								
Unit-I	Unit-I https://nptel.ac.in/courses/106106131							
Unit-II	https://	/www.youtube	e.com/watch?v=bE_MYkWukwI	&list=PLgjc	0A1c-mogMbecoTJWWSRL450gH	E6aw		
Unit-III	https://	/nptel.ac.in/cou	urses/106101060					
Unit-IV	https://	/nptel.ac.in/cou	urses/106101060					
Unit-V	V https://www.youtube.com/watch?v=5hPfm_uqXmw&list=PLm77mruelczpPDzLgp4UefbQRT4-cyJsW							

Subject Name: Organizational Behavior

L-T-P [4-0-0]

Subject Code: AMICA0504

Applicable in Department: MCA- Integrated

Pre-requisite of Subject: Basic understanding and foundational knowledge of general communication skills.

Course Objective: This course explores the theories and concepts of organisational behaviour and their application in the workplace. It covers individual behaviour, group dynamics, and managerial processes to enhance effectiveness. The Organizational Behaviour course focuses on a better understanding of the key factors that determine human behaviour in organisations. The course focuses on critical factors for understanding people's behaviour in organisational contexts from a socio-psychological point of view that play an essential role in people management. That is the basis of any leadership course in the rest of the program.

	Course Outcomes (CO)							
Course outco	ome: After completion of this course, students will be able to:				Bloom's			
					Knowledge			
~~~~					Level(KL)			
CO1	Demonstrate a sound understanding of the prominent theories	, concepts ar	nd models t	hat are used to understand and	Analyzing			
	analyze human behaviour in organizations				(K4)			
CO2	Analyze the elements of group dynamics and solve applied pr	oblems related	ed to group	behavior	Applying			
					(K3)			
CO3	Develop practical insights into perception and apply motivation	onal theories	for effectiv	vely managing the Organization	al <b>Applying</b>			
	people and processes				(K3)			
CO4	Apply conceptual knowledge of theory and models relevant to	leadership	and Change	e in organizations.	Applying			
CO5	5 Display a working understanding of organizations as institutions including issues of structure, power, politics and conflicts.							
	Syllab	us						
Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping			

Introductio n to OB, Personality & Attitude	Fundamentals of individual behaviour, Models of OB, Organizational Climate and Culture, Personality- Determinants of Personality, types of personality, Personal effectiveness. Attitudes: Meaning, Types, Components, Theory of attitude formation	Discussion, Interactive lecture	8	Compare and contrast the culture and structure of any two organisations in the same industry.	C01
Foundation of Group Behaviour	Group: Meaning, types, group dynamics, group cohesiveness, Team Building, Tuckman Model of Team Development. Meaning of Interpersonal Behaviour& Interpersonal skills, Transactional Analysis, Johari Window	Discussion, Simulation, Roleplay, Group activities	8	Self-Analysis using Johari window Role plays on Transactional Analysis	CO2
Motivation, Perception	Meaning & definition, Traditional theory of Motivation: Maslow's, Herzberg's, McClelland, Contemporary theories of Motivation: Self Determination Theory, Self-Efficacy Theory, Vroom's Expectancy Theory, Equity Theory, Reinforcement Theory. Meaning, process, principles and errors of perception, managerial &behavioural applications of perception.	Interactive lecture, Case study	8	Case study discussion	CO3
Leadership, Organizatio nal Change	Leadership, types of leaders and leadership styles, traits and qualities of effective leader, trait theory, LSM – Leadership Situational Model, Meaning of organizational change, approaches to managing organizational change, creating a culture for change, implementing the change, Kurt Lewin Model of change.	Discussion, Leadership games, role plays	8	Select a business leader of your choice. Identify its leadership style and analyse its impact on team performance.	CO4
Organizatio nal Power and Politics, Conflict Managemen t	Organizational Power: Definition, Types of powers, Sources and Characteristics, Effective use of power, Organizational Politics: Factors and Impact. Organizational conflict: Constructive and Destructive conflicts, Conflict Process, Strategies for resolving destructive conflict	Discussion, Case study	8	"The political power game is very real in today's organizations" Explain this statement in terms of the discussion in the unit and support your answer with appropriate examples from the industry.	CO5
Total			40		

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	Textbooks					
Sr No	Book Details					
1.	Robbins, S. P., Judge, T. A., & Vohra, N. (2019). Organizational behaviour by pearson 18e. Pearson Education India.					
2.	Pareek Udai (2018). Understanding Organizational Behaviour. Oxford University Press.					
	Reference Books					
Sr No	Book Details					
1	Luthans, F., Luthans, B. C., & Luthans, K. W. (2021). Organisational behaviour: An evidence-based approach fourteenth edition. IAP.					
2	Buchanan, D., & Badham, R. (2020). Power, politics, and organisational change. Sage.					
	Link: NPTEL/YouTube/Faculty Video Link:					
1. 2.	https://openstax.org/books/principles-management/pages/10-1-organizational-structures-and-design http://www.mbaexamnotes.com/organization-change-and-development.html					

Subject Name: Artificial Intelligence

Subject Code: AMICA0511

**Applicable in Department: MCA-Integrated** 

Pre-requisite of Subject:	Basic Knowledge of Transform techniques
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Course Objective: Introduce knowledge of historical perspective of AI and its foundations and familiarity with principles of AI toward problem solving, inference, perception, knowledge representation, and learning.

#### **Course Outcomes (CO)**

<b>Course outc</b>	Course outcome: After completion of this course students will be able to:			
		Knowledge		
		Level(KL)		
CO 1	Describe the history of Artificial intelligence (AI) and its foundations	K2		
CO 2	Apply principles of AI in solutions that require problem solving, inference and perception.	К3		
CO 3	Explain the important AI techniques, including intelligent search methods and solutions	K2		
CO 4	Apply the concepts of knowledge & reasoning of predicate logic and representing knowledge using rules & Probabilistic reasoning	К3		
CO 5	Evaluate the AI techniques presented and apply them to real world problems	K4		

#### Syllabus

Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introductio n	Introduction to AI	Introduction to Artificial Intelligence, Historical developments of Artificial Intelligence, well defined learning problems, Designing a Learning System, Basics of problem-solving: problem representation paradigms, state space, Problem reduction, Constraint satisfaction, Applications of AI	Lectures, PPTS, Notes	8L	Assignment	CO1

2. Search Techniques	Search Techniques	Searching for solutions, Uninformed Search Strategies: DFS, BFS, Informed Search Strategies: Local search algorithms and optimistic problems, adversarial Search, Search for games, minimax, Alpha - Beta pruning, Heuristic Search techniques, Hill Climbing, Best-first search, Means Ends Analysis, Iterative deepening Heuristic Search and A*.	Lectures, PPTS, Notes	8L	Assignment	CO2
3. Logic And Knowledge Representat ion	Logic And Knowledge Representati on	Introduction of Logic, Propositional Logic Concepts, Semantic Tableaux and Resolution in Propositional logic, FOPL, Semantic Tableaux and Resolution in FOPL, Logic Programming in Prolog. Production systems and rules for some AI problems: Water Jug Problem, Missionaries-Cannibals Problem, n- Queen problem, monkey banana problem, Travelling Salesman Problem. Knowledge representation, semantic nets, partitioned nets, parallel implementation of semantic nets. Frames, Common Sense reasoning and thematic role frames.	Lectures, PPTS, Notes	8L	Assignment	CO3
4. Expert System	Expert System	Architecture of knowledge-Based System, Rule-based systems, Forward and Backward Chaining, Frame Based systems. Architecture of Expert System, Agents and Environment, Forward & Backward chaining, Resolution, Probabilistic reasoning, Utility theory, Hidden Markov Models (HMM), Bayesian Networks.	Lectures, PPTS, Notes	8L	Assignment	CO4

5. Planning And Uncertainty	Planning And Uncertainty	Planning with state Space Search, Conditional Planning, Continuous planning, Multi-Agent Planning, Forms of learning, inductive learning, Reinforcement Learning, learning decision trees, Neural Net learning and Genetic learning. Probabilistic Methods, Bayesian Theory, Dempster Shafer Theory, Bayes Network. 19 Evolutionary computations: Swarm Intelligence, ant colony optimization Agents, Intelligent Agents, Structure of Intelligent Agents, Virtual Agents, Multi-agent systems. Case Study: Health Care, E Commerce, Smart Cities.	Lectures, PPTS, Notes	8L	Assignment	CO5		
			40L					
		Те	xtbooks					
Sr. No		Во	ok Details					
1.	Stuart Russell, Peter Norvig, "Artificial Intelligence – A Modern Approach", Pearson Education. Fourth Edition 2021.							
2.	Elaine Rich and Kevin Knight, "Artificial Intelligence", McGraw-Hill 3rdEdition 2010.							
	Reference Books:							
Sr. No		Во	ok Details					
1.	Patrick Henry Winston, "Artificial Intelligence", Pearson Education Inc., Third edition.							
2.	2. Python Machine Learning: Learn Python in a Week and Master It. An Hands-On Introduction to Artificial Intelligence Coding, a Project-Based Guide with Practical Exercises (7 Days Crash Course, Book 2) 2020.							
3.	Nils J.Nilsson, "Artificial Intelligence - A New Synthesis", Harcourt Asia Pvt. Ltd							
4.	AI in the Wil	d: Sustainability in the Age of Artificia	l Intelligence 2020.					
5.	Knowledge-Based Systems Techniques and Applications (4-Volume Set).							

	Link: NPTEL/YouTube/Faculty Video Link:				
Unit-I	https://nptel.ac.in/courses/106/106/106106198/				
Unit-II	https://nptel.ac.in/courses/111/107/111107137/				
Unit-III	https://nptel.ac.in/courses/106/106/106106202/				
Unit-IV	https://nptel.ac.in/courses/106/106/106106213/				
Unit-V	https://nptel.ac.in/courses/106/105/106105152/				

Subject Name: Fundamentals of Digital Marketing and Optimization

L-T-P [3-0-0]

Subject Code: AMICA0512

Applicable in Department: MCA-Integrated

**Pre-requisite of Subject:** Basic Marketing Concepts, Basic Knowledge of Computers

**Course Objective**: To introduce students about digital and social media marketing techniques and decisions on digital platforms. Identify the benefits and advantages to a business of using social media to engage an audience, Build, manage, and sustain an active social media community.

		Course O	Outcomes (CO)			
Course outcome: After completion of this course students will be able to:						
CO1	Describe impo	rtance of digital marketing.				K2
CO2	Reorganize ho platforms usin	w marketers use Google SEO projects to go a set of the good of the set of the	to influence purchasing and	l selling dec	cisions on digital	K2
CO3	Analyze the benefits of integrating traditional and digital marketing with Google SEO for sells and purchasing marketing strategies.					
<b>CO4</b>	Evaluate the b	enefits of search advertising for a busin	ness that uses social media t	to target an	audience.	K4
CO5	Implement an	active social media community by usin	g social media advertising.			K3
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introdu ction	Digital Marketing Landscape:	Digital Consumer Behavior, The Digital Customer Journey, The Digital Opportunity, Digital and Your Organization, Business Growth and Digital Marketing Principles: Key Digital Marketing Concepts, Traditional and Digital Marketing, 3i Principles, Integrating Traditional	Lectures, PPTS, Notes	8L	Assignment	CO1

		and Digital Marketing, Tools for Digital Marketing.				
	Content Marketing for Social:	Content Marketing, Content Types, Social Media Platforms, Content Creation Tools, Influencer Marketing, eBook and Whitepapers				
2. Content Marketing	Business Strategy:	Social Media : Social Media Platforms, Key Concepts of Social Media, Types and Primary Uses of Social Media Platforms, Benefits of Social Media to Business, Role of Social Media, Social Media Platforms for Business: Social Media Marketing Concepts, Key Social Media Platforms, Setting up Social on Key Platforms. The value of building Social Media Community.	Lectures, PPTS, Notes	8L	Assignment	CO2
3. Social Media Strategy	Social Content Strategy: Fundamental s:	Content Seeding, Social Media Formats, Content Promotion, Content Optimization, Influencer Marketing, Word of Mouth Marketing, Measurement and Tracking, Content Promotion Strategy, Audience Segmentation Facebook Marketing : Introduction to Facebook, The Value to Marketers, Page Management, Facebook Live, Messenger Facebook Ads and Marketing: Facebook Ads, Ads Manager, Strategy Process, Buying Channels and Ad Auctions	Lectures, PPTS, Notes	8L	Assignment	CO3

4.	Instagram and Snapchat: Basic	Social Apps: Introduction to Social Apps, Differentiating Social Apps Video, stories, live, Instagram Posts,				CO4
Instagram And	Features of	Snapchat Meanings, Snapchat Story,	Lectures, PPTS, Notes	8L	Assignment	
Snanchat	Instagram:	Basic Features Instagram				
Application s	Snapchat Marketing:	Instagram Account Overview, Audience Development, Advertising Overview, 3V Advertising, Ads Manager, SnapAds, Instagram Analysis, Snapchat Analysis, Campaign Setup, Snapchat Geofilters				
	Twitter Marketing:	Twitter Concepts, Platform Features, Profile Promotion and management, Hashtags, Analysis and Reporting.				
5. Twitter, LinkedIn And YouTube Application S	LinkedIn and Social Selling:	Social Selling and Personal Branding, The Benefits of Personal Branding, LinkedIn Concepts, Features and Functions, LinkedIn Social Plugins, LinkedIn Analytics. YouTube and Social Video Marketing: Misconceptions and Benefits, Platform Features, Channel Setup, Channel Promotion, Channel Management, YouTube Native Formats.	Lectures, PPTS, Notes	8L	Assignment	CO5
Total 40L						
Textbooks						
Sr. No		Bo	ok Details			
1.	Ryan Deiss &	Ryan Deiss & Russ Henneberry, "Digital Marketing for Dummies", Publisher: John Wiley & Sons, Inc ,2021				

2.	JayBaer, "Youtility", Publisher : Gildan Media, LLC,2013			
	Reference Books:			
Sr. No	Book Details			
1.	Dave Chaffey and Fiona Ellis-Chadwick , "Digital Marketing: Strategy, Implementation and Practice" , Pearson Publication, 2021 (7th Edition)			
2.	Ira Kaufman, Chris Horton, and Rajan Sambandam, "Digital Marketing: Integrating Strategy and Tactics with Values", 2nd Edition, 2022			
3.	Simon Kingsnorth, "Digital Marketing Strategy: An Integrated Approach to Online Marketing", 2020			
Link: NPTEL/YouTube/Faculty Video Link:				
Unit 1	https://www.coursera.org/learn/social-media-digital-marketing-fundamentals			
Unit 2	https://www.coursera.org/learn/social-media-social-content-strategy			
Unit 3	https://www.coursera.org/learn/facebook-instagram-snapchat-marketing			
Unit 4	https://www.coursera.org/learn/facebook-instagram-snapchat-marketing			
Unit 5	https://www.coursera.org/learn/twitter-linkedin-youtube-marketing			

Subject Name: CRM Fundamentals L-T-P					Г-Р [3-0-0]	
Subject Cod	e: AMICA0	513	Арр	licable in I	Department: MC.	A-Integrated
Pre-requisit	e of Subject:	Basic knowledge of computer, market	ing concepts and good com	munication	skills .	
Course Obje for Sales, Ma	ective: This course of the termination of terminat	ourse is designed to help in understandin ustomer Relations in an Enterprise.	ng the fundamentals of CRM	M which wil	l help in providing	g better services
		Course C	Dutcomes (CO)			
Course outc	ome: After cor	npletion of this course students will be	able to:			Bloom's Knowledge Level(KL)
CO 1	Discuss the ba	sic concepts of customer relationship n	nanagement.			K2
CO 2	Recognize strat	egy and framework of customer relation	ship management.			K2
CO 3	Acquire basics	s of cloud-based customer relationship r	nanagement.			K3
CO 4	Illustrate custor	mer relationship management in contex	t with business usecases.			K3
CO 5	Implement bas	sics of CRM.				K3
		S	yllabus			•
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introductio n	CRM	Definition, history, goals. Sources of CRM value. Components of CRM: people, process, technology.				
	Evolution of CRM:	Marketing and its principles, customer relations to CRM. Dynamics of Customer Supplier Relationships, Nature and context of CRM, Strategy	Lectures, PPTS, Notes	8L	Assignment	CO1

	Organization of CRM:	The relationship-oriented organization: Mission, Culture, Structure, People, Communication & Information Systems.				
2. CRM Strategy and Framework	CRM Strategy and Framework	Developing a CRM strategy. Customer oriented (C in CRM), Relationship driven, 360-degreeview of customer. CRM system features- functions, application, benefits and solutions. Importance of loyalty- active, passive, split, shifting and switchers, customer profiling, customer segmentation model, Customer Experience, relationship marketing and journey, Case study.	Lectures, PPTS, Notes	8L	Assignment	CO2
3. Solution Design and Architectur e	CRM system solution- specifications	Data Analysis, Solution Requirements. Types of CRM- On- Premise, cloud based. Pros and Cons of each. Integration CRM with other enterprise applications.	Lectures, PPTS, Notes	8L	Assignment	CO3
	The Technology of CRM:	Data warehouses and customer relationships, creating data mart model, components of operational data warehouse.				
4. CRM for Business	CRM for Business:	CRM in Sales, Service, Marketing, E-commerce. Social Customer Relationship Management. Analytical CRM: Predictive Analytics Vs Operational Analytics. Channel Partner Relationship management, Collaborative CRM (using data pooling), Business Benefits of	Lectures, PPTS, Notes	8L	Assignment	CO4

		Cloud Based System, SLAs, Practical Challenges.					
5. CRM implementa tion	Building CRM roadmaps:	Current processes, customers, strategic goals, technology issues, pilot and proof of concept projects. Preliminary Roadmap and its template, developing roadmap midstream. Design stage, custom development, integration, reporting, data migration, and implementation, testing, launching and application management.	Lectures, PPTS, Notes	8L	Assignment	CO5	
	Introduction to CRM tools:	ZOHO, Pega, Microsoft Dynamics 365, Sales force.					
Total				40L			
		Те	xtbooks				
Sr. No		Bo	ok Details				
1.	Francis Buttle	e and Stan Maklan, "Customer Relation	ship Management", 4th edit	tion 2019.			
2.	Michael Pearce, "Customer Relationship Management- How to develop and execute a CRM strategy", Business Expert						
3.	Francis Buttle, "Customer Relationship Management: Concepts and Technologies" 3rd Edition, 2016						
Reference Books:							
Sr. No	Book Details						
1.	V. Kumar and Werner Reinartz, "Customer Relationship Management: Concepts and Tools", Springer, 4th Edition 2018.						
2.	V.Kumar and Werner Reinartz, "Customer Relationship Management: A Databased Approach", Wiley Publication, 2018						
3.	3. Stanley A. Brown, "Customer Relationship Management: A Strategic Imperative in the World of E- Business", Wiley publication, 1st Edition, 2000						
Link: NPTEL/YouTube/Faculty Video Link:							

Unit 1	https://onlinecourses.nptel.ac.in/noc20_mg57/preview_
	https://archive.nptel.ac.in/courses/110/105/110105145/
Unit 2	https://www.youtube.com/watch?v=67ruTkrQXIY
Unit 3	https://www.youtube.com/watch?v=DE077z2kxVk
Unit 4	https://www.youtube.com/watch?app=desktop&v=120oaKkDssw
Unit 5	https://www.youtube.com/watch?app=desktop&v=120oaKkDssw

Subject	Name: Web Technology Lab	L-T-P [0-0-4]					
Subject	ect Code: AMICA0552 Applicable in Department: MCA-Integrated						
Course JavaScri	Course Objective: Design static and dynamic web pages using HTML and CSS, implementing client-side script programming using JavaScript. Learn how to connect database using JDBC with Project development. Learn Servlet API development and JSP application design.						
	Course Outcomes (CO)						
Course	outcome: After completion of this course students will be able to:	Bloom's Knowledge Level(KL)					
CO 1	Describe the concept of web designing and publishing website	K2					
CO 2	Apply and design web pages using HTML and CSS	K3, K5					
CO 3	Implement JavaScript code to add interactivity and dynamic behavior to webpages.	К3					
CO 4	Apply database connectivity using Java Database Connectivity (JDBC)	К3					
CO 5	Create dynamic web pages using JSP	K5					
	List of Practicals						
Sr No	Program Title	CO Mapping					
1	Write a program for different formatting tags used in HTML.	CO2					
2	Write a program for different types of list.	CO2					
3	Write a program for printing class time table showing use of rowspan and colspan.	CO2					
4	Program to show the use of target attribute with different values.	CO2					
5	Write a program to create a web page using image as hyperlink.	CO2					
6	Write a program to set a background image.	CO2					

7	Write a program to create a web page showing the use of font and text attribute of CSS.	CO2
8	Write a program to create a web page showing the use of color and background attribute of CSS.	CO2
9	Write html code to develop a webpage having two frames that divide the webpage into two equal rows.	CO2
10	Write a program to create a web page showing the use of inline, internal and External CSS.	CO2
11	Write a program to create a web page showing the use of implementation of BOX model in CSS.	CO2
12	Write a program to create a web page showing the use of CSS positioning.	CO2
13	Create your resume using HTML tags also experiment with colors, text, link, size and also other tags you studied.	CO2
14	Write a JavaScript Program to Print Hello World.	CO3
15	Write a JavaScript Program to Add Two Numbers	CO3
16	Write a JavaScript Program to Find the Square Root	CO3
17	Write a JavaScript Program to Calculate the Area of a Triangle	CO3
18	Develop simple calculator for addition, subtraction, multiplication and division operation using JavaScript	CO3
19	Write a JavaScript Program to Swap Two Variables	CO3
20	Write a JavaScript Program to Convert Celsius to Fahrenheit	CO3
21	Write a JavaScript Program to Convert Decimal to Binary	CO3
22	Write a JavaScript Program to Check if a number is Positive, Negative.	CO3
23	JavaScript Program to Find the Factorial of a Number	CO3
24	JavaScript Program to Check Prime Number	CO3
25	JavaScript Program to Display the Multiplication Table	CO3
26	JavaScript Program to Print the Fibonacci Sequence	CO3
27	JavaScript Program to Check Armstrong Number	CO3
28	JavaScript Program to Find the Sum of Natural Numbers	CO3
29	Write a JavaScript code to enter week day number and print day name.	CO3

30	Write a program for implementation of statement in JDBC	CO4			
31	Write a program Transaction management using statement.	CO4			
32	Write a program to Import JDBC packages	CO4			
33	Write a program to Register JDBC Driver	CO4			
34	Write a program to Open and Close a connection using JDBC	CO4			
35	Write a program to Extract data from above created student table.	CO4			
36	Write a basic Servlet program that prints "Hello, World!" on the web page.	CO5			
37	Write a Program to create simple servlet that just generates plain text.	CO5			
38	Write a Servlet program displays the current date and time.	CO5			
39	Write a servlet program to demonstrate Http Servlet.	CO5			
40	A Servlet program that demonstrates session management by storing user data in a session.	CO5			
Required Software and Tools					
1.	VS-Code				
2.	Subline text editor				
3.	Netbeans				
Subject	name: Design and Analysis of Algorithm Lab	L-T-P [0-0-4]			
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Subject	Code: AMICA0551Applicable in Department: M	ICA-Integrated			
Course (	<b>D</b> bjective: Analyze asymptotic performance of algorithms designed using different computational model. Study advar	nced data			
Structure	s nee Neu black Tree, billonnal and Fibbliacer heap and learn theconcept of complexity classes				
	Course Outcomes (CO)				
Course o	<b>utcome:</b> After completion of this course students will be able to:	Bloom's Knowledge Level(KL)			
CO 1	Describe & illustrate algorithm to solve problems by iterative approach.	K2, K3			
CO 2	CO 2 Implement & illustrate algorithm to solve problems by divide and conquer approach.				
CO 3 Determine & develop algorithm to solve problems by Greedy algorithm approach.					
CO 4 Illustrate algorithm to solve problems by Dynamic programming, branchand bound approach.					
CO 5	Apply & analyze algorithm to solve problems by backtracking approach.	K3, K4			
	List of Practicals				
Sr No	Program Title	CO Mapping			
1	<ul> <li>Write an Algorithm / Program for the following:</li> <li>a) Leap Year Check</li> <li>b) Prime Number Check</li> <li>c) Generate a Fibonacci Series</li> <li>d) Factorial of a Number</li> <li>e) Check Number is a palindrome or not</li> <li>f) Find GCD</li> <li>g) Number is an Armstrong Number or Not</li> <li>Two strings are Anagram Strings or not.</li> </ul>	CO1			

2	Program for Recursive and Non Recursive for Binary & Linear Search.	CO2	
3	Program for Selection, Bubble and Count Sort.	CO2	
4	Program for Merge Sort.	CO2	
5	Program for Insertion Sort.	CO2	
6	Program for Quick Sort.	CO2	
7	Program for Heap Sort.	CO2	
8	Program to implement Knapsack Problem using Greedy Solution.	CO3	
9	Program for 0/1 knapsack.	CO4	
10	Program for LCS (Longest Common Subsequence).	CO4	
11	Program for BFS and DFS.	CO5	
12	Program to implement Dijkstra's Algorithm.	CO5	
13	Program to find Minimum Spanning Tree using Kruskal's Algorithm.	CO5	
14	Program to implement N Queen Problem using Backtracking.	CO5	
15	Program for traversing a tree.	CO5	
Required Software and Tools			
1. Py 2. Ja	ython ava		

Subject Name: Software Testing and Application Lab

## Subject Code: AMICA0553

## Applicable in Department: MCA-Integrated

<b>Course objectives:</b> To equip students with	practical skills in testing methodology	, tools and techniques, to develop	expertise in test case design,
execution, automation, defect tracking and	performance testing for robust softwar	e development.	

	Course Outcomes (CO)				
Course	outcome: After completion of this course students will be able to:	Bloom's Knowledge Level(KL)			
CO 1	Design and execute effective test cases for various programming constructs and application functionalities.	K5,K6			
CO 2	<b>CO 2</b> Identify, analyze, and document potential causes of failures in software applications, such as matrix multiplication.				
CO 3	CO 3 Prepare testing user interfaces and performance metrics for web applications, particularly focusing on registration and login pages.				
CO4	Apply security testing techniques to ensure the robustness of web applications against potential vulnerabilities.	К3			
CO5	Develop the ability to write detailed system specifications, identify bugs, and create test cases for complex systems like ATM and banking applications.	K1,K5,			
	List of Practicals				
Sr No	Program Title	CO Mapping			
1	Write the Test cases for programs in any language which demonstrate the working of the following constructs i) do While ii) while iii) ifelse iv) switch v) for.	^{o.} CO1			
2	Write down the possible reasons for failure of Matrix multiplication.	CO1			
3	Write the Test cases based on UI of Registration Page in Online Banking System.	CO2			
4	Write the Test cases based on Terms and Conditions field of Registration Page.	CO2			
5	Write the Test cases based on Performance in Registration Page.	CO2			
6	Write the Test cases for Functionality in Registration Page.	CO3			
7	Write the Test cases based on Security in Registration Page.	CO3			

8	Write the Test cases for Functionality in Login Page.	CO3
9	Write the Test cases based on UI in Login Page.	CO4
10	Write the Test cases based on Performance in Login Page.	CO4
11	Write the Test cases based on Security in Login Page.	CO4
12	Write system specifications for ATM and make report on various bugs.	CO5
13	Write the test cases for banking application in respect of Registration Page and Login Page.	CO5
	Required Software and Tools	
	1. Excel	
	2. TestLink	

Subject Nar	ne: Constituti	on Of India, Law and Engineering				L-T-P [2-0-0]	
Subject Cod	le: AMICANC	20501	Арр	licable in D	epartment: MC	A-Integrated	
Pre-requisit	e of Subject:	Basic Understanding of the Indian Co	nstitution.				
Course Obj diversified le	ective: To ac egal document	equaint the students with legacies of co of India and philosophy behind it. <b>Course C</b>	onstitutional development in Dutcomes (CO)	India and	help them to unde	rstand the most	
Course outc	ome: After co	npletion of this course students will be	able to:			Bloom's Knowledge Level(KL)	
CO 1	Identify and e	dentify and explore the basic features and modalities about Indian constitution.					
CO 2	Differentiate a	nd relate the functioning of Indian parl	iamentary system at the cer	ter and stat	e level.	K2	
CO 3	Differentiate of	lifferent aspects of Indian Legal Systen	n and its related bodies.			K4	
CO 4	Discover and	apply different laws and regulations rel	lated to engineering practice	es.		K4	
CO 5	Correlate role	of engineers with different organizatio	ns and governance models			K4	
		S	yllabus			-	
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping	
1. Introductio n And Basic Informatio n About Indian Constitutio n	Introduction	Meaning of the constitution law and constitutionalism, Historical Background of the Constituent Assembly, Government of India Act of 1935 and Indian Independence Act of 1947,Enforcement of the Constitution, Indian Constitution and its Salient Features, The Preamble of the Constitution, Fundamental Rights, Fundamental	Lectures, PPTS, Notes	4L	Assignment	CO1	

		Duties Directive Principles of State				
		Policy. Parliamentary System.				
		Federal System. Centre-State				
		Relations. Amendment of the				
		Constitutional Powers and				
		Procedure, The historical				
		perspectives of the constitutional				
		amendments in India				
		National Emergency, President Rule,				
	Emergency	Financial Emergency, and Local Self				
	<b>Provisions:</b>	Government – Constitutional				
		Scheme in India.				
		Functions of Rajya Sabha, Functions				
		of Lok Sabha, Powers and Functions				
	<b>Powers Of</b>	of the President, Comparison of				
	Indian	powers of Indian President with the				
	Parliament	United States, Powers and Functions				
		of VicePresident, Powers and				
2. Union		Functions of the Prime Minister				
Executive		The Independence of the Supreme				
And State		Court, Appointment of Judges,				
Fxecutive	Indiciory	Judicial Review, Public Interest	Lectures, PPTS, Notes	4L	Assignment	CO2
Executive	Juuiciai y	Litigation, Judicial Activism,				
		LokPal, Lok Ayukta, The Lokpal and				
		Lok ayuktas Act 2013				
		Powers and Functions of the				
		Governor, Powers and Functions of				
	State	the Chief Minister, Functions of				
	Executives	State Cabinet, Functions of State				
		Legislature, Functions of High Court				
		and Subordinate Courts.				

3.Introducti on And Basic Informatio n About	The Legal System, Sources Of Law And The Court Structure:	Enacted law -Acts of Parliament are of primary legislation, Common Law or Case law, Principles taken from decisions of judges constitute binding legal rules. The Court System in India and Foreign Courtiers (District Court, District Consumer Forum, Tribunals, High Courts, Supreme Court).	Lectures, PPTS, Notes	4L	Assignment	CO3
Legal System	Arbitration:	As an alternative to resolving disputes in the normal courts, parties who are in dispute can agree that this will instead be referred to arbitration. Contract law, Tort, Law at workplace.				
4.Intellectu al Property Laws And Regulation To Informatio n	Intellectual Property Laws	Introduction, Legal Aspects of Patents, Filing of Patent Applications, Rights from Patents, Infringement of Patents, Copyright and its Ownership, Infringement of Copyright, Civil Remedies for Infringement, Regulation to Information, Introduction, Right to Information Act, 2005, Information Technology Act, 2000, Electronic Governance, Secure Electronic Records and Digital Signatures, Digital Signature Certificates, Cyber Regulations Appellate Tribunal, Offences, Limitations of the Information Technology Act.	Lectures, PPTS, Notes	4L	Assignment	CO4

5.Business Organizatio ns And E- Governanc e	Sole Traders, Partnerships, Companies: The Company's Act:	Introduction, Formation of a Company, Memorandum of Association, Articles of Association, Prospectus, Shares, Directors, General Meetings and Proceedings, Auditor, Winding up. E-Governance and role of engineers in E- Governance, Need for reformed engineering serving at the Union and State level, Role of I.T. professionals in Judiciary, Problem of Alienation and Secessionism in few states creating hurdles in Industrial development.	Lectures, PPTS, Notes	4L	Assignment	CO5							
		Total		20L									
		Te	extbooks										
Sr. No		Bo	ok Details										
1.	M Laxmikantł	n: Indian Polity for civil services and o	ther State Examination,6th E	Edition, Mo	c Graw Hill								
2.	Brij Kishore S	Brij Kishore Sharma: Introduction to the Indian Constitution, 8th Edition, PHI Learning Pvt. Ltd.											
3.	Granville Austin: The Indian Constitution: Cornerstone of a Nation (Classic Reissue), Oxford University Press.												
	Reference Books:												
Sr. No	Book Details												
1.	Madhav Khosla: The Indian Constitution, Oxford University Press.												
2.	2. PM Bakshi: The Constitution of India, Latest Edition, Universal Law Publishing.												
3.	3. 3. V.K. Ahuja: Law Relating to Intellectual Property Rights (2007)												
Link: NPTEL/YouTube/Faculty Video Link:													
Unit 1	https://archive	.nptel.ac.in/courses/129/106/12910600	)3/			Unit 1 https://archive.nptel.ac.in/courses/129/106/129106003/							

Unit 2	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 3	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 4	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 5	https://archive.nptel.ac.in/courses/129/106/129106003/

Subject Nar	ubject Name: Essence Of Indian Traditional Knowledge L-					
Subject Cod	le: AMICANC	20502	Ар	oplicable in Department: M	ICA-Integrated	
Pre-requisit	e of Subject:	Basic Understanding of the Indian Co	nstitution.			
Course Obj	ective: This	course aims to provide basic knowled	dge about different theorie	es of society, state and polity	/ in India, Indian	
literature, cu	lture, Indian rel	igion, philosophy, science, manageme	nt, cultural heritage and di	ifferent arts in India.		
		Course (	Dutcomes (CO)			
Course outcome: After completion of this course students will be able to:					Bloom's Knowledge Level(KL)	
CO 1	Understand the	e basics of past Indian politics and state	e polity.		K2	
CO 2	Understand the	e Vedas, Upanishads, languages & liter	rature of Indian society.		K2	
CO 3	Know the diffe	erent religions and religious movement	ts in India.		K4	
CO 4	CO 4 Identify and explore the basic knowledge about the ancient history of Indian agriculture, science & technology, and ayurveda.					
CO 5	CO 5 Identify Indian dances, fairs & festivals, and cinema.				K1	
Syllabus						
Unit No	Module Name	Topic covered	Pedagogy	Lecture Practical/ Required Assignment/ (L+P) Lab Nos	CO Mapping	

1. Society State And Polity In India	State In Ancient India:	Evolutionary Theory, Force Theory, Mystical Theory Contract Theory, Stages of State Formation in Ancient India, Kingship , Council of Ministers Administration Political Ideals in Ancient India Conditions' of the Welfare of Societies, The Seven Limbs of the State, Society in Ancient India, Purusārtha, Varnāshrama System, Āshrama or the Stages of Life, Marriage, Understanding Gender as a social category, The representation of Women in Historical traditions, Challenges faced by Women.	Lectures, PPTS, Notes	4L	Assignment	CO1
2. Indian Literature, Culture, Tradition, And Practices	Evolution Of Script And Languages In India:	Harappan Script and Brahmi Script. The Vedas, the Upanishads, the Ramayana and the Mahabharata, Puranas, Buddhist And Jain Literature in Pali, Prakrit And Sanskrit, Sikh Literature, Kautilya's Arthashastra, Famous Sanskrit Authors, Telugu Literature, Kannada Literature, Malayalam Literature ,Sangama Literature Northern Indian Languages & Literature, Persian And Urdu ,Hindi Literature	Lectures, PPTS, Notes	4L	Assignment	CO2
3. Indian Religion, Philosophy, And Practices	Indian Religion, Philosophy, And Practices	Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy, Shankaracharya, Various Philosophical Doctrines, Other Heterodox Sects, Bhakti Movement, Sufi movement, Socio religious reform movement of 19th century, Modern religious practices.	Lectures, PPTS, Notes	4L	Assignment	CO3

4. Science, Manageme nt And Indian Knowledge System	Science, Management And Indian Knowledge System	Astronomy in India, Chemistry in India, Mathematics in India, Physics in India, Agriculture in India, Medicine in India , Metallurgy in India, Geography, Biology, Harappan Technologies, Water Management in India, Textile Technology in India ,Writing Technolog	Lectures, PPTS, Notes	4L	Assignment	CO4
5.Cultural Heritage And Performing Arts	Cultural Heritage And Performing Arts	Indian Architect, Engineering and Architecture in Ancient India, Sculptures, Pottery, Painting, Indian Handicraft, UNESCO'S List of World Heritage sites in India, Seals, coins, Puppetry, Dance, Music, Theatre, drama, Martial Arts Traditions, Fairs and Festivals, UNESCO'S List of Intangible Cultural Heritage, Calenders, Current developments in Arts and Cultural, Indian's Cultural Contribution to the World. Indian Cinema	Lectures, PPTS, Notes	4L	Assignment	CO5
		Total		20L		
		Te	xtbooks			
Sr. No		Во	ok Details			
1.	Sivaramakrish	na (Ed.), Cultural Heritage of India-Co	ourse Material, Bharatiya Vi	dya Bhava	n, Mumbai, 5th Edi	tion, 2014.
2.	S. Baliyan, Ind	dian Art and Culture, Oxford Universit	y Press, India			
3.	Nitin Singhan	ia, Indian Art and Culture: for civil serv	vices and other competitive	Examinati	ons,3rd Edition,Mc	Graw Hill
		Refere	ence Books:			
Sr. No		Во	ok Details			
1.	Romila Thapa	r, Readings In Early Indian History Ox	ford University Press, India			

2.	Basham, A.L., The Wonder that was India (34th impression), New Delhi, Rupa & co.
	Link: NPTEL/YouTube/Faculty Video Link:
nttps://online	courses.swayam2.ac.in/imb23_mg53/preview

Subject Name: Computer Graphics and Multimedia

Subject Code: AMICA0602

Applicable in Department: MCA-Integrated

**Pre-requisite of Subject:** Knowledge of Computer, Mathematics and algorithm is preferable.

**Course Objective**: Understanding Basic Concepts and fundamental concepts of computer graphics, including rendering, geometric transformations, and image processing. Introduce students to graphics software and libraries commonly used for developing graphics applications, and provide experience with programming graphics applications.

applications,	and provide ex	perionee with programming graphies a	ppilouions.			
		Course C	Dutcomes (CO)			
Course outc	ome: After cor	npletion of this course students will be	able to:			Bloom's Knowledge Level(KL)
CO 1	Analyze variou Algorithms.	as Generating Algorithms, attributes as	sociated with output primiti	ves and Are	ea Filling	K4
CO 2	Apply the con	cepts of parallel and perspective projective	ctions with proficient inline	e clipping.		K3
CO 3	Develop 3-D	transformations on objects and variou	s algorithms for visiblesur	face detect	ion.	K5
<b>CO 4</b>	Create, implen	nent and control animations using com	puter-based methods.			K3, K5
CO 5	Explore basic	and advanced compression techniques.				K3
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1.Introduc tion	Computer Graphics and output primitives: Graphics Software output	Concepts and applications, Interactive Graphics, Random and Raster scan devices, Refresh Cathode ray tubes, LCD monitors, Laser, Printers, Keyboards, Mouse,Scanners. Line drawing algorithm: DDA along with Bresenhan's. Circle generating algorithm. Midpoint algorithms:	Lectures, PPTS, Notes	10L+4P	Experiment/ Program 1-6	CO1

	primitives:	ellipse and other curves. Attributes of output primitive, Antialising.				
	Area filling:	Filled area primitive: Scan-line Polygon fill Algorithm, boundary fill algorithm, flood fill algorithm.				
2. Two- Dimension al Graphics Transform ations 2-D- Transform on, Viewin clipping 2D- projection	2-D- Transformati on, Viewing, clipping:	Two-dimensional Transformations: Translation, scaling, rotation, reflection, shear, matrix representation of all homogeneous coordinates, composite transformation.	Lectures, PPTS, Notes	8L+4P	Experiment/	CO2
	2D- projections	parallel and perspective projection. Two-dimensional viewing, Viewing pipeline Window-to-view port transformation. Clipping operations. Line Clipping: Cohen Sutherland, Nicholl-lee-Nichol land Liangbarsky, Polygon Clipping.	Lectures, PPTS, Notes 8	0L+4r	Program 7-9	
3. Three- Dimensiona l Graphics Transforma	3-D Transformati on and Visible surface detection:	Three-dimensional object representations: Polygon Surface, Tables, Plane Equation. Curved lines and Surfaces: Spline representation, Interpolating and approximation curves, continuity conditions Cubic Splines, Bezier curves B- Spline curves: characteristics and generation, 3-D Transformation.	Lectures, PPTS, Notes	10L+4P	Experiment/ Program 10-12	CO3
tions	Visible Surface detection Algorithm:	Object based and image based methods, depth comparison, A- Buffer, Back face removal, Scan- line method, Depth Sorting Method Area subdivisionmethod.				

4. Introductio n to Multimedia and Animation	Overview of multimedia, Classification , basic concept of sound/audio MIDI:	devices, messages, software. Speech, Video and Animation: Basic concept, computer-based animation, methods of controlling animation, display of animation, and transmission of animation.	Lectures, PPTS, Notes	6L+4P	Experiment/ Program 13-14	CO4
5. Data Compressio n Techniques	Data Compression somebasic compression technique	storage space, coding requirements. Source, entropy and hybrid coding runlength code, Huffman code. JPEG: Image preparation, Lossy sequential DCT – based mode, expanded lossy DCT based mode, Lossless mode, Hierarchical mode. MPEG, Huffman Encoding, LZW compression.	Lectures, PPTS, Notes	6L+4P	Experiment/ Program 15-16	CO5
		Total		40L+20P		
		Te	xtbooks			
Sr. No		Во	ok Details			
1.	Donand Hearr	n & M. Pauline Baker, "Computer Grap	phics", Pearson Publication,	2nd Editio	on 2014.	
2.	Ralf Steimnet	y & Kerla Neshtudt., "Multimedia Co	mputing Communication &	Applicatio	ons", Pearson Public	cation 2017,
3.	P. K. Andleigl	h & K. Thakrar, "Multimedia Systems ]	Design", Pearson Publicatio	n, 1st Editi	ion, 2015.	
		Refere	ence Books:			
Sr. No		Во	ok Details			
1.	W. M. Newma	an & Robert F Sproull, "Principles of I	nteractive Computer Graphi	cs", McGra	aw Hills, 2nd Editio	on 2001.
2.	David Rogers	, "Procedural elements of Computer G	raphics", 2nd Edition, 2017.			
3.	Anirban Mukł	nopadhyay & Arup Chattopadhyay, "In	troduction to Computer Gra	phics and I	Multimedia", 2nd E	dition, 2007.
		Link: NPTEL/You	Tube/Faculty Video Link:			

Unit 1	https://onlinecourses.nptel.ac.in/noc20_cs90/preview
Unit 2	https://nptel.ac.in/courses/106103224
Unit 3	https://archive.nptel.ac.in/courses/106/103/106103224/
Unit 4	https://nptel.ac.in/courses/106106090
Unit 5	https://gec.digimat.in/nptel/courses/video/106106090/L42.html

Subject Name: Computer Networks

Subject Code: AMICA0603

Applicable in Department: MCA-Integrated

**Pre-requisite of Subject:** Basic computer concepts and terminology

**Course Objective:** To develop understanding of concepts, principles, and technologies related to networking. To enhance their knowledge and skills in designing, implementing and managing networkinfrastructure. To establish a strong foundation for a career in the field of networking.

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		Course C	Dutcomes (CO)			
Course outc	ome: After cor	npletion of this course students will be	able to:			Bloom's Knowledge Level(KL)
CO 1	Identification	of Network fundamentals.				K1
CO 2	Classify Vario	ous IP addressing techniques.				K2
CO 3	Implement, an	nd verify IP routing technologies.				K3
CO 4	Identify and c	onfigure LAN switching technologies.				K1
CO 5	Explore about	network management methods and too	ls for monitoring and troub	leshooting		K2
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Network Fundament als	Introduction to Networks	Basic network concepts, Network architecture and topologies, OSI and TCP/IP models, <b>Physical Layer:</b> Cabling and network devices, Ethernet standards and technologies, <b>Data Link Layer:</b> MAC addressing and ARP,VLANs and trunking, <b>Network Layer:</b> IP addressing and subnetting, IPv4 vs.	Lectures, PPTS, Notes	8L+4P	Assignment/ Program 1-4, 23, 25	CO1

		IPv6,Routing basics and protocols (e.g., RIP, EIGRP, OSPF), <b>Transport Layer:</b> TCP and UDP operations, Port numbers and sockets, <b>Application Layer:</b> Common network services and protocols (e.g., HTTP, FTP, DNS)				
	Switching Concepts	Switch operations and configuration, Spanning Tree Protocol (STP), EtherChannel and link aggregation				
	Routing Concepts	Static and dynamic routing, Routing tables and protocols, Inter, VLAN routing			Assignment/	CO2
2.Network Access and IP	IP Services	DHCP and NAT, NTP and Syslog	Lectures, PPTS, Notes	8L+4P	Program 5-8, 13, 16-22, 26, 30, 44, 47	02
Connectivit y	Network Security Basics	Access control lists (ACLs), Secure access to devices				
3. Security Fundament als and Automation	Network Security Fundamental s:	Security threats and vulnerabilities, Mitigation techniques and best practices,	Lectures, PPTS, Notes	8L+4P	Assignment/ Program 9-12, 14, 15, 29, 31-34, 36- 39, 46, 48	CO3

	Securing Network Devices:	Secure device management, Implementing device hardening,				
	Firewall and IPS:	Firewall technologies and types, Intrusion Prevention Systems (IPS)				
	Network Automation and Programmab ility:	Introduction to network automation, Configuration management tools (e.g., Ansible, Puppet), Basics of network programmability and SDN				
	Advanced Switching:	Advanced STP features, Multilayer switching, QoS concepts,				
4. Advanced Routing and Switching	Advanced Routing:	Advanced OSPF configurations, BGP fundamentals and configuration, Route redistribution and filtering,	Lectures, PPTS, Notes	8L+4P	Assignment/ Program 27	CO4
Switching	WAN Technologies :	MPLS and VPNs, WAN topologies and protocols (e.g., GRE, DMVPN)				
	Network Design Principles:	Hierarchical network design, Enterprise network architecture, High availability and redundancy,				
5. Network Design and Troublesho oting	Network Troubleshoot ing:	Troubleshooting methodologies and tools, Common network issues and resolutions, Case studies and real- world scenarios,	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 27, 28,	CO5
	Wireless Networks:	Wireless technologies and standards, Wireless LAN configuration and management, Wireless security protocols,			135, 40-43, 45, 49, 50	
	Emerging Technologies	IoT and cloud networking, Network virtualization				

	:					
	<u> </u>	Total		40L+20P		
		ŗ	Fextbooks			
Sr. No		Bo	ook Details			
1.	Behrouz A. F	forouzan, "Computer Networks", Stand	lard Edition, McGraw Hill, 2	2023		
2.	Andrew S. Ta	anenbaum, "Computer Networks", 6th	Edition, Pearson Education	India, 2022	2	
3.	Peterson and	Davie, "Computer Networks, A Syster	ns Approach", 5th ed., Elsev	vier, 2011.		
		Refe	erence Books:			
Sr. No		Bo	ook Details			
1.	Ying-Dar Liu,	, Ren-Hung Hwang, Fred Baker, "Com	puter Networks: An Open S	ource App	roach", McGraw-H	iill, 2011.
2.	W. Richard St Addison-Wes	tevens, Bill Fenner and Andrew Rudof ley Professional, 2003.	f, "Unix Network Programm	ning", Volu	mes 1 and 2, Third	Edition,
3.	Michael Dona 2000.	hoo, Ken Calvert, Pocket Guide to TC	P/IP Socket Programming in	n C, Morga	n Kaufmann Series	in Networking,
4.	CCNA Cisco	certified Network Associate Study Gui	ide by Todd Lammle 5th edi	tion (BPB)		
5.	James F. Kurc	ose, "Computer Networking A top Dov	wn Approach" 8th Edition ,F	Pearson Ed	ucation 2022	
	1	Link: NPTEL/Yo	ouTube/Faculty Video Link:			
Unit 1	https://www.	.youtube.com/watch?v=AozdnphtXIU				
Unit 2	https://www.y	outube.com/watch?v=HAVcXPI7oUY	7 			
Unit 3	https://archive	e.nptel.ac.in/courses/106/105/10610508	<u>31/</u>			
Unit 4	https://youtu	.be/21LITSa58a0?si=hSIjx3yXGZEM	2naB			
Unit 5	https://youtu	.be/PG46YejJseA?si=e_S79EyX9e9Jz	<u>3IW</u>			

Subject Nan	Subject Name: Advance Java L-T					Г-Р [3-1-0]
Subject Cod	e: AMICA06	01	Ap	plicable in	Department: MC	CA-Integrated
Pre-requisit	e of Subject:	Basics of Programming Concepts and C	Core JAVA, Database-SQL	, JavaScript	, HTML, CSS.	
Course Objedevelopment	ective: Objecti environment t	ve of this course is to provide the ability o create, debug and run multi-tier and e	y to design console based, <b>(</b> enterprise-level application	GUIbased, v s.	veb based applicat	ions, Integrated
		Course (	Dutcomes (CO)			
Course outc	ome: After con	mpletion of this course students will be	able to:			Bloom's Knowledge Level(KL)
CO 1	Illustrate, Ana	lyze, and Build dynamic web pages for	r server-sideprogramming.			K3, K4
CO 2	Implement the	e connection between Java andDataba	se using JDBC.			K3
CO 3	Analyze and design the Spring Core Modules and DI to configure and wirebeans (application objects) together.					K4, K5
CO 4	Design Model loosely couple	View Controller architecture and ready ed web applications.	y components that can beus	ed to develo	p flexible and	K5
CO 5	Analyze and I	Design React components using JavaSc	ript functions.			K4, K5
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introductio n: Servlets and JSP	Applets in Java:	Applet Basics, Life Cycle of an Applet in Java, Flow of Java Applet Life Cycle, The Applet Class, Invoking an Applet, Getting Applet Parameters, Application Conversion to Applets, Event Handling. Displaying Images.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 1-22	CO1

	JSP and Servlets:	Setting up for JSP and Servlets, Hello Servlets, Servlets lifecycle, Hello JSP, JSP scripting elements, JSP Declarations element, JSP Comments, Deployment descriptor and annotations Reading URL parameter(s) in Servlets, Include file(s) in JSP page, How to create Maven project in Eclipse, Import class in JSP file, Forward and Redirect in JSP.				
	The Concept of MVC:	A simple JSP exercise, Forms overview, Forms under JSP, Forms under Servlets.				
2.Java	Java beans overview:	Java beans scopes - Session and application, Java beans scopes - page and request Java beans with forms, Session in JSP – introduction, Introduction to cookies, Read and Write Operation of Cookie in JSP and Servlets, User logout using cookie, User logout using session, Organizing the application, Adding redirects and forwards, About web templates, Integrate template with project			Experiment/	
Beans, JSP, Database, Hibernate.	MySQL installation	Setting up the controller, Database connection setup, Displaying data from database, Adding database operations in Model, Add user form, Add user operation, Update user operation, Delete user operation.	Lectures, PPTS, Notes	8L+4P	Program 26	CO2
	Hibernate Overview:	Setting up eclipse project for hibernate, Setting hibernate configuration file, About Hibernate sessions, Setting hibernate entity class, Hibernate CURD operation –				

		Create, Hibernate CURD operation – Read, Hibernate CURD operation – Update, Hibernate CURD operation – Delete, Hibernate HQL operation – Listing, Hibernate HQL operation - Where clause, Hibernate HQL operation – update, HQL - Delete and wrap up, Debugging in Eclipse.				
	Spring framework:	(Setting things up) Setting the IDE, Dependency injection getting started, Dependency injection continues, Inversion of control, Autowire introduction, Autowire scenarios, Qualifier annotation, Spring beans, Constructor injection, SpringMVC minimal project,				
3. <b>Spring</b> 5.0	<b>Restful</b> :	Introduction To Web Services, Resource based URIs, Rest response, Status codes, Idempotence of HTTP Methods, Hypermedia as the Engine of Application State (HATEOAS) The Richardson Maturity Model.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 23-25	CO3
	Spring Boot and what are we building:	Setting up for Spring boot, Spring Starter project, Spring Web MVC starter project, The template and external files, Adding Fragments, header, footers to web pages Finalizing the template for the application, Updating application properties, Adding Models in Spring Boot Adding repository and service classes in Spring Boot, Adding seed data in the database, Displaying data on webpage, Spring Boot, Adding				

		Account models in Spring Boot, Updating the seed data, Adding register account form, Adding login user form, Adding Spring security into the application, Spring security login, adding rules and Bcrypt password, Spring security login, override loadUserByUsername, Update the Webtemplate with Thymeleaf tags.				
4.Spring Boot	Spring Boot	Role and Authorities, Adding Roles to user account, Add Authorities to UserAccount in Spring boot, Add users with Roles and Authorities, Add users with Roles and Authorities continues, Application has bugs Add security rules for Roles and Authorities, Update homepage, for post links, GetPost from Spring Boot Application, View a post with editoptions. Add post in Spring Boot application Add WYSIWYG text Editor in the Add post page,Handle post add in <b>Spring Boot Blog</b> <b>application</b> , Add edit post form in Spring Boot Blog application, Handle edit post in Spring Boot Blog application, Delete post in Spring Boot Blogapplication, Add warning model for Delete operation	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 27-30	CO4
	Adding validations	Upgrading the registration form in Springboot, Adding Profile page on the Blog application, Update Profile (Account) on the Spring BootBlog, Update Profile Photo on the Spring Boot Blog, Remember				

		Handle reset password view, Handle reset password and token generation, Sending email for password reset, Sending email for password reset continues, Email Service, Spring Boot, Password change in Spring boot, Reset password Spring Boot. Adding Pagination and Sorting option on homepage, Pagination and Sorting in Spring boot. Setting up React JS, Getting started				
5. React	React	with React, Downloading the template, Understanding the template, Making changes in the template, Dark mode on Google Chrome, Making HTTP GET call with axios, Local server, CORS and Proxy, The login page with react JavaScript, Login, token handling and local storage, Token validation and redirections, Dynamic menus and updated registration page, Logout and about page Logout and about page continues, Section wrap- up, Add albums, Album tiles on homepage, Upload photos onto the Albums, Upload photos form, Upload photos processing animation, Props, useEffect and Async, AlbumsShow page, Albums Show page, Network calls, Add album and photo actions, Edit album and photo action, Edit album and photo action continues, Delete actions, Download photo action, View Photo.	Lectures, PPTS, Notes	8L+4P	Experiment/ Program 31-33	CO5

	Total	40L+20P		
	Textbooks			
Sr. No	Book Details			
1.	Sarika Agarwal and Vivek Gupta"Java for Web Development",2022			
2.	Budi Kurniawan, "Servlet and JSP",2016			
3.	Marty Hall & Larry Brown "Core Servlets and JavaServer Pages", second edition	l		
	<b>Reference Books:</b>			
Sr. No	Book Details			
1.	Uttam K. Roy "Advanced Java Programming", Oxford University Press			
2.	Kathy Sierra, "Head First Servlets and JSP",O'Really Media			
3.	"Core and Advanced Java", Black Book, Dreamtech Press(eBook)			
	Link: NPTEL/YouTube/Faculty Video Link:			
Unit 1	https://www.youtube.com/watch?v=xve6QEgIR-0&list=PL0zysOflRCel5BSXc	slpfDawe8	3FyyOSZb	
Unit 2	https://www.youtube.com/watch?v=WkKT5M-ABnY&list=PLlhM4lkb2sEiiEA	P0uSFXiF	Y8KdXPnN0f	
Unit 3	Unit 3 <u>https://www.youtube.com/watch?v=-Fe0zk-F4OA</u>			
Unit 4	https://www.youtube.com/watch?v=9SGDpanrc8U			
Unit 5	https://react.dev/community/videos			

Subject Nai	Ibject Name: Distributed SystemL-T-P [4]					Т-Р [4-0-0]
Subject Coo	de: AMICA06	04	А	pplicable in	Department: MO	CA-Integrated
Pre-requisit	te of Subject:	Basic knowledge of Data Structures a	and Algorithms, Basic netw	working conce	epts, and Basic OS	concepts.
Course Obj heterogeneo	jective: To hav us systems such	e a broad and up-to-date coverage on as computers, mobile phones, other of	f the principles and pract devices, and Internet) and t	ice in Distrib heir functiona	uted Systems. To lities.	understand th
		Course	Outcomes (CO)			
Course outo	come: After cor	npletion of this course students will b	e able to:			Bloom's Knowledge Level(KL)
CO 1	Compare and architectures.	contrast different architectural mode	els such as client-server,	peer-to-peer, a	nd three-tier	K4
CO 2	Implement and	I manage remote object interactions u	using RMI or similar tech	nologies.		K3, K4
CO 3	Develop distri	buted applications using middleware	solutions.			K5
CO 4	Apply event-d	riven programming for asynchronous	communication.			K3
CO 5	CO 5 Implement clock synchronization algorithms.					K3
		5	Syllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping

1. Basic Concepts	Basic Concepts	Definition of a distributed systems, Examples, Resource sharing and the Web, Challenges, System models, Architectural and fundamental models, Networking Inter process communication, External data representation and marshalling, Client-server and Group communication.	Lectures, PPTS, Notes	8L	Assignment	CO1
2.Distribute d Objects and Process	Distributed Objects and Process	Distributed objects and remote invocation, Communication between distributed objects, Remote procedure call, Events and notifications - The operating system layer, Protection, Processes and Threads, Communication and invocation, OS Architecture. Security techniques, Cryptographic algorithms, Access control, Digital signatures, Cryptography pragmatics, Needham-Schroeder, Kerberos, Securing electronics transaction, IEEE 802.11 WiFi.	Lectures, PPTS, Notes	8L	Assignment	CO2
3. Operating System Issues	Operating System Issues	Distributed file systems - Name services, Domain name system, Directory and discovery services, Peer to peer systems, Napster file sharing system, Peer to peer middleware routing overlays – Clocks, Events and process states Clock Synchronization - Logical clocks Global states - Distributed debugging - Distributed mutual exclusion - Elections - Multicast communication.	Lectures, PPTS, Notes	8L	Assignment	CO3

4. Distributed Transactio n Processing	Distributed Transaction Processing	Transactions - Nested transactions - Locks - Optimistic concurrency control - Timestamp ordering - Flat and nested distributed transactions - Atomic commit protocols - Concurrency control in distributed transactions - Distributed deadlocks - Transaction recovery - Overview of replication, Distributed shared memory and Web services.	Lectures, PPTS, Notes	8L	Assignment	CO4
5. Distributed Algorithms	Distributed Algorithms	Synchronous network model - Algorithms: leader election, maximal independent set - Asynchronous system model: I/O automata, operations on automata, fairness - Asynchronousshared memory model - Mutual exclusion: model, the problem, stronger conditions, lockout-free mutual exclusion algorithms, lower bound on the number of registers - Asynchronous network model - Asynchronous network algorithms: leader election in a ring and an arbitrary network.	Lectures, PPTS, Notes	8L	Assignment	CO5
		Total		40L		
	1	Te	xtbooks			
Sr. No		Boo	ok Details			
1.	1. George Coulouris, Jean Dollimore, and Tim Kindberg, "Distributed Systems Concepts and Design", 5th eition., Pearson Education, 2017.					
2.	Andrew S. Ta Education, 20	nenbaum, Maarten Van Steen, "Distrib 15.	uted Systems Principles and	d Paradigm	ns", 2nd edition, Pe	arson
	Reference Books:					

Sr. No	Book Details				
1.	Vijay K. Garg, "Elements of Distributed Computing", Wiley Publication, 1st Edition, 2008.				
2.	2. Ajay D. Kshemkalyani and, Mukesh Singhal, "Distributed Computing: Principles, Algorithms, and Systems", Cambridge University Prees, 2010.				
3.	Christian Cachin, Rachid Guerraoui, and Luís Rodrigues, "Introduction to Reliable and Secure Distributed Programming", Springer, 2nd Edition, 2014.				
	Link: NPTEL/YouTube/Faculty Video Link:				
Unit 1	https://nptel.ac.in/courses/106106168				
Unit 2	https://nptel.ac.in/courses/106106093				
Unit 3	https://onlinecourses.nptel.ac.in/noc21_cs87/preview_				
Unit 4	https://onlinecourses.nptel.ac.in/noc22_cs80/preview_				

Subject Name: Machine Learning

Subject Code: AMICA0611

Applicable in Department: MCA-Integrated

**Pre-requisite of Subject**: Programming Proficiency, Mathematics Fundamentals, Data Structures and Algorithms.

**Course Objective:** Understand the basic principal of Machine Learning and importance of Supervised Learning, Unsupervised Learning & Familiarize with concepts of clustering.

		Course O	Outcomes (CO)			
Course outc	ome: After com	pletion of this course students will be a	able to:			Bloom's Knowledge Level(KL)
CO 1	Describe the fur	ndamental concepts and terminologies	of machine learning.			K1, K2
CO 2	Evaluate and co	ompare supervised learning models using	ng appropriateevaluation m	etrics.		K4
CO 3	<b>CO 3</b> Implement dimensionality reduction techniques to visualize high-dimensionaldata and extract important features.					
CO 4	Apply feature of	engineering techniques to preprocess	raw data and improvemod	lel accuracy		K3
CO 5	<b>CO 5</b> Analyze and solving the results of machine learning models in the context of thical considerations and societal impact.					
		Sy	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introductio n to	Overview of Machine Learning	Definition of machine learning, Historical development and milestones, Applications of machine learning in various fields	Lectures, PPTS, Notes	8L	Assignment	C01

Machine Learning	Types of Machine Learning	Supervised learning, Unsupervised learning, Semi-supervised learning, Reinforcement learning, Other paradigms (e.g., self-supervised learning, transfer learning), Basic Concepts and Terminology Features, labels, and examples Training data, validation data, Loss functions and optimization algorithms				
	Regression	Linear regression, Polynomial regression, Regularization techniques (L1, L2 regularization), Evaluation metrics (e.g., mean squared error, R-squared)				CO2
2.Supervise d Learning	Classification	Binary classification, Multi-class classification, Logistic regression, Decision trees, Support Vector Machines (SVM), Evaluation metrics (e.g., accuracy, precision, recall, F1- score)	Lectures, PPTS, Notes	8L	Assignment	
3. Unsupervis	Clustering	K-means clustering, Hierarchical clustering, Density-based clustering (e.g., DBSCAN), Evaluation metrics (e.g., silhouette score)		QI		
ed Learning	Dimensionalit y Reduction	Principal Component Analysis (PCA), t-Distributed Stochastic Neighbor Embedding (t-SNE), Autoencoders, Applications and interpretation of dimensionality reduction techniques.	Lectures, PPTS, Notes	8L	Assignment	03

4. Advanced Techniques in Machine Learning	Ensemble Learning Model Evaluation and Selection	Bagging (e.g., Random Forest), Boosting (e.g., AdaBoost, Gradient Boosting), Stacking Feature Engineering: Techniques for creating new features from raw data, Feature scaling and normalization, Handling missing data. Cross-validation, Bias-variance tradeoff, Model selection techniques (e.g., grid search, random search), Model interpretability and visualization	Lectures, PPTS, Notes	8L	Assignment	CO4
5. Application s and Case Studies	Real-world Applications of Machine Learning Case Studies and Projects	Healthcare, Finance, Marketing, E- commerce,Social media analysis Practical implementation of machine learning algorithms on real datasets, Project planning, execution, and presentation Ethical considerations in machine learning projects	Lectures, PPTS, Notes	8L	Assignment	CO5
		Total		<b>40L</b>		
		Тех	xtbooks			
Sr. No		Bool	k Details			
1.	Christopher M	Bishop, "Pattern Recognition and Mac	chine Learning", Springer ,1	st Edition	2006	
2.	Kevin P. Murp	hy, "Machine Learning: A Probabilistic	e Perspective", The MIT Pre	ess, : 1st Ec	lition 2012.	
3.	Aurélien Géron, "Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow", O'Reilly Media, 2nd Edition, 2019.					
		Refere	nce Books:			
Sr. No		Bool	k Details			
1.	Trevor Hastie, Prediction", Spi	Robert Tibshirani, and Jerome Friedma ringer, 2nd Edition, 2017.	nn, "The Elements of Statisti	ical Learni	ng: Data Mining, Ir	oference, and

2.	David Barber, "Machine Learning for Beginners", Cambridge University Press, 2014				
3.	Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, "Machine Learning", Pearson Publication, 2018.				
Link: NPTEL/YouTube/Faculty Video Link:					
Unit 1	https://onlinecourses.nptel.ac.in/noc23_cs18/preview				
Unit 2	https://onlinecourses.nptel.ac.in/noc23_ee87/preview_				
Unit 3	https://www.shiksha.com/online-courses/machine-learning-courses-certification-training-by-nptel-st553				
Unit 4	https://onlinecourses.nptel.ac.in/noc22_cs24/preview				
Unit 5	https://archive.nptel.ac.in/courses/106/106/106106198/				

Subject Name: Fundamentals of Digital Marketing and Analytics L						L-T-P [3-0-0]
Subject Cod	e: AMICA06	12	Арр	licable in	Department: N	ACA-Integrated
Pre-requisit	e of Subject: C	Creative thinking and which is being us	ed by the creative talent in y	our busine	ess areas.	
Course Objemetrics, and	ective: The con analytics techn	urse aims to equip learners with founda iques essential for effective digital mar	tional skills in digital marke keting campaign planning,	eting and ar execution,	nalytics, coverin and optimizatio	g strategies, tools, n.
		Course (	<b>Dutcomes (CO)</b>			
Course outcome: After completion of this course students will be able to:						Bloom's Knowledge Level(KL)
CO 1	Develop proficiency in interpreting marketing strategies in the digital age and provide fundamental knowledge for working in an online team					K1,K2
CO 2	Discuss various concepts of data analytics pipeline					K1,K2
CO 3	Evaluate the productivity of digital marketing channels for business success					K3
CO 4	Prepare candidates for global exposure of digital marketing practices to make them employable in a high growth industry					K1,K2
CO 5	Learn data mining basic concepts and understand association rules mining.					K1,K3
Syllabus						
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Fundament als of Digital marketing	Introduction	Fundamentals of Digital marketing & Its Significance, Traditional marketing Vs Digital Marketing, Evolution of Digital Marketing, Digital Marketing Landscape, Key Drivers, Digital Consumer & Communities, Gen Y & Netizen's expectation & influence wrt Digital Marketing.	Lectures, PPTS, Notes	8L	Assignment	CO1
2. Introductio n to Data Analytics	Introduction to Data Analytics	Sources and nature of data, classification of data (structured, semi-structured, unstructured), characteristics of data, introduction to Big Data platform, need of data analytics, evolution of analytic scalability, analytic process and tools, analysis vs reporting, modern data analytic tools, applications of data analytics.	Lectures, PPTS, Notes	8L	Assignment	CO2
--------------------------------------------------------------------	-----------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------	----	------------	-----
	Data Analytics Lifecycle	Need, key roles for successful analytic projects, various phases of data analytics lifecycle – discovery, data preparation, model planning, model building, communicating results, operationalization.				
3. Prepare Data for Exploration and Stakeholde r	Prepare Data for Exploration and Stakeholder	Prepare Data for Exploration and Stakeholder-data analysts, balance needs and expectations, managing stakeholder expectations, communication with your team. Datatypes and structures-generate data, Collection of data, analysis for data, Bias, credibility, privacy, ethics, and access-data analysts work, data is unbiased and credible, different types of bias in data, importance of data ethics and data privacy.	Lectures, PPTS, Notes	8L	Assignment	CO3
4. Organizing and protecting	Organizing and protecting your data Databases	Where data lives- databases, access them and extract, filter, and sort the data, metadata and its different types and how analysts use them.	Lectures, PPTS, Notes	8L	Assignment	CO4

your data						
	Organizing and protecting your data	organizing data and keeping it secure, analysts use file naming conventions. Engaging in the data community-how to manage your online presence, benefits of networking with other data analytics professionals				
5. Introductio n to Data Mining	Introduction	Data Mining, Definition, KDD, Challenges, Data Mining Tasks, Data Preprocessing, Data Cleaning, Missing data, Dimensionality Reduction, Feature Subset Selection, Discretization and Binarization, Data Transformation; Measures of Similarity and Dissimilarity- Basics.	Lectures, PPTS, Notes	8L	Assignment	CO5
Total 40L						
		Total		<b>40L</b>		
		Total	xtbooks	<b>40L</b>		
Sr. No		Total Te Bo	xtbooks ok Details	40L		
<b>Sr. No</b>	Vandana, Ahu	Total Te Bo 1ja, "Digital Marketing", Oxford Unive	<b>xtbooks</b> o <b>k Details</b> rrsity Press India, November	<b>40L</b>		
<b>Sr. No</b> 1. 2.	Vandana, Ahu Eric Greenber Returns on Yo	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H	xtbooks ok Details rsity Press India, November gital Marketing: Top Digita ill Professional October, 20	<b>40L</b> r, 2015 l Experts S 13.	hare the Formula fo	or Tangible
Sr. No 1. 2. 3.	Vandana, Ahu Eric Greenber Returns on Yo David Whitel	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H ey, "E-Commerce: Strategy, Technolog	xtbooks ok Details rsity Press India, November gital Marketing: Top Digita ill Professional October, 20 gies and Applications", McC	<b>40L</b> r, 2015 l Experts S 13. Graw Hill H	hare the Formula fo Education, 2017.	or Tangible
Sr. No 1. 2. 3.	Vandana, Ahu Eric Greenber Returns on Yo David Whitel	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H ey, "E-Commerce: Strategy, Technolog <b>Refere</b>	xtbooks ok Details rrsity Press India, November gital Marketing: Top Digita ill Professional October, 20 gies and Applications", McC	<b>40L</b> r, 2015 l Experts S 13. Graw Hill H	Thare the Formula for Education, 2017.	or Tangible
Sr. No 1. 2. 3. Sr. No	Vandana, Ahu Eric Greenber Returns on Yo David Whitel	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H ey, "E-Commerce: Strategy, Technolog Refere Bo	xtbooks ok Details rrsity Press India, November gital Marketing: Top Digita ill Professional October, 20 gies and Applications", McC ence Books: ok Details	<b>40L</b> r, 2015 l Experts S 13. Graw Hill H	hare the Formula fo Education, 2017.	or Tangible
Sr. No 1. 2. 3. Sr. No 1.	Vandana, Ahu Eric Greenber Returns on Yo David Whitel Puneet Bhatia	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H ey, "E-Commerce: Strategy, Technolog Refere Bo	xtbooks ok Details rrsity Press India, November gital Marketing: Top Digita ill Professional October, 20 gies and Applications", McC ence Books: ok Details Pearson Publications – 29 J	<b>40L</b> r, 2015 l Experts S 13. Graw Hill H une 2023	bhare the Formula for Education, 2017.	or Tangible
Sr. No 1. 2. 3. Sr. No 1. 2.	Vandana, Ahu Eric Greenber Returns on Yo David Whitel Puneet Bhatia Seema Gupta	Total Te Bo aja, "Digital Marketing", Oxford Unive rg, and Kates, Alexander, "Strategic Di our Marketing Investment", McGraw-H ey, "E-Commerce: Strategy, Technolog Refere Bo a, "Fundamentals of digital Marketing" , "Marketing Analytics"- Wiley Publica	xtbooks ok Details rrsity Press India, November gital Marketing: Top Digita ill Professional October, 20 gies and Applications", McC ence Books: ok Details Pearson Publications – 29 J ation, 2021	<b>40L</b> r, 2015 l Experts S 13. Graw Hill H une 2023	bhare the Formula for Education, 2017.	or Tangible

Unit 1	https://www.youtube.com/watch?v=68B3N0x3cPI&list=PLbRMhDVUMnge625uLkVoqfSuK-KJTBgp&index=1
Unit 2	https://www.youtube.com/watch?v=3iSKFCKLUsI&list=PLbRMhDVUMnge625uLkVoqfSuK-KJTBgp&index=2
Unit 3	https://www.youtube.com/watch?v=67lO4HtJitg&list=PLbRMhDVUMnge625uLkVoqfSuK-KJTBgp&index=8
Unit 4	https://www.youtube.com/watch?v=fYSvrZD4G38&list=PLbRMhDVUMnge625uLkVoqfSuK-KJTBgp&index=14
Unit 5	https://www.youtube.com/watch?v=GauClv1HsZA&list=PLbRMhDVUMnge625uLkVoqfSuK-KJTBgp&index=19

Subject Name CRM Administration

Subject Code: AMICA0613

## Applicable in Department: MCA-Integrated

**Pre-requisite of Subject:** Basic understanding of CRM, Basic knowledge of computer, marketing concepts and good communication skills.

Course Objective: Understand the working concept of Trailhead and importance of Salesforce. To make familiar with data modelling and security concepts.

		Course (	Dutcomes (CO)			
Course outcome: After completion of this course students will be able to:						Bloom's Knowledge Level(KL)
CO 1	Describe the w	orking of Trailhead				K3
CO 2	Describe the ir	nportance of Salesforce and its feature	S			K2
CO 3	Implement the	validations				K3
CO 4	Discuss the co	ncept and importance of user managen	nent			K2
CO 5	Identify and in	nplement Security concepts in Industry	I			K2, K3
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Trailhead and Trailblazer Community	TrailMix-1 :	Trailhead and Trailblazer Community, Impacts of the fourth Industrial Revolution, Trailhead Playground Management	Lectures, PPTS, Notes	8L	Assignment	CO1

Security	Security	Customization, Security specialist				
Customizat ion 5. Data	Data Security	App Basics, UserManagement Data Security, Salesforce Mobile App Customization, Security specialist	Lectures, PPTS, Notes	8L	Assignment	CO5
4. Lightening Experience	TrailMix-3 :	Lightening Experience Customization, Salesforce Mobile	Lectures, PPTS, Notes	8L	Assignment	CO4
3. Data Modelling	Trail Mix -2 :	Data Modelling , Formulas and Validations, Picklist Administration, AppExchange, Basic Data Management	Lectures, PPTS, Notes	8L	Assignment	CO3
2. Salesforce Platform Basic	Salesforce Platform Basic	Salesforce Platform Basic, Salesforce User Basic, Lightening Experience User Basic, Lightening Experience Basics	Lectures, PPTS, Notes	8L	Assignment	CO2

Sr. No	Book Details
1.	Salesfore Essentials for Administrators, By Shrivasthava Mohith, Edition Ist, 2018
2.	Christopher Mathew Spencer, "Salesforce : A quick Study laminated Reference Guide" eBook by Amazon (Online)
3.	Mastering Salesforce CRM Administration By Gupta Rakesh Edition 2nd 2018
	Link: NPTEL/YouTube/Faculty Video Link:
Unit 1	www. Trailhead.salesforce.com
	https://www.youtube.com/watch?v=9dlgpAKtL34&list=PLJYRK0JYJM2Fn9f1YBXtHoC6MGFKZpNh_&index=8
Unit 2	www.mindmajix.com/salesforce-tutorial
Unit 3	https://www.youtube.com/playlist?list=PLJYRK0JYJM2Fn9f1YBXtHoC6MGFKZpNh_
Unit 4	https://youtu.be/saRDk6sYkVg?si=7ZQcXHyjMeZl6h-2
Unit 5	https://www.youtube.com/watch?v=ncDZ4S2xhHk

Subject	Name: Computer Networks lab	L-T-P [0-0-4]
Subject	Code: AMICA0653Applicable in Department: N	ICA-Integrated
Course o	bjectives: To provide hands-on experience with network design, configuration, and troubleshooting, covering prot	ocols, hardware,
and softv	vare tools to build and maintain reliable and efficient network systems.	
	Course Outcomes (CO)	
Course	outcome: After completion of this course students will be able to:	Bloom's Knowledge Level(KL)
CO1	Identify and use various networking components Understand different transmissionmedia and design cables for establishing a network	K1
CO2	Implement any topology using network devices	К3
CO3	Analyze performance of various communication protocols.	K3
CO4	Discuss TCP/IP configuration for Windows and Linux	K2
CO5	Demonstrate the major software and hardware technologies used on computer networks	К3
	List of Practicals	
Sr No	Program Title	CO Mapping
1.	Connect and configure basic network devices (switch, router, PC).	CO1
2.	Create straight-through and crossover cables, test connectivity.	CO1
3.	Configure a switch with a hostname, passwords, and basic settings.	CO1
4.	Use commands to explore and clear the MAC address table on a switch.	CO1
5.	Create and assign VLANs on a switch, verify VLAN configurations.	CO2
6.	Configure a router with a hostname, passwords, and basic settings.	CO2
7.	Assign IP addresses to devices, subnet a network, and configure interfaces.	CO2

8.	Configure static routes between two or more routers.	CO2
9.	Set up a router or server as a DHCP server, configure DHCP pools.	CO3
10.	Use ping and traceroute to test connectivity and understand network paths.	CO3
11.	Configure a router on a stick or a Layer 3 switch for inter-VLAN routing.	CO3
12.	Configure STP on switches, test failover scenarios.	CO3
13.	Configure EtherChannel between switches, verify configuration.	CO2
14.	Configure EIGRP on routers, verify and troubleshoot EIGRP.	CO3
15.	Configure OSPF on routers, understand and verify OSPF areas.	CO3
16.	Configure standard and extended ACLs, apply them to interfaces.	CO2
17.	Configure static and dynamic NAT, and PAT on a router.	CO2
18.	Configure Syslog for logging and NTP for time synchronization.	CO2
19.	Configure a basic wireless LAN, set up SSIDs and security settings.	CO2
20.	Diagnose and resolve common VLAN and routing problems	CO2
21.	Configure SSH for secure remote access to network devices.	CO2
22.	Configure basic firewall rules on a router or firewall device.	CO2
23.	Configure IPS features on a network device, monitor alerts.	CO1
24.	Apply best practices for securing network devices (e.g., disable unused services, securepasswords).	CO1
25.	Configure port security on switches to restrict access based on MAC addresses.	CO1
26.	Implement VLAN access control policies and verify their effects.	CO2
27.	Write simple Python scripts to automate network configurations.	CO5
28.	Use Ansible to automate device configuration tasks.	CO5
29.	Set up SNMP for monitoring network devices.	CO3
30.	Set up and verify IPSec VPN connections between routers.	CO2

31.	Configure RSTP or MSTP, and test failover scenarios.	CO3			
32.	Configure OSPF for multiple areas, verify route propagation.	CO3			
33.	Configure basic BGP between routers, verify and troubleshoot BGP peering.	CO3			
34.	Configure route redistribution between different routing protocols.	CO3			
35.	Implement basic QoS policies on a router or switch.	CO5			
36.	Configure basic MPLS settings, verify MPLS forwarding.	CO3			
37.	Set up GRE tunnels between routers, test and verify tunnel connectivity.	CO3			
38.	Configure and verify DMVPN in a hub-and-spoke topology.	CO3			
39.	Configure VRRP or HSRP for gateway redundancy.	CO3			
40.	Set up and test IP SLA for monitoring and troubleshooting	CO5			
41.	Create a network design diagram using tools like Cisco Packet Tracer or GNS3.	CO5			
42.	Configure redundant links and devices, test failover scenarios.	CO5			
43.	Plan and design a wireless network for an office environment.	CO5			
44.	Use structured methodologies (e.g., OSI model approach) to troubleshoot network issues.	CO2			
45.	Use Wireshark to capture and analyze network traffic.	CO5			
46.	Set up SNMP monitoring on network devices, use SNMP tools to gather information.	CO3			
47.	Resolve VLAN-related issues based on a provided network scenario.	CO2			
48.	Troubleshoot and resolve issues with routing protocols (e.g., OSPF, EIGRP).	CO3			
49.	Design and implement a network with redundant paths and devices.	CO5			
50.	Diagnose and resolve common wireless network problems.	CO5			
	Required Software and Tools				
	1. Packet Tracer				

Subject	Code: AMICA0652Applicable in Department: M	CA-Integrated
<b>Course</b> transforn CG.	<b>Objective:</b> To implement drawing algorithm, polygon fitting, clipping and 2D transformation curves and an introduct nation. It provides the basics of OpenGL application programming interface which allows students to develop program	tion to 3D mming skills in
	Course Outcomes (CO)	
Course	outcome: After completion of this course students will be able to:	Bloom's Knowledge Level(KL)
CO1	Apply and compare the algorithms for drawing 2D images also explainaliasing, anti aliasing and half toning techniques	K3, K4
CO2	Analyze and apply clipping algorithms and transformation on 2D images.	K3, K4
CO3	Solve the problems on viewing transformations and explain the projection andhidden surface removal algorithms.	K2, K3
CO4	Use of geometric transformations on graphics objects and their application in composite form.	К3
CO5	Extract scene with different clipping methods and its transformation to graphics display device.	K4
	List of Practicals	-
Sr No	Program Title	CO Mapping
1.	To Study various in build graphics functions in Python library.	CO1
2.	Write a program to draw a line using DDA algorithm.	CO1
3.	Write a program to draw a line using Bresenham's algorithm.	CO1
4.	Write a program to draw a circle using midpoint algorithm.	C01
5.	Write a program to draw a circle using Bresenham's algorithm.	CO1
6.	Write a program to draw a rectangle using line drawing algorithm.	CO1

## L-T-P [0-0-4]

7.	Write a program to perform 2D Transformation on a line.	CO2	
8.	Write a program to perform shear transformation on a rectangle.	CO2	
9.	Write a program to rotate a circle (alternatively inside and outside) around the circumference of another circle.	CO2	
10.	Write a program to draw a car using in build graphics function and translate it frombottom left corner to right bottom corner of screen.	CO2	
11.	Write a program to draw balloons using in build graphics function and translate it frombottom left corner to right top corner of screen.	CO2	
12.	<ul> <li>Write a program to draw a cube using in build library function and perform 3Dtransformations <ol> <li>Translations in x, y, z directions</li> <li>Rotation by angle 450 about z axis, rotation by 600 about y-axis in succession.</li> </ol> </li> <li>Scaling in x-direction by a factor of 2, scaling in y- direction by a factor of 3.</li> </ul>	CO3	
13.	Write a program to implement line clipping (Cohen Sutherland algorithm).	CO3	
14.	Write a program for making Bezier curve.	CO4	
15.	Write a program to study various in build functions for 2D drawing in MAYA software.	CO4	
16.	Write a program to show animation of a ball moving in a helical path.	CO5	
Required Software and Tools			
	<ol> <li>Turbo C</li> <li>Code Block</li> <li>VS Code</li> </ol>		

Subject Name: Advance Java Lab

Applicable in Department: MCA-Integrated

**Course objectives:** To create a fully functional window-based applications. To develop GUIapplications, and designing and implementing Component based application like Jelly Beans, Color bean, and designing of server-sidepages, client server interactions with TCP.

	Course Outcomes (CO)			
Course	outcome: After completion of this course students will be able to:	Bloom's Knowledge Level(KL)		
CO 1	Develop the window-based applications.	K5		
CO 2	Create a client and server communication using netpackage.	K5		
CO 3 Develop reusable software components using java beans				
CO 4	Demonstrate server-side programming.	K3		
CO 5	Create the dynamic web pages using JSP.	K5		
	List of Practicals			
Sr No	Program Title	CO Mapping		
1	Write a Java Program to create an applet that show a simple message along withbackground and foreground colors	? <b>CO1</b>		
2	Write a Java Program to create an applet that scrolls a message from left to right?	CO1		
3	Write a Java Program to create an applet that receives an integer in one text field, and computes its factorial value a returns it in another text field, when the button named "Compute" is clicked.	and CO1		
4	Write a Java Program to create an applet that receives a string and returns either itUppercase or Lowercase, Revers given string, and length of a given String.	e of CO1		
5	Write a java program to draw Lines, ovals, filled ovals and arcs, filled arcs?	CO1		
6	Write a java program to draw rectangle, filled rectangle and rounded rectangle and filledrounded rectangle with any two colors?	y CO1		
7	Write a java program to draw a smiley face?	CO1		

8	Write a Java program to demonstrate the mouse event handlers.	CO1
9	Write a Java program to demonstrate the key event handlers.	CO1
10	Write a Java program that creates a user interface to perform integer divisions. The user enters two numbers in the text fields, Num1 and Num2. The division of Num1 and Num2is displayed in the Result field when the Divide button is clicked. If Num1 or Num2 werenot an integer, the program would throw a Number Format Exception. If Num2 were Zero, the program would throw an Arithmetic Exception Display the exception in a message dialog box.	CO1
11	Write a Java program that works as a simple calculator. Use a grid lay	CO1
12	Write a Java Program to create 4 push Buttons bearing the names of 4 colors. When abutton is licked, that particular color is set as background color in a frame?	CO1
13	Write a Java Program that simulates a traffic light. The program lets the user select one of three lights: red, yellow, or green. When a radio button is selected, the light is turned on, and only one light can be on at a time No light is on when the program starts.	CO1
14	Write a Java Program a simple user form which reads the name of a user and mail id in Text fields, select gender with radio buttons, and selects some Known languages using checkboxes, and also enters an address in a text area. After filling details whenever a userpress the "submit" button, then displays all the information about the user input.	CO1
15	Write a Java Program to create multiple frames, which create a Frame2 with a 'back' button, such that when a user click 'back' button, Frame 2 is closed and we see the Frame1 only?	CO1
16	Write a Java Program to create an applet using Swings which contains two push buttons. If a user presses a particular button then display a message 'selected' button is pressed.	CO1
17	Write a Java Program to create a frame using swing in which create a push button with alabel and image. When the button is clicked an image is displayed in the Frame?	CO1
18	Write a Java Program to create a student table, which includes name, roll no, branch andage or DOB?	CO1
19	Write a Java Program to create a tabbed pane with two tabs. In the first tab sheet, displaysome push buttons with names of Branches. In second tab sheet, display checkboxes withnames of subjects.	CO1
20	Write a java program to create a menu with several menu items by implementing JMenu.	CO1
21	Write a java program to create a combo box with some name of some places. The user canselect any one name from the list and the selected country name is displayed in the frame?(Use JComboBox)	CO1
22	Write a java program to select multiple places and displayed in Frame using JList?	CO1
23	Write a java program to create a simple visual bean with a area filled with a color. Theshape of the area depends on the property shape. If it is set to true then the shape of thearea is Square and it is Circle, if it is false. The color of the area	CO3

	should be changed dynamically for every mouse click. The color should also be changed if we change the color in the "property window "	
24	Write a java program to create a bean that performs conversion of American dollar toIndian rupee.	CO3
25	Write a java program to create a bean that counts the number of button clicks?	CO3
26	Write a Java program that implements a simple client/server application. The client sendsdata to a server. The server receives the data, uses it to produce a result, and then sends the result back to the client. The client displays the result on the console. For ex: The datasent from the client is the radius of a circle, and the result produced by the server is the area of the circle. (Use java.net)	CO2
27	Write a Java program to retrieve the information from the given URL? (Note: Read theURL from Command Line Arguments)	CO4
28	Write a java program to create a sample TCP chat application where client and server canchat with each other?	CO4
29	Installation of Apache Tomcat webserver	CO4
30	Write a java Program to create a simple servlet and run it using tomcat server.	CO5
31	Write a java Program to create a JSP page to display a simple message along with currentDate?	CO5
32	Write a java Program to create a JSP page to display the random number?	CO5
33	Write a java Program to create a User request page in JSP?	CO5
	Required Software and Tools	
1. V:	S Code	

Subject Name: Essence Of Indian Traditional Knowledge L-T-P [2-					
Subject Cod	le: AMICANC	20602	Α	pplicable in Department: <b>N</b>	ICA-Integrated
Pre-requisit	e of Subject:	Basic Understanding of the Indian Co	nstitution.		
Course Obj	ective: This	course aims to provide basic knowled	dge about different theor	ies of society, state and polity	y in India, Indian
literature, cu	lture, Indian rel	ligion, philosophy, science, manageme	ent, cultural heritage and c	different arts in India.	
		Course (	Dutcomes (CO)		
Course outo	come: After con	npletion of this course students will be	able to:		Bloom's Knowledge Level(KL)
CO 1	Understand the	e basics of past Indian politics and state	e polity.		K2
CO 2	Understand the	e Vedas, Upanishads, languages & liter	rature of Indian society.		K2
CO 3	CO 3 Know the different religions and religious movements in India.				K4
CO 4	CO 4 Identify and explore the basic knowledge about the ancient history of Indian agriculture, science & technology, and ayurveda.				K4
CO 5	CO 5 Identify Indian dances, fairs & festivals, and cinema.			<u>K1</u>	
		S	yllabus		
Unit No	Module Name	Topic covered	Pedagogy	Lecture Practical/ Required Assignment/ (L+P) Lab Nos	CO Mapping

1. Society State And Polity In India	State In Ancient India:	Evolutionary Theory, Force Theory, Mystical Theory Contract Theory, Stages of State Formation in Ancient India, Kingship , Council of Ministers Administration Political Ideals in Ancient India Conditions' of the Welfare of Societies, The Seven Limbs of the State, Society in Ancient India, Purusārtha, Varnāshrama System, Āshrama or the Stages of Life, Marriage, Understanding Gender as a social category, The representation of Women in Historical traditions, Challenges faced by Women.	Lectures, PPTS, Notes	4L	Assignment	CO1
2. Indian Literature, Culture, Tradition, And Practices	Evolution Of Script And Languages In India:	Harappan Script and Brahmi Script. The Vedas, the Upanishads, the Ramayana and the Mahabharata, Puranas, Buddhist And Jain Literature in Pali, Prakrit And Sanskrit, Sikh Literature, Kautilya's Arthashastra, Famous Sanskrit Authors, Telugu Literature, Kannada Literature, Malayalam Literature ,Sangama Literature Northern Indian Languages & Literature, Persian And Urdu ,Hindi Literature	Lectures, PPTS, Notes	4L	Assignment	CO2
3. Indian Religion, Philosophy, And Practices	Indian Religion, Philosophy, And Practices	Pre-Vedic and Vedic Religion, Buddhism, Jainism, Six System Indian Philosophy, Shankaracharya, Various Philosophical Doctrines, Other Heterodox Sects, Bhakti Movement, Sufi movement, Socio religious reform movement of 19th century, Modern religious practices.	Lectures, PPTS, Notes	4L	Assignment	CO3

4. Science, Manageme nt And Indian Knowledge System	Science, Management And Indian Knowledge System	Astronomy in India, Chemistry in India, Mathematics in India, Physics in India, Agriculture in India, Medicine in India , Metallurgy in India, Geography, Biology, Harappan Technologies, Water Management in India, Textile Technology in India ,Writing Technolog	Lectures, PPTS, Notes	4L	Assignment	CO4	
5.Cultural Heritage And Performing Arts	Cultural Heritage And Performing Arts	Indian Architect, Engineering and Architecture in Ancient India, Sculptures, Pottery, Painting, Indian Handicraft, UNESCO'S List of World Heritage sites in India, Seals, coins, Puppetry, Dance, Music, Theatre, drama, Martial Arts Traditions, Fairs and Festivals, UNESCO'S List of Intangible Cultural Heritage, Calenders, Current developments in Arts and Cultural, Indian's Cultural Contribution to the World. Indian Cinema	Lectures, PPTS, Notes	4L	Assignment	CO5	
		Total		20L			
		Te	xtbooks				
Sr. No		Во	ok Details				
1.	Sivaramakrish	Sivaramakrishna (Ed.), Cultural Heritage of India-Course Material, Bharatiya Vidya Bhavan, Mumbai, 5th Edition, 2014.					
2.	S. Baliyan, Ind	S. Baliyan, Indian Art and Culture, Oxford University Press, India					
3.	Nitin Singhania, Indian Art and Culture: for civil services and other competitive Examinations, 3rd Edition, Mc Graw Hill						
Reference Books:							
Sr. No		Во	ok Details				
1.	Romila Thapa	r, Readings In Early Indian History Ox	ford University Press, India				

2.	Basham, A.L., The Wonder that was India (34th impression), New Delhi, Rupa & co.
	Link: NPTEL/YouTube/Faculty Video Link:
nttps://online	courses.swayam2.ac.in/imb23_mg53/preview

Subject Nar	ne: Constitutio	on Of India, Law and Engineering				L-T-P [2-0-0]
Subject Cod	le: AMICANC	20601	Арр	licable in D	epartment: MC	A-Integrated
Pre-requisit	e of Subject:	Basic Understanding of the Indian Co	nstitution.			
Course Obj diversified le	ective: To ac egal document	equaint the students with legacies of co of India and philosophy behind it. <b>Course (</b>	onstitutional development in Dutcomes (CO)	India and	help them to unde	rstand the most
Course outc	ome: After co	mpletion of this course students will be	able to:			Bloom's Knowledge Level(KL)
CO 1	Identify and e	xplore the basic features and modalitie	s about Indian constitution.			K1
CO 2	Differentiate a	nd relate the functioning of Indian parl	iamentary system at the cer	ter and stat	e level.	K2
CO 3	Differentiate of	lifferent aspects of Indian Legal Systen	n and its related bodies.			K4
CO 4	Discover and	apply different laws and regulations rel	lated to engineering practice	es.		K4
CO 5	Correlate role	of engineers with different organizatio	ns and governance models			K4
		S	yllabus			
Unit No	Module Name	Topic covered	Pedagogy	Lecture Required (L+P)	Practical/ Assignment/ Lab Nos	CO Mapping
1. Introductio n And Basic Informatio n About Indian Constitutio n	Introduction	Meaning of the constitution law and constitutionalism, Historical Background of the Constituent Assembly, Government of India Act of 1935 and Indian Independence Act of 1947,Enforcement of the Constitution, Indian Constitution and its Salient Features, The Preamble of the Constitution, Fundamental Rights, Fundamental	Lectures, PPTS, Notes	4L	Assignment	CO1

		Duties, Directive Principles of State				
		Policy. Parliamentary System.				
		Federal System. Centre-State				
		Relations. Amendment of the				
		Constitutional Powers and				
		Procedure, The historical				
		perspectives of the constitutional				
		amendments in India				
		National Emergency, President Rule,				
	Emergency	Financial Emergency, and Local Self				
	<b>Provisions:</b>	Government – Constitutional				
		Scheme in India.				
		Functions of Rajya Sabha, Functions				
		of Lok Sabha, Powers and Functions				
	<b>Powers Of</b>	of the President, Comparison of				
	Indian	powers of Indian President with the				
	Parliament	United States, Powers and Functions				
2. Union		of VicePresident, Powers and				
		Functions of the Prime Minister				
Executive		The Independence of the Supreme				
And State		Court, Appointment of Judges,				
Executive	T 1	Judicial Review, Public Interest	Lectures, PPTS, Notes	4L	Assignment	CO2
	Judiciary	Litigation, Judicial Activism,				
		LokPal, Lok Ayukta, The Lokpal and				
		Lok ayuktas Act 2013				
		Powers and Functions of the				
		Governor, Powers and Functions of				
	State	the Chief Minister, Functions of				
	Executives	State Cabinet, Functions of State				
		Legislature, Functions of High Court				
		and Subordinate Courts.				

3.Introducti on And Basic Informatio n About Legal System	The Legal System, Sources Of Law And The Court Structure:	Enacted law -Acts of Parliament are of primary legislation, Common Law or Case law, Principles taken from decisions of judges constitute binding legal rules. The Court System in India and Foreign Courtiers (District Court, District Consumer Forum, Tribunals, High Courts, Supreme Court).	Lectures, PPTS, Notes	4L	Assignment	CO3
	Arbitration:	As an alternative to resolving disputes in the normal courts, parties who are in dispute can agree that this will instead be referred to arbitration. Contract law, Tort, Law at workplace.				
4.Intellectu al Property Laws And Regulation To Informatio n	Intellectual Property Laws	Introduction, Legal Aspects of Patents, Filing of Patent Applications, Rights from Patents, Infringement of Patents, Copyright and its Ownership, Infringement of Copyright, Civil Remedies for Infringement, Regulation to Information, Introduction, Right to Information Act, 2005, Information Technology Act, 2000, Electronic Governance, Secure Electronic Records and Digital Signatures, Digital Signature Certificates, Cyber Regulations Appellate Tribunal, Offences, Limitations of the Information Technology Act.	Lectures, PPTS, Notes	4L	Assignment	CO4

5.Business Organizatio ns And E- Governanc e	Sole Traders, Partnerships, Companies: The Company's Act:	Introduction, Formation of a Company, Memorandum of Association, Articles of Association, Prospectus, Shares, Directors, General Meetings and Proceedings, Auditor, Winding up. E-Governance and role of engineers in E- Governance, Need for reformed engineering serving at the Union and State level, Role of I.T. professionals in Judiciary, Problem of Alienation and Secessionism in few states creating hurdles in Industrial development.	Lectures, PPTS, Notes	4L	Assignment	CO5		
	Total 20L							
		Te	extbooks					
Sr. No		Bo	ok Details					
1.	M Laxmikantł	n: Indian Polity for civil services and o	ther State Examination,6th E	Edition, Mo	c Graw Hill			
2.	Brij Kishore Sharma: Introduction to the Indian Constitution, 8th Edition, PHI Learning Pvt. Ltd.							
3.	Granville Austin: The Indian Constitution: Cornerstone of a Nation (Classic Reissue), Oxford University Press.							
		Refer	ence Books:					
Sr. No	Book Details							
1.	Madhav Khosla: The Indian Constitution, Oxford University Press.							
2.	2. PM Bakshi: The Constitution of India, Latest Edition, Universal Law Publishing.							
3.	3. 3. V.K. Ahuja: Law Relating to Intellectual Property Rights (2007)							
Link: NPTEL/YouTube/Faculty Video Link:								
Unit 1	Unit 1 https://archive.nptel.ac.in/courses/129/106/129106003/							

Unit 2	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 3	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 4	https://archive.nptel.ac.in/courses/129/106/129106003/
Unit 5	https://archive.nptel.ac.in/courses/129/106/129106003/