Integral University, Lucknow

Effective from Session: 2023-24								
Course Code	CG302	Title of the Course	Career Development Course	L	T	P	C
Year	III	Semester	VI	2	0	0	2
Pre-Requisite	None	Co-requisite	None				
Course Objectives		The course on soft skills aims at preparing young minds into professionals of tomorrow and to make them aware of the importance, the role and the content of soft skills through instruction, knowledge acquisition, demonstration and practice.						

Course Outcomes	
CO1	Identify strategies to improve interpersonal relationships
CO2	Job Application Resume writing
CO3	Learn about positive Body language
CO4	Students will be better prepareed for before, during and after the Interview
CO5	Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Soft Skills: An Introduction	Definition and Significance of Soft Skills. Process. Importance of Soft Skill Development. **Self-Discovery:** Discovering the Self. Setting Goals. Beliefs, Values, Attitude, Virtue. **Positivity and Motivation:** Developing Positive Thinking and Attitude. Driving out Negativity;. Enhancing Self Motivation Levels	2	CO1
2	Writing Skills	Netiquettes: Effective e-mail message. Writing Statement of Purpose -SOP Job Application: Cover letter, Differences between Bio-data, CV and Resume, Resume Construction. Video Resume Creating Professional Profiles on Professional Networking Sites like Linkedin	4	CO2
3	Body Language and Group Discussion Process	Forms of non-verbal communication; Interpreting body language cues; Effective use of body language during Interview. Group Discussion: Group Dynamics, Differences between group discussion and debate; Ensuring success in group discussions. Practice Group Discussion and feed back.	6	CO3
4	Interview Process	Ensuring success in job interviews. Tips to prepare for before, during and after the Interview New Interview trends - Telephonic & Skype Interview Grooming and dress code. Common Interview Questions ,Mock Interviews / Practice Interview Sessions and Feedback	6	CO4
5	Corporate Etiquette and employability skills	Making a Great First Impression, greetings, introductions, The Art of Small Talk and Conversations Employer Expectations and Employability Skill Requirements Decision Making, Negotiation skills, Conflict Management and Leadership Skills Time Management Concept and Essential Tips	6	CO5

Reference Books:
Books Recommended:
Managing Soft Skills for Personality Development – edited by B.N.Ghosh, McGraw Hill India, 2012.
English and Soft Skills – S.P.Dhanavel, Orient Blackswan India, 2010.
The Definitive Book of Body Language. Pease, Allan and Barbara Pease. Manjul Publishing House

Course Articulation Matrix: (Mapping of COs with POs and PSOs)

PO-PSO CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	1	2	3			
CO2	1	1	1	1	1	1	2	3			
CO3	1	1	1	1	1	1	2	3			
CO4	1	1	1	1	1	1	2	3			
CO5	1	1	1	1	1	1	2	3			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA314	**Title of the Course**	Introduction to Open-Source Environment	**L**	**T**	**P**	**C**
Year	III	**Semester**	VI	**3**	**1**	**0**	**4**
Pre-Requisite	None	**Co-requisite**	CA323				
Course Objectives	● To learn basic concepts, syntax and uses of PHP as server-side scripting language. ● To learn and implement PHP script and Arrays. ● To learn and implement decision making, looping and object oriented features supported by PHP ● To learn various tools and implement forms in PHP ● To demonstrate the use of MySQL database in phpMyAdmin and build dynamic web site using server side PHP Programming and MySQL						

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

Reference Books:
1. Vikram Vaswani, "PHP and MySQL", Tata McGraw-Hill, 2005.
2. Ben Forta, "MySQL Crash Course", SAMS, 2006.
3. Tim Converse, Joyce Park and Clark Morgan, "PHP 5 and MySQL", Wiley India Reprint, 2008.
4. Robert Sheldon, Geoff Moes, "Beginning MySQL", Wrox, 2005.
e-Learning Source:
1. https://www.tutorialspoint.com/php/index.htm
2. https://www.w3schools.com/php/php_mysql_intro.asp

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	3		1		1		1						3	1				
CO	3	1	2	1		2	1						3	1				

2															
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			

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA316	Title of the Course	Management Information System	L	T	P	C
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	● To learn the basic knowledge and fundamentals of Information System and various types of Information System. ● To learn the concepts of Management Information System and Decision Support Systems. ● To learn the overall perspective of Planning and Control in an Organization. ● To learn how internet, E-Commerce and other technologies help in business processes. ● To learn the management of Information Technologies in organizations. To learn the role of various advance concepts in managing the business.						

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	Concepts of Planning and Control	Concept of Organizational Planning, The Planning Process, Computational Support for Planning, Characteristics of Control Process, The Nature of Control in an Organization.	8	CO3
4	Business Applications of Information Technology	Internet and Electronic Commerce, Intranet, Extranet and Enterprise Solutions, Information System for Business Operations, Information System for Managerial Decision Support, Information System for Strategic Advantage	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

Reference Books:
1. Brian, "Management Information 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. Murdick, "Information System for Modern Management", PHI Learning Private Limited, Delhi India.
5. Jawadekar, "Management Information 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	PSO7
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				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA317	Title of the Course	E-Governance	L	T	P	C
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	- To learn Concept of E-Governance and E-Kranti framework. - To provide an idea of using various open source software's and Framework for Adoption of Open Source Software in E-Governance Systems. - To learn basic concept of Policy on Open Application Programming Interfaces (APIs) for Government of India and Email Policy of Government of India. - To learn 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. - To learn basics concept of Application Development & Re-Engineering Guidelines for Cloud Ready Applications.						

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	Application Development & Re- Engineering Guidelines for Cloud Ready Applications	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, Raising Competence of Administration: Role of Indian Theory.	8	CO5

Reference Books:

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://negd.gov.in/ebook-e-governance-policy-initiatives-under-digital-india.
2. M.G. Gupta and R.K. Tiwari (eds.), Reinventing the Government, IIPA, 1998.
3. Jan Erik Lane, New Public Management, Rout ledges, 2000.
4. Work Bank Report, Good Governance, The Business of Government, 1997.
5. IJPA Special No. on "Indian Theory and Public Administration", July-September, 2000.

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	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				
CO	2	1	2	1		1							2	2				

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1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA318	Title of the Course	Fundamentals of E-Commerce	L	T	P	C
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	● To provide knowledge of e-commerce with its technology, benefits, limitations and impact on business. ● To enhance practical knowledge for different applications of e-commerce such as e-banking, eLearning and e-shopping etc. ● To give knowledge for architecture framework and security aspects in e-commerce. ● To offer knowledge of encryption techniques used in e-commerce. ● To construct the concept of process of electronic payment in e-commerce along with its risk. ● To give the implementation knowledge about Electronic Data Interchange with respect to architecture and standards. ● To provide the practical knowledge of security issues in Electronic Data Interchange. ● To develop business skill and techniques for digital marketing.						

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.	8	CO3
4	Electronic Data Interchange	EDI Architecture, EDI Standards, Non EDI System, Partial EDI System, Fully Integrated EDI System, Prerequisites for EDI. Issues of EDI: Legal Issues, Security Issues, Privacy Issues, Fundaments of Financial Electronic Data Interchange, Taxation Rules in the E-Commerce.	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

Reference Books:
1. David Whiteley, "E-Commerce", Tata McGraw Hill, 2000.
2. Greenstein and Feinman, "Electronic Commerce – Security: Risk Management & Control", McGraw-Hill, 1999.
3. Ravi Kalakota and A.B. Whinston, "Frontiers of Electronic Commerce", Pearson Education, 2005.
4. Eframi Turban, Jae Lee, David King, K. Michale Chung, "Electronic Commerce", Pearson Education, 2000.
5. Henry Chan, Raymond Lee, Elizabeth Chang, "E-commerce: Fundamentals and Applications", Wiley, 2001.

e-Learning Source:
1. https://www.tutorialspoint.com/e_commerce/index.htm
2. https://www.geeksforgeeks.org/e-commerce/

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	3	1	1		1		1						3	1				
CO2	2	1	1		3	1							2	1				
CO3	2	2	1	1	2								3	1				
CO		1	2		1	3	1	1					1	2				

4																		
CO 5	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				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA319	Title of the Course	ERP Systems	L	T	P	C
Year	III	Semester	VI	3	1	0	4
Pre-Requisite	None	Co-requisite	None				
Course Objectives	● To learn the basic concepts of Enterprise Resource Planning. ● To learn different technologies used in ERP. ● To learn the concepts of ERP Manufacturing Perspective and ERP Modules. ● To study and understand the ERP life cycle. ● To learn the different tools used in ERP.						

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
3	ERP Transition Strategies	Big Bang Strategy, Phased Implementation, Parallel Implementation, Process Line Transition Strategy, Hybrid Transition Strategy. ERP Implementation Process: Implementation Methodologies, Implementation Plan, Risk Assessment, ERP Project Teams, Implementation Vendors Evaluation Criterion.	8	CO3
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

Reference Books:
1.   Lexis Leon, "Enterprise Resource Planning", TMH.
2.   Brady, Manu, Wegner, "Enterprise Resource Planning", TMH.
3.   V.K Garg, N.K. Venkitakrishnan, "ERP Ware: ERP Implementation Framework", Prentice Hall of India.
e-Learning Source:
1. https://www.tutorialspoint.com/management_concepts/enterprise_resource_planning.htm
2. https://www.javatpoint.com/erp-full-form

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	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				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Effective from Session: 2023-24								
Course Code	CA331	Title of the Course	Fundamentals of Machine Learning and Python		L	T	P	C
Year	III	Semester	VI		3	1	0	4
Pre-Requisite	None	Co-requisite	CA335					
Course Objectives	• Primarily know the basic structure of python programming language. • Learn and implement Machine learning based libraries with python. • Understand the concept of Machine learning and its types. • Implement the basic concepts of various algorithms of Machine learning.							

Course Outcomes	
CO1	Learn the basic concept of Machine learning and types of Machine learning
CO2	Learn the concept and implementation of Supervised learning and Unsupervised learning.
CO3	Understand the concept of Bayesian Learning and learn basic concept of python programming
CO4	Learn to write the programs on control and looping structure and implement data structure.
CO5	Learn python function declaration and implement the various machine learning based libraries used by Python

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction to Machine Learning	Introduction to Machine Learning: Machine Learning, Types of Machine Learning, Applications of Machine Learning. Preparing to Model- Introduction, Machine Learning Activities, Basic Types of Data in Machine Learning, Exploring Structure of Data, Data Pre-Processing. Regression: Linear Regression and Logistic Regression Reinforcement Learning: Introduction to Reinforcement Learning , Learning Task, Example of Reinforcement Learning.	10	CO1
2	Supervised Learning and Unsupervised Learning	Introduction to Supervised Learning: Supervised Learning, Applications of Supervised Learning, Classification Model, Classification Learning Steps, Common Classification Algorithms - k-Nearest Neighbour (kNN), Decision tree, Random forest model, Support vector machines. Introduction to Unsupervised Learning- Introduction, Application of Unsupervised Learning, Clustering –Clustering as a Machine Learning task, Different types of clustering techniques.	9	CO2
3	Bayesian Learning and Introduction to Python	Bayesian Learning: Bayes Theorem, Concept Learning, Bayes Optimal Classifier, Naïve Bayes Classifier, Bayesian Belief Networks. Introduction to Python: Introduction, IDE, Installation Process, Python Indentation. Elements of Python: Variables (Identifiers), Datatypes, Operators, Keywords. Python Input and Output functions.	8	CO3
4	Control, Loop and Data Structure	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. Data Structure: *String*: Types, Indexing, Slicing, Methods, Formatting, *List:* Indexing, Slicing, Methods, Comprehension. Tuple, Set and Dictionary Methods.	7	CO4
5	Function	Function: Definition, Calling, Local and Global Scope, Types of arguments, Packing and Unpacking Sequence, Recursion Python Libraries: Numerical Calculation: Numpy; File Operation: Pandas; Data Visualization: Matplotlib; Data preprocessing: Scikit_learn.	6	CO5

Reference Books:
1. Martin C. Brown, "Python: The Complete Reference", McGraw Hill Education(India) Private Limited, Fifth Edition, 2019
2. Manaranjan Pradhan, U Dinesh Kumar, "Machine Learning using Python", Wiley India Pvt Ltd., 2019
3. R. Nageswara Rao, "Machine Learning in Data Science Using Python", Dreamtech Press.
e-Learning Source:
1. https://onlinecourses.swayam2.ac.in/cec22_cs20/preview
2. https://onlinecourses.nptel.ac.in/noc23_cs18/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	1	1	3	1		1		2					1	1				
CO2	1		2	1		1		1					1	1				
CO3	2	1	2	1		1		1					1	1				
CO4	1	1	1					1					1	1				
CO5	1	1	2			1		2					1	1				

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2023-2024								
Course Code	CA332	**Title of the Course**	Fundamentals of Artificial Intelligence	**L**	**T**	**P**	**C**
Year	III	**Semester**	VI	3	1	0	4
Pre-Requisite	None	**Co-requisite**	None				
Course Objectives	● Understand the concepts of AI, production system and its characteristics. ● Understand the concepts of searching techniques. ● To develop the logical skills of knowledge and it's representational structure. ● Understand the concepts of natural language processing. ● Learn the concepts how to design the expert systems.						

Course Outcomes	
CO1	Study the concepts of AI, production system and its characteristics.
CO2	Develop the searching techniques in AI.
CO3	Develop the knowledge skills and its representational structure in AI.
CO4	Study the concepts of natural language processing in AI.
CO5	Study how design the expert systems.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Overview of AI	Introduction to AI, Importance of AI, AI and its related field, AI techniques, Criteria for success. Problems, problem space and search: Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem.	7	CO1
2	Search Strategies	Uninformed search strategies: DFS, BFS; Informed Search: Best First Search, A* search, Means End Analysis. Adversarial Search & Games: Two-player zero-sum games. Heuristic search techniques: Best first search technique, problem reduction, constraint satisfaction.	9	CO2
3	Knowledge Representation	Definition and importance of knowledge, Knowledge representation, various approaches used in knowledge representation, Issues in knowledge representation. Logic: Propositional logic, First-order predicate logic, Propositional versus first-order inference, Unification and lifting, Forward chaining, Backward chaining, Resolution.	9	CO3
4	Natural language processing	Natural language processing: Introduction syntactic processing, Semantic processing, Discourse and pragmatic processing. Learning: Introduction learning, Rote learning, learning by taking advice, learning in problem solving, learning from example-induction, Explanation based learning.	8	CO4
5	Expert System	Expert System: Introduction, Representing using domain specific knowledge, Expert Systems: Architecture and role of expert systems, two case studies of Expert Systems.	7	CO5

Reference Books:

1. Elaine Rich, Kevin Knight," Artificial Intelligence", Tata McGraw Hill.

2. Nilsson Nils J, "Artificial Intelligence: A new Synthesis, Morgan Kaufmann Publishers Inc. San Francisco, CA, ISBN: 978-1-55-860467-4.

3. Dan W Patterson, "Introduction to Artificial Intelligence & Expert Systems", PHI.

e-Learning Source:

1. http://www.digimat.in/nptel/courses/video/106106126/L01.html

2. http://www.nitttrc.edu.in/nptel/courses/video/106106126/L02.html

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	2	2	1		1						2	1				
CO2	1	2	3	1	1	2							1	1				
CO3	1	1		1		1	1						2	1				
CO4	2	1	1	1		1	1						2	1				
CO5	1	1	3	2		2	1						1	1				

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2023-2024								
Course Code	CA333	Title of the Course	Basics of Cloud Computing		L	T	P	C
Year	III	Semester	VI		3	1	0	4
Pre-Requisite	None	Co-requisite	None					
Course Objectives	● To learn basic concepts, types and characteristics of cloud computing ● To learn Cloud Computing Architecture and service models. ● To learn Virtualization and its types in cloud computing. ● To learn fundamental concepts and architecture of cloud computing security. ● To learn basics of SOA and cloud-based storage							

	Course Outcomes
CO1	Able to understand basic concepts, principles and paradigm of Cloud Computing
CO2	Able to interpret various Cloud computing models and services.
CO3	Able to identify the significance of implementing virtualization techniques.
CO4	Able to understand the need of security in Cloud computing.
CO5	Understand the concept SOA and cloud-based storage in Cloud computing.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction	Introduction to Cloud Computing, History and Evolution of Cloud Computing, Types of clouds, Private Public and hybrid clouds, Cloud Computing architecture, Cloud computing infrastructure, Merits of Cloud computing, Cloud computing delivery models and services (IaaS, PaaS, SaaS), obstacles for cloud technology, Cloud vulnerabilities, Cloud challenges, Practical applications of cloud computing.	8	CO1
2	Migrating to Cloud	Web-based business services, Delivering Business Processes from the Cloud: Business process examples, Broad Approaches to Migrating into the Cloud, The Seven-Step Model of Migration into a Cloud, Efficient Steps for migrating to cloud., Risks: Measuring and assessment of risks, Company concerns Risk Mitigation methodology for Cloud computing, Case Studies.	8	CO2
3	Selection of Cloud Provider	Assessing the Cloud: software Evaluation, System Testing, Cost cutting and cost-benefit analysis, selecting the right scalable application. Considerations for selecting cloud solution. Clouding the Standards and Best Practices Issue: Interoperability, Portability, Integration, Security, Standards Organizations and Groups associated with Cloud Computing, Commercial and Business Consideration	8	CO3
4	Governance in the Cloud	Need for IT governance in cloud computing, Cloud Governance Solution: Access Controls, Financial Controls, Key Management and Encryption, Logging and Auditing, API integration. Legal Issues: Data Privacy and Security Issues, Cloud Contracting models, Jurisdictional Issues Raised by Virtualization and Data Location, Legal issues in Commercial and Business Considerations	9	CO4
5	Virtualization	Introduction of Virtualization concept, Application Virtualization, Benefits of Virtualizing Server Environment, VMWare Workstation and Workstation Player, Type I and Type II Hypervisor (Xen and KVM), Microsoft Hypervisor (server and Workstation Environment).	9	CO5

Reference Books:

1. Barrie Sosinsky, "Cloud Computing Bible", Wiley India, 2010.

2. Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, "Cloud Computing: Principles and Paradigms", Wiley, 2011.

3. Nikos Antonopoulos, Lee Gillam, "Cloud Computing: Principles, Systems and Applications", Springer, 2012.

4. Ronald L. Krutz, Russell Dean Vines, "Cloud Security: A Comprehensive Guide to Secure Cloud Computing", Wiley-India, 2010.

e-Learning Source:

1. https://nptel.ac.in/courses/106105167

2. https://onlinecourses.nptel.ac.in/noc22_cs20/

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	3	1			1	1		1			1		2	1				
CO2	1	2	1	3	1		1						1	2				
CO3		1	3	1	2	1		1					2	1				
CO4	2	1	2	1		2	1						2	1				
CO		1	1	2	1	2		1					2	1				

O5														

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2023-2024								
Course Code	CA334	Title of the Course	Data Mining		L	T	P	C
Year	III	Semester	VI		3	1	0	4
Pre-Requisite	None	Co-requisite	None					
Course Objectives	● Explain Objective of Data Mining, Issues. Matrices, applications, and trends. ● Describe Statistical approach, similarity measures, decision trees, NN, genetic algorithms. ● Classification of Statistical, Distance, and Decision based algorithms. ● To understand different types of data mining algorithms. ● Detail Description of Association based rules and their comparison.							

Course Outcomes	
CO1	To understand basics of Data mining concepts and their applications with trends.
CO2	To understand importance of decision tree, Neural Network and Genetics algorithm.
CO3	To learn classification based algorithm and their implementations.
CO4	To Learn various Data mining Techniques algorithms.
CO5	Describe Data Mining Association rules measurements and quality of rules.

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Introduction to Data Mining	Definition and Functionalities of DM. Knowledge representation in Data Bases. DM issues, DM Matrices, DM applications and Trends.	8	CO1
2	Data Mining Techniques	A statistical approach on data mining, similarity measures, Decision Trees, Neural Network, and genetic Algorithm.	8	CO2
3	Classification	Statistical Based Algorithm, Distance Based Algorithm, Decision Based Algorithms.	8	CO3
4	Algorithm	Clustering Tree Algorithm, Neural Network Algorithm, Rule Based Algorithm, and Combining Techniques: Introduction, Similarity and Distance measures outliers, Hierarchical Algorithm.	8	CO4
5	Association Rules	Introduction, Large Item sets, Parallel and distributed Algorithm, Comparing approaches, Incremental rules, advance association Rules, Measuring the quality of rules	8	CO5

Reference Books:
1.Data Mining Techniques, Arun K Pujari, University Press
2. Data Mining: Concepts and Techniques, 3rd Edition, Jiawei Han, Micheline Kamber, Jian Pei

e-Learning Source:
1. Institutional Learning Management System i.e Integral Learning Initiative (ILI)
2. NPTEL Video Lectures

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	1	1	3		1		2						3	1				
CO2	3	1	1			1							3	1				
CO3	2	2	1	1		2							3	1				
CO4	1	1	3			1	2	2					1	2				
CO5		3	1	2	1	1							2	3				

1– Low Correlation; 2– Moderate Correlation; 3– Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018								
Course Code	CA321	**Title of the Course**	Project Lab		**L**	**T**	**P**	**C**
Year	III	**Semester**	VI		0	0	6	3
Pre-Requisite	None	**Co-requisite**	None					
Course Objectives	• To offer students a glimpse into real world problems, able to gather and document the requirement of real world. • To developed an prototype so that student can overcome the gap of academic and industry. • To enable students to create very precise specifications of the IT solution to be designed and able to implement solution using programming language. • To create awareness among the students of the characteristics of several domain areas where IT can be effectively used. • To improve the team building, communication and management skills of the students.							

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

Unit No.	Title of the unit	Content of Unit	Contact Hrs.	Mapped CO
1	Unit 1	To offer students a glimpse into real world problems, able to gather and document the requirement of real world.	6	CO1
2	Unit 2	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	Unit 3	To create awareness among the students of the characteristics of several domain areas where IT can be effectively used.	6	CO3
4	Unit 4	To improve the team building, communication and management skills of the students.	6	CO4

Reference Books:

1. Jessica Burdman, "Collaborative Web Development", Pearson Education Asia

2. Ivan Bayross, "HTML, DHTML, JavaScript, Perl CGI", BPB Publication.

3. Mark O'Ncile, "Web Services – Security", TMH.

e-Learning Source:

1. https://www.mcu.ac.in/wp-content/uploads/2020/06/Major-Project-BCA-Guidelines-10062020.pdf

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

PO-PSO \ CO	Course Articulation Matrix: (Mapping of COs with POs and PSOs)																	
	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				

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2017-2018							
Course Code	CA323	Title of the Course	Open-Source Lab	L	T	P	C
Year	III	Semester	VI	0	0	2	1
Pre-Requisite	None	Co-requisite	CA314				
Course Objectives	• Ability to demonstrate knowledge of Computer science and its applications in order to enhance basic understanding of various software technologies. • Ability to analyze and identify various business and technical problems to further solve problems with effective communication. • 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. • Ability to investigate complex problems and provide computer-based solutions. • Ability to understand and deliver ethical, social and cultural responsibilities in professional environment as an individual and team. • Ability to adapt new technologies for upgrading their skills and contributing to a lifelong learning. • Ability to create and manage multidisciplinary projects and successfully apply software and project management principles.						

Course Outcomes	
CO1	Understand, analyze and apply the role of languages like HTML, DHTML, CSS, JavaScript and PHP.
CO2	Analyze a web page and identify its elements and attributes.
CO3	Create web pages using HTML, DHTML and Cascading Style Sheets.
CO4	Create dynamic web pages using JavaScript, XML.
CO5	Build web applications using PHP

Unit No.	Title of the Unit	Content of Unit	Contact Hrs.	Mapped CO
1	Web pages Programming using PHP	Creating simple web pages using PHP. Use of conditional statements in PHP. Use of looping statements in PHP.	6	CO1
2	Arrays, User defined functions and File manipulation	Creating different types of arrays in PHP. Creating user defined functions in PHP. Creation of files in PHP. File manipulation using PHP.	6	CO2
3	PHP Application using Sessions and Cookies	Creation of sessions in PHP. Creation of cookies in PHP. Creating simple applications using PHP.	6	CO3
4	Working with MYSQL, Transactions on MySQL	Creating simple table with constraints using MYSQL. Insertion, Updating and Deletion of rows in MYSQL tables. Usage of aggregate functions in MYSQL. Working with set operators using MYSQL.	8	CO4
5	String, numeric and date functions, Database connectivity	Working with string, numeric and date functions using MYSQL. Database connectivity in PHP with MySQL. Validating Input. Creating simple Application using PHP and MYSQL	8	CO5

Reference Books:

1. Vikram Vaswani, "PHP and MySQL", Tata McGraw-Hill, 2005.

2. Tim Converse, Joyce Park and Clark Morgan, "PHP 5 and MySQL", Wiley India Reprint, 2008.

3. Robert Sheldon, Geoff Moes, "Beginning MySQL", Wrox, 2005.

4. Alexis Leon and Mathews Leon, "Database Management Systems", Vikas, 2008.

e-Learning Source:

1. https://www.geeksforgeeks.org/php-tutorials/

2. https://www.javatpoint.com/php-programs

PO-PSO / CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO4	PSO5	PSO6	PSO7
Course Articulation Matrix: (Mapping of COs with POs and PSOs)																		
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			

1-Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation

Integral University, Lucknow

Effective from Session: 2023-24								
Course Code	CA335	Title of the Course	Fundamentals of Machine Learning and Python Lab	L	T	P	C	
Year	III	Semester	VI	0	0	3	1	
Pre-Requisite	None	Co-requisite	CA331					
Course Objectives		• Primarily know the basic structure of python programming language. • Learn and implement Machine learning based libraries with python. • Understand the concept of Machine learning and its types. • Implement the basic concepts of various algorithms of Machine learning.						

Course Outcomes	
CO1	Student will able to write basic programming structure of Python using conditional statements.
CO2	Ability to write and implement programs on data structure of Python.
CO3	Explore and implement program on basic machine learning.
CO4	Understand and explore Machine learning algorithms.
CO5	Able to write the programs on Machine learning algorithms.

Experiment No.	Title of the Experiment	Content of Unit	Contact Hrs.	Mapped CO
1	Basic Python	Write a program to calculate the area of circle based on the radius entered by the user. Write a program to enter the year by user and check whether the given year is leap year or not using nested if statement. Write a program to print the HCF of the two given numbers. Write a program to print those numbers who are perfect square and perfect cube between a given range.	4	CO1
2	Python Data Structure	Write a program to check whether the given string is palindrome or not. Write a program to implement the concept of Sieve of Eratosthenes. Write a program to count the alphabets, numbers and spaces of the string in a given file. 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.	4	CO2
3	Basic Machine Learning	Write a program to create the matrix with the help of numpy and then convert into dataframe using pandas. Write a python program to import and export data using Pandas library functions. To perform data pre-processing operations i) Handling Missing data ii) Min-Max normalization. Write a Python program to demonstrate various Data Visualization Techniques.	4	CO3
4	Machine Learning Algorithm - 1	Write a program to implement linear regression using Python. Write a python program on the Heart Disease Prediction Using Logistic Regression.	4	CO4
5	Machine Learning Algorithm - 2	Write a python program to implement K-Means clustering Algorithm. Write a program to diagnose a disease using k-nearest neighbour's classification.	4	CO5

Reference Books:

1. Martin C. Brown, "Python: The Complete Reference", McGraw Hill Education(India) Private Limited, Fifth Edition, 2019

2. Manaranjan Pradhan, U Dinesh Kumar, "Machine Learning using Python", Wiley India Pvt Ltd., 2019

3. R. Nageswara Rao, "Machine Learning in Data Science Using Python", Dreamtech Press.

e-Learning Source:

1. https://onlinecourses.swayam2.ac.in/cec22_cs20/preview

2. https://onlinecourses.nptel.ac.in/noc23_cs18/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	1	1	3		1		1						1	1				
CO2	2	1	2	1	1		1						1	1				
CO3	1		2	1	1		2						1	1				
CO4	1		3	2		2	2						1	1				
CO5	2	1	3	1		1	2						2	1				

1- Low Correlation; 2- Moderate Correlation; 3- Substantial Correlation