

Effective from Session: 2017	7-2018						
Course Code	CA314	Title of the Course	INTRODUCTION TO OPEN SOURCE ENVIRONMENT	L	Т	Р	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	NONE	Co-requisite	CA323				
Course Objectives	<ul> <li>To</li> <li>To</li> <li>To</li> <li>To</li> <li>To</li> <li>PH</li> </ul>	learn basic concepts, syn learn and implement PH learn and implement dec learn various tools and i demonstrate the use of P Programming and My	ntax and uses of PHP as server-side scripting language. P script and Arrays. Sision making, looping and object oriented features supported mplement forms in PHP MySQL database in phpMyAdmin and build dynamic wo SQL	l by PH eb site	IP using	server s	side

	Course Outcomes
CO1	Able to understand the basic concepts, syntax and uses of PHP as general-purpose language
CO2	Able to understand basic of PHP as scripting Language and implement Arrays in PHP.
CO3	Able to understand and implement decision making, looping and other object-oriented features supported by PHP.
CO4	Students able to understand latest framework supported by PHP and implement forms using PHP.
CO5	Students able to develop a web application using PHP and MySQL as database.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction to PHP	Introduction, Uses of PHP, Using PHP in Web Application, Using PHP for Database Applications, Using PHP with your File System, Using PHP for System Commands, Understanding the working of PHP, PHP as a General-Purpose Language, PHP for the Web, keeping up with Changes in PHP, PHP 5, Writing PHP Statements, Adding PHP Sections to HTML File, PHP Output Statement, Documenting your Scripts.	7	CO1
2	Basics of PHP Script & Working with Data	Understanding Data Types, Performing Arithmetic, Manipulating Characters String, Using Date and Time, Naming Variables, assigning values to Variable, Removing Variables, Using Constants, Handling Errors. Storing Data in Group by using Arrays: Introduction, Building Arrays, Assigning values to Arrays, Sorting Arrays, using value in Arrays, Building Multidimensional Arrays.	9	CO2
3	Controlling the Flow Script & Reusing PHP Code	Introduction, Changing the order of Statements Executed, setting up Condition, Joining Simple Conditions to make Complex Conditions, Using Conditions in Conditional Statements and Loops, writing if Statements, Building and using Loops, Breaking Loop, Including Files in Scripts, Understanding Store for included Files, Writing Functions, Using Functions in PHP. Object Oriented Concepts in PHP: Introduction, Understanding Object Oriented Programming, Identifying Objects, Writing Classes, Object Oriented Concepts.	8	CO3
4	Web Application and PHP	Introduction, Understanding Web Security, Displaying Static Pages, Collecting Information from User with HTML Forms, Processing Information received from Users, Passing Information from Page to Page, Using Cookies, Using Hidden Fields in HTML Forms, Using HTTP Session Functions, Adding JavaScript to PHP Scripts, Writing and Reading Flat Files in PHP. Introduction to CMS (Drupal, Joomla) and PHP Framework (Cake PHP).	8	CO4
5	PHP and MySQL	Introduction to MySQL, Effectiveness of MySQL, MySQL Tools, Prerequisites for MySQL Connection, Displaying Queries in Tables, Database Tables, Database Manipulation in MySQL (CREATE, INSERT, UPDATE, DELETE) Operation, SQL Functions. Exchanging Data between PHP and other Programs, Understanding Database supports in PHP, Using PHP to Interact with a Database, PHP/MYSQL Connection, Handling Database-Connection Errors, Validating User Input using JavaScript.	8	CO5
Referen	ce Books:			
1. V1k	ram Vaswani, "PHP and	1 MySQL", Tata McGraw-Hill, 2005.		
2. Ber 3 Tin	n Converse Joyce Park	course, SAMOS, 2000. and Clark Morgan, "PHP 5 and MySOL" Wiley India Reprint 2008		
4 Rol	pert Sheldon Geoff Mo	es "Beginning MySOL", Wrox 2005		
a I aar	ning Source.			
1. http	s://www.tutorialspoint.	com/php/index.htm		
2. <u>h</u> ttp	s://www.w3schools.com	n/php/php_mysql_intro.asp		

						C	ourse	Articul	lation I	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)			
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	3		1		1		1						3	1				
CO2	3	1	2	1		2	1						3	1				
CO3	2	1	2		1	2	1						3	1				
CO4	1	1	2	1		3	1	2					2	1				
CO5		1	3		1	2	2	3					1	2				



Effective from Session: 2017	7-2018												
Course Code	CA315	Title of the Course	CYBER LAW AND INTERNET SECURITY	L	Т	Р	С						
Year	III	Semester	VI 3 1 0										
Pre-Requisite	NONE	ONE Co-requisite NONE											
Course Objectives	<ul> <li>To Bus</li> <li>To</li> <li>To pro 200</li> <li>To</li> </ul>	study the concepts of siness, Issues, Problems learn Internet Security a learn use of Encryption blems and digital signa 00, Introduction to India learn Investigation and I	<sup>2</sup> Fundamentals of E-commerce and understand the Impa and Prospects of E-commerce. nd their fundamentals for securing Transactions on web, issu a Techniques and their application in the field of computer ture. To learn Fundamentals of Cyber Law like Object a n Cyber Law, and Law related to Semiconductor Layout and Ethics and, Internet Security Treats.	act of ue rela scienc and Sc Desig	E-Con ted to fi e to sol tope of n.	irewall. ve secu the IT	on rity Act						

	Course Outcomes
CO1	Understand the different theoretical and cross-disciplinary approaches (criminological, political, legal and information security/management) to the study of cyber-security and the regulation of the Internet and the Internet of Things
CO2	Understand the structure, mechanics and evolution of the Internet in the context of emerging crime threats and technological and other trends in cyberspace.
CO3	Understand how to Distinguish and classify the forms of cybercriminal activity and the technological and 'social engineering' methods used to undertake such crimes.
CO4	Understand to Analyze and assess the impact of cybercrime on government, businesses, individuals and society. Evaluate the effectiveness of cyber-security, cyber-laws and other countermeasures against cybercrime and cyber warfare.
CO5	Understand to Investigate assumptions about the behavior and role of offenders and victims in cyberspace, and use basic web-tools to explore behavior on-line.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO								
1	Fundamentals of E- commerce	Basic of E-Commerce, Types of E-Commerce, Benefits, Advantages and Disadvantages, Impact of E-Commerce on Business. Network Infrastructure for E-Commerce: Internet and Intranet. E-Commerce: Issues, Problems and Prospects, Network Access Equipment's, Broadband Telecommunication.	8	CO1								
2	Internet Security	Security Issues on Web, Importance of Firewall, Components of Firewall, Transaction Security, Emerging Client Server, Security Threats, Network Security, Factors to Consider in Firewall Design, Limitation of Firewalls.	8	CO2								
3	Encryption Techniques, Symmetric Encryption Keys and Data Encryption Standard, Triple Encryption Asymmetric Encryption Secret Key Encryption, Public and Private Pair Key Encryption, Digital Signatures, Virtual Private Network. Digital Signatures: Technical Issues, Legal Issues, Electronic Records, Digital Contracts and Requirements of Digital Signature System.											
4	Fundamentals of Cyber Law	8	CO4									
5	Investigation and Ethics	Cyber Crime, Cyber Jurisdiction, Cyber Crime and Evidence Act, Treatment of Different Countries of Cyber Crime, Ethical Issues in Data and Software Privacy, Plagiarism, Pornography, Tampering Computer Documents, Data Privacy and Protection, Domain Name System, Software Piracy, Issues in Ethical Hacking. Internet Security Treats: Hacking, Cracking, Sneaking, Virus, Trojan horse, MaliciousCode and Logic Bombs, Introduction to Biometric Security and its Challenges, Finger Prints.	8	CO5								
Referen	ce Books:											
1. Ray	vi Kalakota, Andrew Wi	nston, "Frontiers of Electronic Commerce", Addison Wesley.										
2. Baj	aj and Nag, "E-Comme	rce: The Cutting Edge of Business", TMH.										
3. Hai	rish Chander, "Cyber La	w and IT Protection", PHI Publication.										
4. Me	rkov, Breithaupt, "Infor	mation Security", Pearson Education.										
5. Far	ooq Ahmad, "Cyber La	w in India", Pioneer Books.										
6. K.	6. K. K. Singh, Akansha Singh "Information Security and Cyber Law", Umesh Publication.											
e-Lear	ning Source:											
1. <u>http</u>	os://nptel.ac.in/courses/1	<u>06105241</u>										
2. <u>http</u>	s://www.javatpoint.con	ı/what-is-cyber-law										

						С	ourse	Articul	ation <b>N</b>	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)			
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	3		1		1								3	1				
CO2	3	1	2			1	1						2	1				
CO3	2	2	1	1	2	1							2	1				
CO4	2	2	2	1	1		1						1	3				
CO5	2	1	3			2	2						2	2				



Effective from Session: 2017	7-2018												
Course Code	CA316	Title of the Course	MANAGEMENT INFORMATION SYSTEM	L	Т	Р	С						
Year	III	Semester	VI 3 1 0										
Pre-Requisite	NONE	Co-requisite	NONE										
Course Objectives	<ul> <li>To Sys</li> <li>To</li> <li>To</li> <li>To</li> <li>To</li> </ul>	learn the basic knowle tem. learn the concepts of Ma learn the overall perspect learn how internet, E-Co learn the management of cepts in managing the b	edge and fundamentals of Information System and variou anagement Information System and Decision Support System etive of Planning and Control in an Organization. commerce and other technologies help in business processes. f Information Technologies in organizations. To learn the ro- usiness.	us type ns.	es of li various	1format	e						

	Course Outcomes
CO1	Able to understand the basic concepts of Information Systems and applying the same to solve the business problems.
CO2	Able to develop the knowledge of Management Information system and how it differs from other Information systems
CO3	Able to define Control and Planning process in an Organization with the characteristics and nature of control process
CO4	Able to use various technologies like Internet, Intranet, Extranet and E-Commerce in business operations and for Managerial decision support.
CO5	Acquainted with the facing challenges in management and using various advance systems such as ERP, SCM, CRM etc.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO							
1	Foundation of Information Systems	Introduction to Information System in Business, Fundamentals of Information Systems, Solving Business Problems with Information Systems, Types of Information Systems, Effectiveness and Efficiency Criteria in Information System.	8	CO1							
2	An Overview of Management Information System	Definition and Concept of a Management Information System, MIS Vs Data Processing, MIS and Decision Support System, MIS and Information Resources Management, End User Computing, Structure of a Management Information system.	8	CO2							
3	8	CO3									
4	Business Applications of Information Technology		8	CO4							
5	Managing Information Technology	Enterprise and Global Management, Security and Ethical Challenges, Planning and Implementing Changes. Advanced Concepts in Information Systems: Enterprise Resource Planning, Supply Chain Management, Customer Relationship Management and Procurement Management.	8	CO5							
Referen	ce Books:										
1. Bria	an, "Management Inforr	nation System", Tata Mcgraw-Hill Education Pvt. Ltd.									
2. Gordon B. Davis and Margrethe H. Olson, "Management Information System", Tata Mcgraw-Hill Education Pvt. Ltd.											
3. Brian, "Introduction to Information System", Tata Mcgraw-Hill Education Pvt. Ltd.											
4. Mu	rdick, "Information Sys	tem for Modern Management", PHI Learning Private Limited, Delhi India.									
5. Jaw	adekar, "Management I	nformation System", Tata Mcgraw-Hill Education Pvt. Ltd.									

6. Brian, "Management Information System", Tata Mcgraw-Hill Education Pvt. Ltd.

#### e-Learning Source:

1. https://ebooks.lpude.in/management/mba/term\_4/DMGT505\_MANAGEMENT\_INFORMATION\_SYSTEM.pdf

2. https://repository.dinus.ac.id/docs/ajar/Kenneth\_C.Laudon,Jane\_P\_Laudon\_- Management\_Information\_Sysrem\_13th\_Edition\_.pdf

		Course Articulation Matrix: (Mapping of COs with POs and PSOs)																
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO 7
CO1	3	2	1	1	1								3	1				
CO2	3	1	2			1	1						2	2				
CO3	2	2	1	1	1								2	1				
CO4		1	2		1	3	1						3	1				
CO5	1	2	2	1		1	1						2	2				



Effective from Session: 2017-2018												
Course Code	CA317	Title of the Course	E-GOVERNANCE	L	Т	Р	С					
Year	III	Semester	VI	3	1	0	4					
Pre-Requisite	NONE	Co-requisite	NONE									
• Course Objectives	<ul> <li>To</li> <li>Sof</li> <li>To</li> <li>and</li> <li>To</li> <li>App</li> <li>To</li> <li>App</li> </ul>	learn Concept of E-Gov provide an idea of usin tware in E-Governance learn basic concept of P Email Policy of Govern learn basics concept of plication Development b learn basics concept of plications.	ernance and E-Kranti framework. ng various open source software's and Framework for Ad Systems. olicy on Open Application Programming Interfaces (APIs) f ument of India. Policy on Use of IT Resources of Government of India and by Opening the Source Code of Government Applications. Application Development & Re-Engineering Guidelines for	loptior for Go Policy Cloud	n of Op vernme 7 on Co I Ready	oen Sou nt of Ind llaborat	rce dia ive					

	Course Outcomes
CO1	Able to understand basics of E-Governance and E-Kranti framework.
CO2	Able to understand various open source software's and Framework for adoption of Open Source in E-Governance Systems.
CO3	To understand the basic concepts of Policy on Open Application Programming Interfaces (APIs) and for Government of India and Email
	Policy of Government of India
CO4	To understand the basics concept of Policy on Use of IT Resources of Government of India and Policy on Collaborative Application
	Development by Opening the Source Code of Government Applications.
CO5	Able to understand basics concept of Application Development & Re-Engineering Guidelines for Cloud Ready Applications.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO								
1	Basic Concept of E- Governance	Meaning of E-Governance, Concept and need of E-Governance, Meaning of Digital India, Overview of E-Governance Framework. The E-Kranti Framework: Preamble, Role of E- Kranti in Digital India and its Approval, Objectives of E-Kranti, Principles of E-Kranti, Approach and Methodology for Implementing E-Kranti, Implementation Strategy of E- Kranti.	8	CO1								
2	Policy on Adoption of Open Source Software for Government of India	Objective, Policy Statement, Nature of Compliance, Applicability, How to Comply, Exception, Implementation Mechanism, Review of Policy. Framework for Adoption of Open Source Software in E-Governance Systems: Metadata, Scope and Applicability, OSS Current Scenario, Factors Influencing the Adoption of OSS, Impact of Adoption of OSS, Types of OSS Support Models, OSS Licenses, Security Aspects, Unified Software Development, Rapid Application Development, Localization and OSS, Device Driver, Procurement Guidelines, Stages for Induction of OSS Solution, Proposed Ecosystem	8	CO2								
3	Policy on Open Application Programming Interfaces (APIs) for Government of India	Objectives and Definition, Policy Statement, Nature of Compliances, Applicability, Implementation Mechanism, Review of Policy. Email Policy of Government of India: Objectives, Roles Specified for Implementation of the Policy, Basic Requirements of GoI E- mail Service, Responsibilities of User Organizations, Responsibilities of Users, Service Level Agreement, Scrutiny of E-mails/Release of Logs, Security Incident Management Process, Intellectual Property, Enforcement, Deactivation, Exemption, Audit.	8	CO3								
4	Policy on Use of IT Resources of Government of India	Scope, Objectives, Roles and Responsibilities, Access to the Network, Monitoring and Privacy, E-mail Access from the Government Network, Access to Social Media Sites, Security Incident Management Process, Intellectual Property, Enforcement, Deactivation, Audit. Policy on Collaborative Application Development by Opening the Source Code of Government Applications: Metadata, Preamble and Effective Date, Objectives, Applicability, Policy Statement, Responsibilities, Review.	8	CO4								
5	India         Applicationly, Forcy Statement, Responsibilities, Review.           Application         Introduction, Need for Software Development and Re-Engineering Guidelines, Evolution of Development & Re- Engineering           Introduction, Need for Software Development and Re-Engineering Guidelines, Evolution of E=Gov App Store, Solution Architecture, Standards, Adoption and Solution Engineering, Integration and Interoperability, Quality Certification, Release Management and Documentation, Solution Sizing and Scalability, Language and Interface, Legacy Integration: Digitization and Migration, Intellectual Property Rights (for Center and State- owned Applications). Cloud Enablement of Applications: Application Migration to Cloud, Software as a Service Characteristics, Utilizations of Indian Theory in Public Administration: Reliain Commetance of Administration: Belo of Indian Theory.         8         CO5											
Referen	ce Books:											
1. "e-0 and	1. "e-Governance Policy Initiatives under Digital India", by Department of Electronics and Information Technology, Ministry of Communication and Information Technology, Government of India, http://need.gov.in/ebook-e-governance-policy-initiatives-under-digital-india											
2. M.C	<ol> <li>M.G. Gupta and R.K. Tiwari (eds.), Reinventing the Government, IIPA, 1998.</li> </ol>											
3. Ric	3. Richard Hecks, Implementing and Managing e-Governance, Vistar Publications.											
4. Jan	Erik Lane, New Public	Management, Rout ledges, 2000.										

- 5. Work Bank Report, Good Governance, The Business of Government, 1997.
- 6. IJPA Special No. on "Indian Theory and Public Administration", July-September, 2000.
- 7. IJPA Special No. on "Towards Good Governance", July-September, 2000.

8. Articles on Indian Theory, e-Governance and Good governance for IJPA, ISDA Journal and Administrative Change.

e-Learning Source:

. https://byjus.com/free-ias-prep/significance-of-e-governance/

2. https://wikieducator.org/images/0/0f/Egovbook.pdf

						С	ourse	Articul	lation I	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Os)			
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	3	1	1	1	1		1						3	1				
CO2	3	1	2	1		2	1						3	1				
CO3	1	1	2		2		1						3	1				
CO4	1	1	3		1	2	2						2	2				
CO5	2	1	2	1		1							2	2				



Effective from Session: 2017	7-2018						
Course Code	CA318	Title of the Course	FUNDAMENTALS OF E-COMMERCE	L	Т	Р	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	NONE	Co-requisite	NONE				
Course Objectives	<ul> <li>To</li> <li>To</li> <li>e-sl</li> <li>To</li> <li>To</li> <li>To</li> <li>To</li> <li>star</li> <li>To</li> <li>To</li> </ul>	provide knowledge of e- enhance practical know hopping etc. give knowledge for arch offer knowledge of encr construct the concept of give the implementation adards. provide the practical kn- develop business skill a	-commerce with its technology, benefits, limitations and imp eledge for different applications of e-commerce such as e-b nitecture framework and security aspects in e-commerce. syption techniques used in e-commerce. process of electronic payment in e-commerce along with its on knowledge about Electronic Data Interchange with resp owledge of security issues in Electronic Data Interchange. nd techniques for digital marketing.	anking anking risk. pect to	busine g, eLear	ss. ning an ecture a	d and

	Course Outcomes
CO1	Gain knowledge of e-commerce with its technology, benefits, limitations, impact on business.
CO2	Understand practical knowledge of applications of e-commerce such as e-banking, eLearning and e-shopping etc.
CO3	Learn about the knowledge of architecture framework and security aspects in ecommerce
CO4	Apply knowledge of encryption techniques used in e-commerce
CO5	Understand the concept of process of electronic payment in e-commerce along with its risk.
C06	Implementation knowledge about Electronic Data Interchange with respect to architecture and standards.
C07	Apply practical knowledge of security issues in Electronic Data Interchange.
C08	Establish business skill and techniques for digital marketing

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO								
1	E-Business and E- Commerce	Introduction, Potential Benefits, Limitations, Classifications, Impact of E-Commerce on Business Models. E-Commerce Applications: Entertainment, E-Marketing, E-Advertising, Search Engines, E-Banking, Mobile Commerce, Online Trading, E-Learning, E-Shopping, Information Superhighway.	8	CO1								
2	Architecture Framework of E- Commerce	Application Services, Brokerage and Data Management, Interface Layers, Secure Messaging, Middleware Services and Network Infrastructure. Security Protocols: Open Systems Interconnection (OSI), TCP/IP, FTP, HTTP, SMTP, S-HTTP, SSL, NNTP. Messaging Protocols: Basic Mail Protocol, Security Enhanced Mail Protocol, Web Security Issues, Encryption Techniques: Symmetric and Asymmetric.	8	CO2								
3 E-Commerce Applications Consumer Oriented E-Commerce Applications, Mercantile Process Model: Consumers Perspective and Merchant's Perspective. Electronic Payment Systems: Advantages and Risks, Types of Payment System (Credit Cards, E-Cash, Smart-Cards), etc.												
4	Electronic Data Interchange	8	CO4									
5	Digital Marketing	Search Engines, Directories, Registrations, Solicited Targeted E-mails, Interactive Sites, Banners, Advertising, Spam Mails, E-mail, Chain Letters. Applications of 5P's (Product, Price, Place, Promotion, People). E-Advertising Techniques: Banners, Sponsorships, Portals, Online Coupons, Digital Assets of Company.	8	CO5								
Referen	ce Books:											
1. Dav	vid Whiteley, "E-Comm	erce", Tata McGraw Hill, 2000.										
2. Gre	enstein and Feinman, "	Electronic Commerce – Security: Risk Management & Control", McGraw-Hill, 1999.										
3. Ray	vi Kalakota and A.B. W	hinston, "Frontiers of Electronic Commerce", Pearson Education, 2005.										
4. Efr	ami Turban, Jae Lee, Da	avid King, K. Michale Chung, "Electronic Commerce", Pearson Education, 2000.										
5. Her	5. Henry Chan, Raymond Lee, Elizabeth Chang, "E-commerce: Fundamentals and Applications", Wiley, 2001.											
e-Learning Source:												
1. https	1. https://www.tutorialspoint.com/e_commerce/index.htm											
2. https:/	//www.geeksforgeeks.or	rg/e-commerce/										

						C	ourse	Articul	ation <b>N</b>	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)			
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
C01	3	1	1		1		1						3	1				
CO2	2	1	1			3	1						2	1				
CO3	2	2	1	1		2							3	1				
CO4		1	2		1	3	1	1					1	2				
CO5	3	1	2	1		1	1						2	2				
C06	1	1	3	1	2	1							3	1				
C07		1	2		1	3	1						2	2				
C08	1	2	2	1	2	1							3	1				



Effective from Session: 2017	7-2018						
Course Code	CA319	Title of the Course	ERP SYSTEMS	L	Т	Р	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	NONE	Co-requisite	NONE				
Course Objectives	<ul> <li>To</li> <li>To</li> <li>To</li> <li>ER</li> <li>To</li> <li>To</li> </ul>	learn the basic concepts learn different technolog learn the concepts of E P study and understand th learn the different tools	of Enterprise Resource Planning. gies used in ERP. RP Manufacturing Perspective and ERP Modules. To learn e ERP life cycle. used in ERP.	what a	are the 1	benefits	of

	Course Outcomes
CO1	Able to understand the basic knowledge of Enterprise Resource Planning.
CO2	Abel to Identify different technologies used in Enterprise Resource Planning.
CO3	Abel to understand and apply the concepts of ERP Manufacturing Perspective and ERP Modules.
CO4	Discuss the benefits, Success and Failure Factors of an ERP Implementation.
CO5	Abel to understand and implement the ERP life Cycle. Apply different tools and Software used in ERP.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO							
1	Introduction to ERP	Common Myths, Advantages, Basic Concepts, Risks and Benefits. Evolution of ERP: Material Requirement Planning, Manufacturing Resource Planning, ERP, e-ERP. ERP and Related Technologies: Business Process Reengineering (BPR), Data Warehousing, Data Mining, Online Analytical Processing (OLAP), Online Transaction Processing (OLTP), Supply Chain Management (SCM) and Customer Relationship Management (CRM).	10	CO1							
2	ERP Marketplace and Marketplace Dynamics	Market Overview, Marketplace Dynamics, Changing ERP Market, Functional Modules. ERP Implementation Basics: Technological, Operational, and Business reasons for Implementing ERP, Implementation Challenges, Implementation Life Cycle, Package Selection	8	CO2							
3ERP Transition StrategiesBig Bang Strategy, Phased Implementation, Parallel Implementation, Process Line Transition Strategy. ERP Implementation Process: Implementation Methodologies, Implementation Plan, Risk Assessment, ERP Project Teams, Implementation Vendors Evaluation Criterion.8CO											
4	Success and Failure Factors of an ERP Implementation	Success Factors, Failure Factors. ERP Operation and Maintenance: After Going Live, Ongoing Implementation Efforts, Upgrading Vs New Software, Operation and Maintenance of the ERP System, ERP Maintenance Phase, Maximizing the ERP System	8	CO4							
5	Emerging Trends in ERP	Supply Chain Integration, The E-Business Process Model, Components of E-Business Supply Chain, Future of ERP, Faster Implementation Methodologies, Customization Tools, Business Models, Challenges of E-Commerce. Commonly Used ERP Packages: Tally ERP, TCS-ION, SAP.	8	CO5							
Referen	ce Books:										
1. Lex	tis Leon, "Enterprise Re	source Planning", TMH.									
2. Bra	dy, Manu, Wegner, "En	terprise Resource Planning", TMH.									
3. V.k	3. V.K Garg, N.K. Venkitakrishnan, "ERP Ware: ERP Implementation Framework", Prentice Hall of India.										
e-Learning Source:											
1. https	://www.tutorialspoint.co	om/management_concepts/enterprise_resource_planning.htm									
2. https:/	//www.javatpoint.com/e	rp-full-form									

						C	ourse	Articul	lation I	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)			
PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO																		
CO1	3		1		1								3	1				
CO2	2	3	1	2		1		1					2	2				
CO3	2	1	2	1		2	1						3	1				
CO4	1	1	2		1		3						1	2				
CO5	2	1	3	1		2	2	1					3	1				



Effective from Session: 2017	7-2018						
Course Code	CA320	Title of the Course	AI AND EXPERT SYSTEMS	L	Т	Р	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	NONE	Co-requisite	NONE				
Course Objectives	<ul> <li>To</li> <li>Uno</li> <li>To</li> <li>Lea</li> <li>Uno</li> </ul>	learn the concepts of Ar derstand the concepts of develop the logical skill arn the concepts how to derstand the concepts of	tificial Intelligence (AI). Searching techniques. s of knowledge and its representational structure. design the program in LISP. Expert system.				

	Course Outcomes										
CO1	Study the concepts of AI.										
CO2	Develop the searching algorithms.										
CO3	Understand the knowledge skills and it's representational structure in AI.										
CO4	Study the concepts of Learn the concepts how to design the program in LISP.										
CO5	To learn the concepts of Expert system										

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Overview of AI	Definition of AI, The AI Problems, Application of AI, Water Jug Problem, Defining the Problem as a State Space Search, Problem Characteristics, Production Systems, Control Strategies, Forward and Backward Chaining	10	CO1
2	Search Techniques	Depth First Search, Breadth First Search, Depth Limited Search, Iterative Deepening First Search, Hill Climbing, Best First Search and A* Algorithm, OR Graphs, Problem Reduction, AO* Algorithm, Constraint Satisfaction Problems.	8	CO2
3	Knowledge Representation	Approach to Knowledge Representation, Issues in Knowledge Representation, First Order Predicate Logic, Horn's Clauses, Conversion to Clausal Form, Resolution Principle in Propositional Logic, Semantic Networks, Frame Structure.	8	CO3
4	Introduction to Functional Programming Language	Introduction to LISP and its Syntax, Numeric Function, Basic List Manipulation Function, Input/ Output and Local Variables, Recursion Function, Property of List, Arrays.	8	CO4
5	Expert System	Introduction to Expert Systems, Rule Based System Architecture, Knowledge Acquisition and Validation, Expert System Shells. Case Studies: MYCIN	8	CO5
Referen	ce Books:			
1. Ela	ine Rich and Kevin Kni	ght, "Artificial Intelligence", Tata McGraw Hill.		
2. Dar	n W.Patterson, "Introdu	ction to Artificial Intelligence and Expert Systems", Prentice Hall of India.		
3. Nils	s J.Nilsson, "Principles	of Artificial Intelligence", Narosa Publishing house.		
4. Stu	art Rusell, Peter Norvig	, "Artificial Intelligence: A Modern Approach", Pearson Edition 2.		
e-Lear	ning Source:			
1. https	://nptel.ac.in/courses/10	6106140		
2. https:/	//www.techtarget.com/s	earchenterpriseai/definition/AI-Artificial-Intelligence		

						С	ourse	Articul	lation <b>N</b>	Matrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)			
PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
co													2					
C01	3	1			1								2	2				
CO2	1	1	3	1		2	2	1					2	2				
CO3	3	1	1	1		1	1						3	1				
CO4	2	1	3		1		2						1	2				
CO5	2	1	1	1		1		1					3	1				



Effective from Session: 2023	8-24						
Course Code	CA327	Title of the Course	PYTHON PROGRAMMING	L	Т	Р	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	None	Co-requisite	CA329				
Course Objectives	<ul> <li>Prim</li> <li>Unde</li> <li>Appl</li> <li>Appl</li> <li>Impl</li> </ul>	arily know the basic stru- erstand and apply the co y decision structure, loc y the concept of Object ementing the code.	acture of programming language. ncept of Python programming language. ping structure and function based programs. oriented programming language.				

	Course Outcomes
CO1	To understand the basic structure of Python and write simple programs.
CO2	To develop programs using conditional and looping statements.
CO3	Python function declaration and implement Python data structure in programs.
CO4	Implement the concept of file handling, exceptional handling, and module creation and import.
CO5	Implement the object-oriented programming concept.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction	<ul> <li>Introduction to Python: Introduction, History, Interpreter, IDE, Installation Process, Python Indentation.</li> <li>Elements of Python: Variables (Identifiers), Datatypes, Operators, Keywords.</li> <li>Python Input and Output functions, Operator Precedence, Comments, Expression Evaluation, Boolean Expression, Automatic Garbage Collection</li> </ul>	8	CO1
2	Conditional and Looping Statement	Conditional Statements: if, if-else, if-elif-else, nested if expression. Looping Statements: range(), for loop, while loop, Nested loop statement. Loop Control Statements: break, continue, and pass. match (switch) case argument. Short Circuit Evaluation.	6	CO2
3	Data Structure and Function	<ul> <li>Data Structure: String: Types, Indexing, Slicing, Methods, Formatting, List: Indexing, Slicing, Methods, Comprehension. Tuple, Set and Dictionary Methods.</li> <li>Function: Definition, Calling, Local and Global Scope, Types of arguments, Packing and Unpacking Sequence, Recursion. Lambda Expression. Iterators. Sieve of Eratosthenes, Tower Of Hanoi</li> </ul>	11	CO3
4	Advanced Python Concept	<ul> <li>File Operations: read(), write(), readline(), writeline(), seek(), tell(), open(), close().</li> <li>Modules: Built-in Modules: math, calendar, os, tkinter. User-defined Modules: Creating and Importing modules.</li> <li>Exceptional Handling: try, except, finally, else, raise, assertions</li> </ul>	8	CO4
5	OOP Concept	<b>OOP:</b> Class Variable, Instance Variable, self, Classes, Objects, Constructors, Inheritance, Encapsulation, Polymorphism, Abstract Data type (ADT). Special methods (eg:init,add).	7	CO5
Referen	ce Books:			
1. Reem	a Thareja, "Python Prog	gramming: Using Problem Solving Approach", Oxford University Press, First Edition, 2017		
2. Marti	in C. Brown, "Python	: The Complete Reference", McGraw Hill Education(India) Private Limited, Fifth Ed	ition, 2019	1
3. R. Na	ageswara Rao, "Core	Python Programming", Dreamtech Press, Second Edition, 2020		
e-Learn	ing Source:			
1. https	://www.w3schools.com	/python/python_intro.asp		
2. https	://onlinecourses.swayan	n2. ac. in/cec22. cs20/preview		

			Course	Articulation M	latrix: (Mappir	ng of COs with	POs and PSO	s)		
PO- PSO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2
CO										
CO1	3			2		3	1		1	
CO2						2				3
CO3	1		2			3	1	2	1	2
CO4	3		1	2			2			
CO5	2		2	1		2		3	2	1



Effective from Session: 202	2-2023						
Course Code	CA328	Title of the Course	SOFTWARE SECURITY FUNDAMENTALS	L	Т	P	С
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	NONE	Co-requisite	NONE				
Course Objectives	<ul> <li>Detendent</li> <li>To</li> <li>Un</li> <li>Gatendent</li> <li>Un</li> </ul>	velop a comprehensive paramount importance understand the Risk Ma derstand the concept of in an understanding of c derstand the concept of	understanding of the nature and scope of security issues in s of security engineering in effectively tackling these challeng nagement Framework (RMF) and risk involved in software touch points and their significance in software security. ryptography and encryption techniques used in software security security knowledge and its role in ensuring software security	;/w, w es. develo urity. 7.	hile rec	ognizin	g

	Course Outcomes
CO1	Understands security issues relating to system development.
CO2	Knows software development techniques to avoid security problems after resolving the risk involved in software development.
CO3	Understand the principles of secure software design and architecture.
CO4	Explore secure design patterns and best practices for building robust and resilient software architectures.
CO5	Understand the importance of integrating security controls into software architecture to mitigate vulnerabilities and protect against attacks.

No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Foundations of Software Security	<ul> <li>Security Fundamental: The Security Problem, Security Problems in Software, Solving the Problem: The Three Pillars of Software Security Rise of Security Engineering.</li> <li>Software Security Issue: The Problem, Software Assurance and Software Security, Threats to Software Security, Sources of Software Insecurity, Benefits of Detecting Software Security Defects Early, Managing Secure Software Development.</li> </ul>	8	CO1
2	Understanding Software Challenges: Historical Perspective, Risk Management, and Future Outlook	<ul> <li>Root of Software Problem: A Brief History of Software, Bad Software is Ubiquitous, The Trinity of Problem, Future of Software.</li> <li>Risk Management Framework: Putting Risk Management into Practice, The Five Stage of Activity, RMF, Applying the RMF, The Importance of Measurement, Risk Management Framework for Software Security.</li> </ul>	8	CO2
3	Enhancing Software Security: Touch Points and Secure Design Principles	Seven Touch Point for Software Security: Seven Terrific Touch Point, Black & White- Two Threads Inextricably Intertwined, Touch Points as Best Practices, Software Security- Multidisciplinary effort, Touch points to success. Secure Software Design and Architecture: Principles of Secure Software Design and Architecture, Threat Modeling and Risk Assessment Techniques, Secure Design Patterns and Best Practices, Security Requirements Engineering, Integration of Security Controls into Software Architecture, Intrusion Patterns.	8	CO3
4	Building Secure Software: Defining Properties, Implementation, and Security Measures	<ul> <li>Secure Software Implementation: Secure Authentication and Access Control Mechanisms, Secure Session Management, Secure Error Handling and Logging, Secure Input Validation and Output Encoding, Cryptography and Encryption Techniques in Software Security.</li> <li>Making Secure Software: Defining Properties of Secure Software, Security Properties of Software, Assertion and Specification for Desired Security properties.</li> </ul>	8	CO4
5	Managing Knowledge and Ensuring Security: Software Security Assurance and Incident Response	<ul> <li>Knowledge for Software Security: Experience, Expertise and Security, Security Knowledge- A Unified View, Security Knowledge and Touch Points, Knowledge Management- Ongoing, Software Security recent issue.</li> <li>Software Security Assurance and Incident Response: Security Assurance in Software Development Lifecycle, Secure Software Deployment and Maintenance, Incident Response and Handling Security Breaches, Security Auditing and Compliance, Emerging Trends and Challenges in Software Security.</li> </ul>	8	CO5
Referen	ce Books:			
1. Juli Add	a H. Allen, Sean Barnum, lison Wesley Professional.	Robert J. Ellison, Gary McGraw, Nancy R. Mead, "Software Security Engineering: A guide for	or Project M	angers,"
2. Gar	y McGraw, "Software Sec	urity: Building Security In," Addison Wesley Professional.		
3. Mar Add	rk Dowd, John McDonald, lison Wesley Professional.	Justin Schuh, "The Art of Software Security Assessment: Identifying and Preventing Software	e Vulnerabil	lities,"
4. Ger	ardus Blokdyk, "Software	Security Vulnerability A Complete Guide," Kindle Edition, 2020.		
e-Lear	ming Source:			
1. http	s://onlinecourses.nptel.ac.	in/noc21_cs30/preview		
2. http	s://nptel.ac.in/courses/106	106199		
3. Sof	tware Security (colorado.e	du)		



Effe	iffective from Session: 2017-2018       ourse Code     CA323       Title of the Course     OPEN SOURCE LAR																		
Cou	rse Co	ode			CA323		Title (	of the (	Course	OPE	EN SOU	RCE LAE	3			L	Т	Р	С
Yea	r				III		Semes	ster		VI						0	0	2	1
Pre	-Requi	isite			None		Co-re	quisite		CA3	514								
Cou	urse O	bjectiv	es		<ul> <li>understanding of various software technologies.</li> <li>Ability to analyze and identify various business and technical problems to further solve problems with effective communication.</li> <li>Ability to adapt analytical, logical and managerial skills with the technical aspects in order to design and deploy reliable software programs and application for real world problems.</li> <li>Ability to investigate complex problems and provide computer-based solutions.</li> <li>Ability to understand and deliver ethical, social and cultural responsibilities in professional environment as an individual and team.</li> <li>Ability to create and manage multidisciplinary projects and successfully apply software and project management principles.</li> </ul>													ective s an	
				Course Outcomes															
CO	<b>1</b> (	Understand, analyze and apply the role of languages like HTML, DHTML, CSS, JavaScript and PHP.																	
CO	<b>2</b>	Analyze a web page and identify its elements and attributes.																	
CO	3 (	Create v	reate web pages using HTML, DHTML and Cascading Style Sheets.																
CO	4 (	Create d	ynamic web pages using JavaScript, XML.																
CO	5 I	Build w	ild web applications using PHP																
Exp ime No.	er ent	Tit Exp	le of tl oerime	ne nt		Content of Unit												Ma (	ipped CO
1	V H H	Web pa Progran PHP	ges ming	using	1. Cr 2. Us 3. Us	<ol> <li>Creating simple web pages using PHP.</li> <li>Use of conditional statements in PHP.</li> <li>Use of looping statements in PHP.</li> </ol>												C	201
2	A C a r	Arrays, defined and File manipul	User function	ons	1. Ci 2. Ci 3. Ci 4. Fi	<ol> <li>Creating different types of arrays in PHP.</li> <li>Creating user defined functions in PHP.</li> <li>Creation of files in PHP.</li> <li>File manipulation using PHP.</li> </ol>											6	C	202
3	H U (	PHP Ap using S Cookies	plicati	on and	1. Ci 2. Ci 3. Ci	eation eation eating	of sessi of cook simple	ions in ties in l applica	PHP. PHP. ations u	sing PH	IP.						6	C	203
4	N N T N	Workin MySQL Fransac MySQL	g with , tions o	n	1. Cr 2. In 3. Us 4. W	eating sertion sage of orking	simple , Updat `aggreg with se	table w ing and ate fun t opera	vith cor l Deleti ctions i tors us	straints on of ro in MYS ing MY	using M ws in M QL. SQL	IYSQL. YSQL tab	oles.				8		204
5	s c I c	string, n date fun Databas connect	umeric ctions, e ivity	c and	1. W 2. Da 3. Va 4. Cr	orking atabase alidatin reating	with st connecting input simple	ring, m ctivity i  Applic	umeric n PHP ation u	and date with My	e functio ySQL. P and M	ns using N YSQL	MYSQL.				8	С	205
Ref	erence	Books	:																
1.	Vikraı	m Vasw	vani, "I	PHP an	d MySO	QL", T	ata Mc	Graw-H	Hill, 20	05.									
2.	Tim Co	onverse	, Joyce	Park a	nd Cla	rk Mor	gan, "P	HP 5 a	nd MyS	SQL", V	Viley Inc	lia Reprin	t, 2008.						
3.	Robert	Sheldo	n, Geo	off Moe	s, "Beg	ginning	MySQ	L", Wr	ox, 200	)5.									
4.	Alexis	Leon a	nd Mat	thews I	eon. "l	Databa	se Man	ageme	nt Syste	ems", Vi	kas, 200	)8.							
	[ 00000	inc Ca			2			5 1	5	,	, ,								
e-	Learn	ing Sou	ir ce:	0	1	(1)													
1.	http	S://WW	w.geek	storgee	KS.org/	php-tu	torials/												
2.	http	os://www	w.javat	point.c	om/phr	o-progr	ams_												
						С	ourse A	Articul	ation N	Aatrix:	(Mappi	ng of CO	s with PO	s and PSC	Ds)				
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO	6	PSO7
CO1	3		1		1		1							3	1				
CO2	3	1	2	1		2	1							1	3				
CO3	2	1	2		1	2	1							2	2				
CO4	1	1	2	1		3	1	2						2	2				
CO5		1	3		1	2	2	3						2	1				



						0	Course	Articu	lation 1	Matrix:	(Mappi	ing of Co	s with Pos	s and PSC	s)			
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	3	1			1	1							3	1				
CO2	1	3	1	2	1		1	1					3	1				
CO3	2	2		1	1	1		1					2	1				
CO4	1	3	2	2		2	1						1	2				
CO5		3	2	2	1	1	1						2	2				



Effective from Session: 2017	Effective from Session: 2017-2018												
Course Code	CA321	Title of the Course	PROJECT LAB	L	Т	Р	С						
Year	III	Semester	VI	0	0	6	3						
Pre-Requisite	None	Co-requisite	None										
Course Objectives	•	To offer students a gli world. To developed an proto To enable students to a implement solution us To create awareness an effectively used. To improve the team b	mpse into real world problems, able to gather and document type so that student can overcome the gap of academic and is create very precise specifications of the IT solution to be des ing programming language. mong the students of the characteristics of several domain are building, communication and management skills of the student	the rec industrigned eas wh	quireme ry. and abl here IT	ent of rea e to can be	al						

	Course Outcomes										
CO1	Identify the problem related to the project work, analyze and Design project documentation.										
CO2	Implement the solution for the chosen problem using the concepts and techniques in the curriculum.										
CO3	Gain practical insights of testing and coding and practical insights of selected technology.										
CO4	Experience the actual work environment in an IT organization, Explore career opportunities in the IT sector.										
CO5	Explore the maximum possible ways to create and handle the software project in different technology										

Exper iment	Title of the unit	Content of Unit	Contact Hrs.	Mapped CO
1	Phase1	To offer students a glimpse into real world problems, able to gather and document the requirement of real world.	6	CO1
2	Phase2	To enable students to create very precise specifications of the IT solution to be designed and able to implement solution using programming language.	6	CO2
3	Phase3 To create awareness among the students of the characteristics of several domain areas where IT can be effectively used.		6	CO3
4	Phase4	To improve the team building, communication and management skills of the students.	6	CO4
Referen	ce Books:			
1. Je	essica Burdman, "Collab	orative Web Development", Pearson Education Asia		
2. Iv	an Bayross, "HTML, D	HTML, JavaScript, Perl CGI", BPB Publication.		
3. M	lark O'Ncile, "Web Serv	vices – Security", TMH.		
e-Lear	ning Source:			
1. <u>h</u> t	ttps://www.mcu.ac.in/w	p-content/uploads/2020/06/Major-Project-BCA-Guidelines-10062020.pdf		

2. http://www.kthmcollege.ac.in/images/department/download-20182408115813.pdf

						Cour	se Arti	culatio	n Matr	ix: (Map	ping of	COs with	n POs and	1 PSOs)				
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	1	3	2	2	1		1						3	2				
CO2	2	1	3	1		2	1						2	2				
CO3	3	1	1	2	1	1							3	1				
CO4	2	1	2	1		1	1						2	2				
CO5	3	1		1	1		2						2	1				



Effective from Session: 2023-24														
Course Code	CA329	Title of the Course	PYTHON PROGRAMMING LAB	L	Т	Р	С							
Year	III	Semester	VI	0	0	3	1							
Pre-Requisite	CA327	Co-requisite	None											
Course Objectives	<ul> <li>Learn</li> <li>To le</li> <li>To le</li> <li>To ir</li> <li>To po</li> <li>To un</li> </ul>	the the use of Python IDL arn and understand the arn control and looping nplement the concept of erform input output file inderstand and implement	E to write programs. problem solving approach using Python programming structure using a programming approach data structure like list, tuple, set, dictionary operation. tt the object oriented approach.											

	Course Outcomes										
CO1	The student will able to write basic programming structures of Python										
CO2	Ability to write and implement programs on control statements.										
CO3	Explore and implement programs based on looping statements.										
CO4	Understand and explore Python data structure based programs.										
CO5	Able to write the programs on file handling, recursion, try-except, and classes and objects.										

Exper iment No.	Title of the Experiment	Content of Unit	Contact Hrs.	Mapped CO
1	Basic Python Program	<ul> <li>Write a program to convert Celsius to Fahrenheit.</li> <li>Write a program to calculate the area of circle based on the radius entered by the user.</li> <li>Write a program which entered the values by user and calculate the given sequence a+bb+ccc+a<sup>b</sup>-b<sup>c</sup>.</li> </ul>	4	CO1
2	Control Statement	<ul> <li>Write a program to enter the age by user and check whether the given candidate is eligible for voting or not.</li> <li>Write a program to enter the value by user and check whether the given number is even number or not.</li> <li>Write a program to enter the year by user and check whether the given year is leap year or not using nested if statement.</li> </ul>	6	CO2
3	Looping Statement	<ul> <li>Write a program to find the factorial of a number.</li> <li>Write a program to print the prime number in a given range.</li> <li>Write a program to print the Fibonacci sequence.</li> <li>Write a program to print the HCF of the two given numbers.</li> <li>Write a program to print those numbers who are perfect square and perfect cube between a given range.</li> </ul>	8	CO3
4	Python Data Structure	<ul> <li>Write a program to print the max and min number from the elements given in the list.</li> <li>Write a program to check whether the given string is palindrome or not.</li> <li>Write a program to take a dictionary which contains student name and attendance as key and value and if attendance is greater than 75, replace the value with Allowed otherwise Not Allowed.</li> <li>Write a program to implement the concept of Sieve of Eratosthenes.</li> </ul>	9	CO4
5	Advanced Python Programs	<ul> <li>Write a program to count the alphabets, numbers and spaces of the string in a given file.</li> <li>Write a program to implement Tower of Hanoi.</li> <li>Write a program to calculate the sum of numbers in the list using try except statement such that if the list is empty, it will be handled by except statement.</li> <li>Write a program to implementadd,gt andle using operator overloading.</li> </ul>	9	CO5
Referen	ce Books:			
1. Reem	a Thareja, "Python Progra	amming: Using Problem Solving Approach", Oxford University Press, First Edition, 2017		
2. Mart	in C. Brown, "Python:	The Complete Reference", McGraw Hill Education(India) Private Limited, Fifth Ed	lition, 2019	
3. R. N	ageswara Rao, "Core P	ython Programming", Dreamtech Press, Second Edition, 2020		
e-Learn	ing Source:			
1. https	://www.w3schools.com/p	ython/python_intro.asp		
2. https	://onlinecourses.swavam2	a.c.in/cec22 cs20/preview		



	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
PO- PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
CO1	2		3			1	2											
CO2		2	1	2				1										
CO3	3				3	3	1											
CO4				3		2	3	2										
CO5	1		2		2			3										