

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications



AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Programme Code:

Duration – 3 Years Online

Batch- 2024-27

Scheme and Syllabus

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Program Outcomes		
Bachelor of Computer Applications – BCA		
S. No.	Description	POs
1.	Acquaint with with knowledge and develop student capabilities in the areas of analysis, design, development, and testing of code.	PO1
2	Understand a broad body of knowledge in computer applications and tools.	PO2
3	Analyze problems, implement program and apply the competencies to solve the real word problems and leave a mark by excelling in their profession.	PO3
4	Develop analytical reasoning, adaptive thinking and acquire logical thinking; analyze and synthesize data from a variety of sources with valid interpretations and conclusions.	PO4

Program Education Objectives (PEOs):

Program Educational Objective

1. Students will be able to prepare plan, design, develop and troubleshoot the problems and generate solutions the field of computer science and applications.
2. Students will be able to apply strong mathematical foundation, algorithms, logical applications, principle and practices of computer science theory so that they are well-equipped to solve any problem with the systematic approach
3. Students will be able to assess societal, health, safety, legal, Cultural and environmental issues and relevant engineering responsibilities by applying reasoned contextual knowledge and understand its impact towards sustainable development.
4. Students will be able to apply modern software engineering and IT tools to complex software and hardware activities with a clear understanding of appropriate selection techniques and limitations associated with it.
5. Students will be able to demonstrate ability for professional conduct, effective communication skills and behavioral skill which enhances their individual performance.
6. Students will be able to have successful careers in industry that meet the needs of Indian and multinational companies or excel in higher studies.
7. Students will be able to inculcate awareness about professional ethics and norms of software and computing practices.
8. Students will be able to demonstrate awareness to engage in independent and lifelong learning of technological changes.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

PROGRAMME STRUCTURE

Semester	CC* Credits	SE * Credits	DE	VA * Credits	NTCC	Total
I	4 * 5	0	0	1 * 4	0	24
II	3 * 5	0	0	2 * 4	0	23
III	5 * 5	0	0	0	0	25
IV	2 * 5	0	3 * 5	0	0	25
V	2 * 5	0	2 * 5	1 * 4	0	24
VI	0	0	3 * 4	0	1 * 6	18
Total	80	0	37	16	6	139

SEMESTER-I				
S. No.	Course Code	Course Name	Course Type	Credit
1	CSIT113	Computer and Information Technology	Core Course	5
2	CSTIT140	Programming in C	Core Course	5
3	CSIT325	Human Computer Interaction	Core Course	5
4	MATH111	Basic Mathematics I	Core Course	5
5	BC107	Business Communication	Value Added Course	4
				24
SEMESTER-2				
S. No.	Course Code	Course Name	Course Type	Credit
1	CSIT123	Operating System Concepts	Core Course	5
2	CSIT124	Data Structure using C	Core Course	5
3	CSIT142	Software Engineering and Modeling	Core Course	5
4	EVS101	Environmental Studies	Core Course	4
5	BS105	Individual Excellence and Social Dynamic	Value Addition Course	4
				23
SEMESTER-3				
S. No.	Course Code	Course Name	Course Type	Credit
1	CSE433	Green Computing	Core Course	5
2	CSIT120	Object Oriented Programming using Java	Core Course	5
3	CSIT127	Network Basics	Core Course	5
4	CSIT132	Introduction to Database Management System	Core Course	5
5	CSIT139	Computational Statistics	Core Course	5
				25

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

SEMESTER-IV				
S. No.	Course Code	Course Name	Course Type	Credit
1	CSIT311	Unix Operating System and Shell Programming	Core Course	5
2	CSIT232	Python Programming	Core Course	5
3	CSIT224	Fundamentals of Digital Marketing	Select 3 Elective of 5 credit each	3 * 5 = 15
4	CSIT243	IT Project Management		
5	IT425	Fundamentals of Cloud Computing and Enterprises		
6	CSIT136	Cyber and Information Security		
				25
SEMESTER-V				
S. No.	Course Code	Course Name	Course Type	Credit
1	CSIT361	Introduction to Artificial Intelligence	Core Course	5
2	CSIT334	Fundamentals of Ecommerce	Core Course	5
3	PFE301	Professional Ethics	Value Addition Course	4
4	CSIT136	Internet of Things	Select 2 Elective of 5 credit each	2 * 5 = 10
5	CSIT312	Introduction to Enterprise Resource Planning		
6	CSIT341	Data Warehousing and Mining		
				24
SEMESTER-VI				
S. No.	Course Code	Course Name	Course Type	Credit
1	ETMJ100	Major Project	NTCC	6
2	CSIT326	Introduction to E-Governance	Select 3 Elective of 4 credit each	3 * 4 = 12
3	HR201	Fundamentals of Human Resource Management		
4	CSIT358	Blockchain Technologies		
5	CSIT359	Introduction to Data Science		
				18
Total Credits				139

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Computer and Information Technology

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT113	5	30	70	100

Course Objectives:

- Provide the basic knowledge of computer system, its history.
- Provide basic knowledge of architecture and components of a computer system.
- Provide knowledge about number systems and their conversions.
- Provide skills to programming concepts like flowchart, algorithms and pseudo-code.

Module I: Introduction to computers

Introduction to computers; History and Evolution; Generation of Computer; Applications of Computers; Capabilities and Limitations; Components of a computer system - Control Unit, ALU, I/ O Devices, Memory – RAM, ROM, EPROM, PROM, Flash Memory and other types of memory;

Module II: Introduction to Number Systems

Introduction to Number Systems – Binary, Hexadecimal, Octal, BCD; Conversion between number systems; One's Complement; Two's Complement; Boolean Algebra and Laws;

Module III: Introduction to IT

Introduction to IT; Need of IT; Introduction to information storage and processing; Role and Applications of IT; Internet; WWW;

Different Type of software; Introduction to information systems; Business data processing

Module IV: Operating System

Definition and use; Types of OS: Batch Processing, Multiprogramming, Multi-Tasking, Multiprocessing; Data Communication

Module V: Introduction to Programming Concepts

Define program; Process of programming; Algorithms; Introduction to flowcharts; Basic symbols and drawing of flow charts; Advantages and limitations of flow charts; Pseudocodes – Sequence logic, Selection logic, Iteration logic, Advantage and disadvantages;

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Text & Reference:

1. Gill, Nasib S.: Essentials of Computer and Network Technology, Khanna Book Publishing Co., New Delhi.
2. Gill Nasib Singh: Computing Fundamentals and Programming in C, Khanna Books Publishing Co., New Delhi.
3. Chhillar, Rajender S.: Application of IT in Business, Ramesh Publishers, Jaipur.
4. Donald Sanders: Computers Today, McGraw-Hill Publishers.
5. Davis: Introduction to Computers, McGraw-Hill Publishers.
6. V. Rajaraman : Fundamental of Computers, Prentice-Hall India Ltd., New Delhi.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Programming in C

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT140	5	30	70	100

Course Objectives:

- The objective of this course module is to acquaint the students with the basics of computers system, its components, data representation inside computer and to get them familiar with various important features of procedure-oriented programming language i.e., C.
- This Course guides the students to read, write and modify C programs and to implement basic projects

Course Contents:

Module I

Introduction to Computer Fundamentals:

Basic Computer Organization, Computer Hardware Components, Primary Memory –RAM, ROM, Secondary Memory, Types of Softwares, Introduction to Compilers, Interpreters, Assembler, Linker, Loader, Introduction to C compiler and its different versions, Basic Operating System Concepts, Functions of Operating system, Types of Operating System.

Module II

Programming in C:

History of C, Introduction of C, Basic structure of C program, Concept of variables, constants and data types in C, Operators and expressions: Introduction, arithmetic, relational, Logical, Assignment, Increment and decrement operator, Conditional, bitwise operators, Expressions, Operator precedence and associativity. Managing Input and output Operation, formatting I/O.

Module III

Fundamental Features in C: C Statements, conditional executing using if, else, nesting of if, switch and break Concepts of loops, example of loops in C using for, while and do-while, continue and break. Storage types (automatic, register etc.), predefined processor, Command Line Argument.

Module IV

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Arrays and Functions: One dimensional arrays and example of iterative programs using arrays, 2-D arrays Use in matrix computations. Concept of Sub-programming, functions Example of user defined functions. Function prototype, Return values and their types, calling function, function argument, function with variable number of argument, recursion.

Module V

Advanced features in C: Pointers, relationship between arrays and pointers Argument passing using pointers, Array of pointers. Passing arrays as arguments. Strings and C string library. Structure and Union. Defining C structures, Giving values to members, Array of structure, Nested structure, passing strings as arguments. File Handling

Text and References:

- Yashwant Kanetkar, “Let us C”, BPB Publication,8th Edition 2008.
- P.K. Sinha, “Computer Fundamentals”, BPB Publications, 4th Revised Edition, 2004.
- Yashwant Kanetkar, “Understanding Pointers in ‘C’ ” , BPB Publications,,3rd Edition,2003

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education Bachelor of Computer Applications

Human Computer Interaction

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT325	5	30	70	100

Course Objectives:

- The students are able to recognize the theories influencing Human Computer Interaction(HCI)
- The students are able to recognize how the requirements and challenges in developing computers with good level of HCI.
- The students think about how advanced computing facilities can be used to design one system which is capable of serving a large diverse population.

Course Contents:

Module I: Introduction to Interaction Design

Introduction to Interaction Design, I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles – elements – interactivity- Paradigms.

Module II: Design and Software Process

Design, Process of Design, Screen Design and Layout, Universal design Principles, Iteration and Prototyping. Human Computer Interaction in the software process-The software life cycle, Usability Engineering, Iterative design and prototyping. Design Rules- Standards, Guidelines, Golden Rules and Heuristics. HCI Patterns - Task centered System Design and User Centered Design & Prototyping.

Module III: Evaluation

Goals of Evaluation, Evaluation through Experts, Evaluation through users. Choosing an Evaluation method.

Module IV: Models and Theories

Cognitive Models, Challenges of using the Display based system Communication and Collaboration Models, Task Decomposition- Knowledge Based Analysis, Dialog Notation and semantics. Standard Formalisms, Interaction Models, Hypertext, Multimedia, World Wide Web.

Module V: Research Framework

Speech Interfaces, Information Visualization, Ubiquitous Computing, Case studies.

Text & Reference:

1. Human-Computer Interaction by Prof Alan Dix
2. Interaction Design: Beyond Human-Computer Interaction by Helen Sharp

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Basic Mathematics

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
MATH111	5	30	70	100

Course Objectives:

- Aimed to solve standard topical textbook-level problems by analytical means.
- Apply multiple concepts in the solution of a more sophisticated problem, which may be derived from a scientific application or from basic application.
- Model a topical problem from math, solve the problem, and report the results in the original problem context.

Course Contents:

Module I: Set Theory and Matrices

Sets, Types of Sets, Basic Operations on Sets, Venn diagram, Cartesian product of two sets, Distributive law, De Morgan's Law, Matrix, Submatrix, types of matrices, symmetric, square, diagonal matrices, singular and nonsingular matrices. Addition, Subtraction, multiplication of matrices, Rank of matrix.

Module II: Mathematical Logic

Basic Concepts, Propositions or Statements, Truth Table, Connectives and Compound Propositions, Implication, Bi- conditional of Connectives, Converse, Inverse and Contra positive of an Implication, Tautology, Logical Equivalence, Switching Circuits

Module III: Group and Subgroup

Binary Operations, Properties of Binary Operations, Semi group, Monoid, Group, Subgroups and other Groups

Module IV: Graph Theory

Graph, Multi Graph, Complete Graph, Bi Graph, Degree, isomorphic Graph, Euler Graph, Hamiltonian Graph, Bipartite Graph.

Module V: Data Analysis

Data and Statistical Data, Frequency Distribution, Graphical Representation, Measure of the Central Tendency, Measure of Dispersion, Kurtosis, skewness.

Text Readings

- Business Mathematics, Sancheti & Kapoor, S.Chand & Sons

References

- Discrete Mathematical Structure, Kolman, Busby and Ross, PHI

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Business Communication

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
BC107	4	30	70	100

Course Objectives:

This course intends to familiarize you with:

- Understand all aspects of communication and their application in different contexts.
- Discuss the processes of communication.
- Analyze and discuss different types of business correspondence.
- Enhance the skills in written as well as oral communication.

Learning Outcomes:

This course helps:

- Understand all aspects of communication and their application in different contexts.
- Discuss the processes of communication.
- Analyze and discuss different types of business correspondence.
- Enhance the skills in written as well as oral communication.

Module I: Essential English Grammar

Tenses, Subject-verb Agreement, Punctuation, Sentence Structure, Common Errors in English, Foreign Words

Module II: Written English Communication

Essay Writing, Precis Writing, Summarising, Paraphrasing

Module III: Concept and Nature of Communication

What is Communication?, Stages of communication: Ideation, Encoding, Transmission, Decoding and Response, Channels of Communication: Downward, Upward, Horizontal and Diagonal, Communication in Organization setting: Internal and External, Barriers to Effective Communication, Guidelines to overcome communication barriers, The Listening Process, Listening with a Purpose, Barriers to Listening, Effective Listening Strategies, Defining Non-verbal communication, Functions of non-verbal communication, Gesture cluster, Acoustic Features

Module IV: Effective Presentation

Pre-Presentation Jitters, Preparation and Practice, Delivering the presentation, Qualities of a skillful presenter, Capturing and maintaining attention, Handling questions, Power-Point presentation, Netiquette, Professional profiles, Blogs, Letters, Emails, Memo, Notices

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education Bachelor of Computer Applications

Module V: Employment Communication

Functions of report, Types of report, The report/proposal process, Organizing the report/proposal, Resume writing, Group Discussion, Qualities/Skills assessed in group discussion, Do's and Don't's in a group discussion, Effective participation in group discussion, Mock GD sessions

Text & References:

Text:

- Business Communication K. K. Sinha
- Business Communication: Theory and Application: Lesikar and Pettit
- Effective Communication: Adair, John
- Successful Communication in Business: Pryse, B. Elizabeth

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Operating System Concepts

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT123	5	30	70	100

Course Objectives:

- Provide the basic knowledge of the concepts involved in designing and working of an operating system.
- Understand how it acts as a resource manager of the system as a whole.
- Describe how CPU management takes place through multiprocessing and switching between various processes.
- Discuss various issues such as Memory conflicts and how these conflicts are resolved by an operating system.

Course Contents:

Module I Introduction

Introduction to Operating System and its need; Operating System Services; Classifications: Batch Operating System; Multiprogramming Operating System; Time Sharing Operating System; Real Time Systems, Multiprocessor Systems, Distributed Systems.

Module II Processes Management

Process Concept; States of Process; Process State transitions , Process Control Block ,Operation on processes;Context switching;

Interprocess Communication; Process Scheduling; CPU Scheduler and Basic Concepts; Scheduling Criteria; CPU Scheduling Algorithms: FCFS, SJF, Round Robin & Queue Algorithms; Deadlocks: Deadlock Characterization; Deadlock Prevention; Deadlock Avoidance; Deadlock Recovery

Module III Memory Management

Introduction to memory management and its significance; logical vs physical address space; Contiguous allocation: Single partition allocation and multiple partition allocation; Fragmentation; Memory Management Techniques: Paging, Segmentation, Virtual Memory, Demand Paging; Page Replacement algorithms: First In First Out algorithm, Least Recently Used Algorithm, Optimal Algorithm.

Module IV File and Device Management

Types of Files; File Access Methods ; File Allocation Methods: Contiguous, Linked and Index Allocation; I/O Devices; Device Controllers; Device Drivers; Directory Structure: Single Level, Tree Structured, Acyclic Graph and General Graph Directory, File Protection

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education Bachelor of Computer Applications

Module V Security and Protection

Security Policies and Mechanism; Protection and Access Control: Access Matrix Model of Protection, Access Hierarchies, Access List, Capabilities

Text:

Silberschatz Galvin Gagne, Operating Systems Concepts, Wiley Publication, Nine Edition, 2012.

A S Tanenbaum, Modern Operating Systems, Prentice Hall of India New Delhi, Fourth Edition, 2015.

References:

Maurice J. Bauch , Design of UNIX Operating System, Prentice Hall of India, Third Edition, 2007

SibsankarHaldar Operating Systems,Pearson Publications, First Edition, 2010

Garry Nutt, Operating Systems, Pearson Publications, Third edition, 2004

Andrew S. Tanenbaum, Modern Operating Systems, 2nd Edition; GOAL Series, 2004.

Evi Nemeth, Garth Snyder, The UNIX System Administration Handbook, Prentice Hall, First Edition, 2014

Iain D. Craig , virtual machines, First Edition, Springer, 2005

Any Other Reading/Study Materials:

NPTEL Lecture Series: <https://nptel.ac.in/courses/106/108/106108101/>

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Data Structure using C

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT124	5	30	70	100

Course Objectives:

- Impart in-depth knowledge of data structure and its implementation in computer programs.
- Make students understand the concepts of linear and nonlinear data structure.
- Illustrate asymptotic notations and their usage.

Course Contents:

Module I: Introduction to Data Structures

Definition, Types. Algorithm design, Complexity, Time-Space Tradeoffs. Use of pointers in data structures.

Array Definition and Analysis, Representation of Linear Arrays in Memory, Traversing of Linear Arrays, Insertion And Deletion, Single Dimensional Arrays, Two Dimensional Arrays, Multidimensional Arrays, Function Associated with Arrays, Character String in C, Character String Operations, Arrays as parameters, Implementing One Dimensional Array, Sparse matrix.

Module II: Stacks and Queues

Definition, Array representation of stacks, Operations Associated with Stacks- Push & Pop, Polish expressions, Conversion of infix to postfix, infix to prefix (and vice versa), Application of stacks recursion, polish expression and their compilation, conversion of infix expression to prefix and postfix expression, Tower of Hanoi problem.

Queue: Definition, Representation of Queues, Operations of queues- Insert, Delete, Priority Queues, Circular Queue, Deque.

Module III: Programming with Linked Lists

Introduction to Singly linked lists: Representation of linked lists in memory, Traversing, Searching, Insertion into, Deletion from linked list, Garbage collection and compaction, doubly linked list, operations on doubly linked list, circular linked list, operations on circular linked list, generalized list. Applications of Linked List-Polynomial representation using linked list and basic operation. Stack and queue implementation using linked list.

Module IV: Trees and Graphs

Trees: Basic Terminology, Binary Trees and their representation, expression evaluation, Complete Binary trees, extended binary trees, Traversing binary trees, Searching, Insertion and Deletion in binary search trees, General trees, AVL trees, Threaded trees, B trees.

Graph and Their Applications Introduction, Graph Theory Terminology, Sequential Representation of Graph (Adjacency and Path Matrix), Warshall Algorithms, Linked Representation of Graph, Different Operations on Graphs, Traversing A Graph(DFS,

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

BFS)., Spanning Trees-Introduction .Representation of Spanning tree, Constructing A Spanning Tree(Prim's Algorithm, Kruskal's Algorithm).

Module V: Searching and Sorting Techniques

Insertion Sort, Bubble sort, Selection sort, Quick sort, Merge sort, Heap sort, Partition exchange sort, Shell sort, Sorting on different keys, External sorting. Linear search, Binary search, Hashing:,Hash Functions, Collision Resolution Techniques.

Text:-

- Yashwant Kanetkar,"Data Structure using C", BPB Publication, 5th Edition ,2011
- A.Tannenbaum,Y. Lanhgsam and A.J. Augenstein ," Data Structures Using C And C++ ",Prentice Hall of India,2nd Edition,2009.
- Jean-Paul Tremblay, P.G Sorenson, "An Introduction to Data Structures with applications", Mcgraw-Hill ,2nd Edition ,1984.

References:-

- Robert L Kruse, "Data Structure and Program Design in C", Prentice Hall (1991).
- Noel Kalicharan ,"Data Structure in C" ,Ist Edition Create space publisher, 2008.
- Mark Allen Weiss,"Data Structure and algorithm Analysis in C",2nd Edition AddisonWesley,1996.
- E. Balagurusamy, "Problem Solving through C language", TMH publication, Fourth Edition, 2008.
- R.S Salaria ,"Data Structures & Algorithms using C",Khanna Publication,4th Edition,2009
- E.Horowitz and S.Sahni,"Fundamentals of Data Structures in C ",2nd Edition, Universities Press,2008.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education Bachelor of Computer Applications

Software Engineering and Modeling

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT142	5	30	70	100

Course Objectives:

- To describe how a given software implementation will affect its surroundings.
- To address the requirements and planning of an Information System.
- To acquire knowledge about design and development of various software process models and Information system tools.
- To apply standard coding practice in developing of software project.
- To expose the students to a variety of topics such as software testing methods, costing techniques.
- To know about planning and management of software projects as per industry standard.

Course Contents:

Module 1: Introduction to Software Engineering.

- What and Why Software Engineering,
- Software Crisis–Problem and Causes.
- Responsibility of Software Engineering,
- Fundamental Qualities of a Software Product,
- Kinds of Software Life-Cycle Models and Case Study

Module II Software Requirement Engineering and Coding

- Traditional Methods for Requirement Determination.
- Modern Methods for Requirement Determination.
- Process Modeling using DFD
- Data Modeling using ERD.
- Requirement documentation;
- Case Study
- Data Modeling using ERD.
- Requirement documentation;
- and trigonometric functions. Successive differentiation, Leibnitz theorem.
- Programming Practices,
- Top down Approach & Bottom up Approach,
- Structure Programming,
- Information hiding,
- Paired Programming

Module III: Software Design

- Software Design Process and Design Objectives
- Structured Design Methodologies.
- Modules Coupling and Cohesion,
- Types of Coupling and Cohesion
- Structured Chart,
- Qualities of Good Software Design,
- Module IV: Software Testing

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Introduction to Software Testing
- Level of Testing
- Characteristics of software testing,
- Black-Box Testing and White-Box Testing,
- Alpha, Beta and Gamma testing

Module V: Software Project Planning and Management

- Software Project Planning,
- Software Metrics,
- Cost and Size Metrics- FP & COCOMO.
- Configuration Management,
- Software Maintenance and Types of Maintenance

LAB EXERCISE

To test programming skills & **case study** for a static website

To test aspects of online marketing, payment mechanisms and try to Redefine SRS of previously made projects.

Derive **FP** using Size-Oriented metrics

Derive LOC based estimation for size-oriented metrics

DFD and ERD diagram

Class Diagram in UML

Use Case Diagram in UML

State Diagram in UML

Object Diagram in UML

Activity Diagram in UML

Sequence Diagram in UML

Collaboration Diagram in UML

Component Diagram in UML

Deployment Diagram in UML

Student Learning Outcomes:

After completion of the course, The student will be able to:
Apply standard coding practice in developing of software project
Review the principles and procedures of software planning and development of software project.

Describe and Employ the concept of Software Life Cycle Model and Quality Concepts in various Software project.

Demonstrate the ability to perform software testing for different types of software application.

Text & References:

Text Books:

An Integrated Approach to Software Engineering, Pankaj Jalote, 2015
Software Engineering Concepts, Richard Fairley.2016.

K. K. Aggarwal and Yogesh Singh, “Software Engineering”, New Age International, 3rd Ed., 20017.

Reference Books:

Software Engineering, A Practitioner’s Approach – Roger S. Pressman.2015

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Environmental Studies

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
EVS101	4	30	70	100

Course Objectives:

- Provide students with the scientific background needed to understand how the Earth works and how we, as human beings, fit into that.
- Enable students to identify and analyze environmental problems as well as the risks associated with these problems.
- Help students understand how to live their lives in a more sustainable manner.

Course Contents:

Module I : Multidisciplinary nature of environmental studies and Natural Resources

Multidisciplinary nature of environmental studies

Introduction, definition and importance of environmental studies, need for public awareness, sensitisation and participation

Natural Resources

1. Types of natural resources, natural resource conservation, Role of an individual in conservation of natural resources, Equitable use of resources for sustainable lifestyles.
2. Land resources: Land as a resource, land degradation, man induced landslides, Land resources: soil erosion and desertification.
3. Natural Resources: Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
4. Natural Resources: Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
5. Natural Resources: Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
6. Natural Resources: Food resources: World food problems, changes caused by agriculture and overgrazing, Food resources effects of modern agriculture, fertilizer pesticide problems, water logging, salinity, case studies.
7. Natural Resources: Energy resources: Growing energy needs, Energy resources renewable and non-renewable energy sources, Energy resources use of alternate energy sources, case studies.
8. Role of individual in conservation of natural resources
9. Equitable use of resources for sustainable lifestyles.

Module II : Ecosystems

1. Concept of an ecosystem,
2. Types of ecosystem,
3. Structure and function of an ecosystem, Producers, consumers and decomposers.
4. Energy flow in the ecosystem, Food chains, food webs and ecological pyramids.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

5. Ecological succession.
6. Introduction, types, characteristic features, structure and function of Forest ecosystem, Grassland ecosystem and Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Module III : Environmental Pollution

Definition Cause, effects and control measures of :- a. Air pollution b. Water pollution c. Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards Solid waste Management : Causes, effects and control measures of urban and industrial wastes. Role of an individual in prevention of pollution. Pollution case studies. Disaster management : floods, earthquake, cyclone and landslides

Module IV: Social Issues and the Environment and Human Population and the Environment

Social Issues and the Environment

Environment from Unsustainable to Sustainable development Urban problems related to energy Water conservation, rain water harvesting, watershed management Resettlement and rehabilitation of people; its problems and concerns. Case Studies Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust.

Case Studies. Wasteland reclamation. Consumerism and waste products. Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and control of Pollution) Act Wildlife Protection Act Forest Conservation Act Issues involved in enforcement of environmental legislation. Public awareness.

Human Population and the Environment

Population growth, variation among nations. Population explosion – Family Welfare Programme. Environment and human health. Human Rights. Value Education. HIV/AIDS. Women and Child Welfare. Role of Information Technology in Environment and human health. Case Studies.

Module V : Biodiversity

1. Introduction - Definition: genetic, species and ecosystem diversity
2. Biogeographical classification of India
3. Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
4. Biodiversity at global, national and local levels, India as a mega-diversity nation
5. Hot-spots of biodiversity,
6. Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
7. Endangered and endemic species of India 8. Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity
8. Biological Diversity Act, 2002

Text & References:

- Gauba Dhawan and Bisht Environmental Studies, Challenges & Solutions A quick Compendium.
- Somvanshi and Dhupper, Fundamentals of Environmental Studies.
- Kaushik and Kaushik, Fundamentals of Environmental Studies.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Asthana and Asthana, A textbook of Environmental Studies.

Individual Excellence and Social Dynamics

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
BS105	4	30	70	100

Course Objectives:

- Students will be able to understand attitudes and their relevance with personality.
- Relate emotional competency with the power of motivation.
- Explain values, ethics & morality to students.
- Discuss cultural and social dynamics.

Course Contents:

Module I: Understanding Self for Effectiveness

- Understanding Personality
- Role of Nature and Nurture in Personality Development
- TEA Model of Self
- 1.1.4- 1.1.5 Component of Self & Real Self, Role Self, Ideal Self
- Self-Awareness
- Techniques of Self Awareness – Johari Window and SWOT Analysis of Self
- Big 5 Factors
- 1.1.9-1.1.10 Meaning, nature of attitude (Components and Formation) & Importance of Attitude has been
- Attitudinal Change
- Prejudice, Discrimination, Stereotype
- Building Positive Attitude

Module 2 Motivation and Emotional Intelligence

- Understanding Emotions
- Types of Emotions
- Function of Emotions
- Positive emotions and Personal development
- Creating healthy organizational climate
- Emotional Intelligence – Meaning, components, Importance and Relevance
- Managing Emotions
- Motivation; Meaning, Types of Motivation, Components of Motivation
- Source of Motivation

Module 3- Social and Behavioral Issues

- Social issues in Community
- Healthy management of Social Issues
- Social and Psychological Stigma
- Strategies to overcome Social Stigma
- Behavioural Problems
- Rumors; Social Media, Electronic Media
- Nature of Socialization
- Types of Socialization
- Agents of Socialization and their Contribution

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Social Inhibition and Social facilitation

Module 4- Managing Diversity for Peace and Harmony

- Individual Differences
- Understanding Diversity
- Barriers and Challenges in Managing Diversity
- Managing Diversity in an Organisation
- Tolerance
- Harmony
- Pro-Social Behavior
- Social Change
- Sense of pride and standings up for one's right
- Integrity and accountability
- Fundamental duties for a good Citizen

Module 5 - Values and Ethics for Personal and Professional Development and Human Interface and Organizational Justice

- Personal values-Empathy, honesty, courage, commitment
- Values Clarification & Acceptance
- Professional Values-Work ethics, respect for others
- Learning based on Scriptures like- Ramayana, Mahabharata, Bible, Quran, Gita etc.
- Types of Judgment (Factual Aesthetic, Moral)
- Domains in study of Ethics (Applied, Normative & Meta Ethics)
- Ethics in Technological Era
- Meaning, Types of Organizational Justice
- Implications of Organizational Justice
- Consequences of Organizational injustice

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Green Computing

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSE433	5	30	70	100

Course Objectives:

- To acquire knowledge to adopt green computing practices to minimize negative impacts on the environment, skill in energy saving practices in their use of hardware, examine technology tools that can reduce paper waste and carbon footprint by user.
- To understand how to minimize equipment disposal requirements.

Course Contents:

Module I FUNDAMENTALS

Descriptors/Topics Green IT Fundamentals: Business, IT, and the Environment – Green computing: carbon

foot print, scoop on power – Green IT Strategies: Drivers, Dimensions, and Goals – Environmentally

Responsible Business: Policies, Practices, and Metrics.

Module II GREEN ASSETS AND MODELING

Descriptors/Topics Green Assets: Buildings, Data Centers, Networks, and Devices – Green Business Process Management: Modeling, Optimization, and Collaboration – Green Enterprise Architecture –Environmental Intelligence – Green Supply Chains – Green Information Systems: Design and Development Models.

Module III GRID FRAMEWORK

Descriptors/Topics: Virtualizing of IT systems – Role of electric utilities, Telecommuting, teleconferencing and teleporting – Materials recycling – Best ways for Green PC – Green Data center – Green Grid framework.

Module IV GREEN COMPLIANCE

Descriptors/Topics

Socio-cultural aspects of Green IT – Green Enterprise Transformation Roadmap – Green Compliance:

Protocols, Standards, and Audits – Emergent Carbon Issues: Technologies and Future.

Module V CASE STUDIES

Text & References:

TEXT BOOKS:

1. Bhuvan Unhelkar, “Green IT Strategies and Applications-Using Environmental Intelligence”, CRC Press, June 2011
2. Woody Leonhard, Katherrine Murray, “Green Home computing for dummies”, August 2009.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

REFERENCES:

1. Alin Gales, Michael Schaefer, Mike Ebbers, “Green Data Center: steps for the Journey”, Shoff/IBM rebook, 2011.
2. John Lamb, “The Greening of IT”, Pearson Education, 2009.
3. Jason Harris, “Green Computing and Green IT- Best Practices on regulations & industry”, Lulu.com, 2008.
4. Carl speshocky, “Empowering Green Initiatives with IT”, John Wiley & Sons, 2010.
5. Wu Chun Feng (editor), “Green computing: Large Scale energy efficiency”, CRC Press, 2012.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Object Oriented Programming Using Java

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT120	5	30	70	100

Course Objectives:

- The objective is to impart programming skills used in this object oriented language java.
- The students are expected to learn it enough so that they can developed program in Java and the web solutions like creating applets etc.

Course Contents:

Module I – OOP and Introduction to Java

Descriptors/Topics

Introduction to oops, Object Oriented Programming: Classes and Objects, Encapsulation, Abstraction, Polymorphism, Inheritance, Introduction of Java, History of Java, How Java is different from C++, JDK Tools, Class File, Java Bytecode, JVM, identifiers, Data types, Operators. Control Statements, loop, arrays, Inheritance in Java, Multilevel hierarchy, method overriding, Abstract classes, Final classes

Module II – Package and Exception in Java

Descriptors/Topics

Defining, Implementing and Applying Packages, Importing Packages, Types of packages, User define package, Exception handling in Java, try, catch, throw, throws and finally, Uncaught Exceptions, Multiple catch, Java's Built-in Exception.

Module III – Constructor, Wrapper, String and StringBuffer Class in Java

Descriptors/Topics

Constructors, Various Types of Constructor, Role of Constructors in inheritance, Introduction to Wrapper Classes, String Operations in java, Immutability, Creating and Initializing Strings using methods of String and StringBuffer Class

Module IV - Interface and Threads in Java

Descriptors/Topics

Interface: Defining Interfaces, Abstract Methods in Interfaces, Implementing Interfaces, Extending Interfaces, Interface References, Default Methods in Interfaces, Static Methods in Interfaces, Constants in Interfaces

Thread: Thread life cycle, Creating and implementing thread, multi-threaded programming, thread priorities, synchronization of thread, resuming and stopping Threads

Module V – Applet and Graphics Programming

Descriptors/Topics

Applet Class, Life cycle of applet, creating an executable applet, adding applet to HTML file, The Graphics class, Draw lines, rectangles, circles, ellipse, arcs, polygon etc. Using control loops in Applet, Introduction to AWT packages, Layout Managers.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Text Reading:

1. JAVA The Complete Reference by PATRICK NAUGHTON & HERBERT SCHILD, TMH
2. Introduction to JAVA Programming a primar, Balaguruswamy.

References:

1. "Introduction to JAVA Programming" Daniel/Young PHI
2. Jeff Frentzen and Sobotka, "Java Script", Tata McGraw Hill Additional Reading:

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Network Basics

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT127	5	30	70	100

Course Objectives:

- This course is aimed to provide a fundamental understanding of Computer Networking, Operating System, Connecting to the networks, network addressing, network services and Wireless technologies etc.
- After the completion of the course, you will understand the core concepts around which computer networks revolve.

Course Contents:

Module I: Exploring the Network

Introduction, Communicating in a Network-Centric World, The Network as a Platform, Converged Networks, LANs, WANs, and the Internet, The Expanding Network, Network Architectures. Configuring a Network Operating System, IOS Bootcamp, Limiting Access to Device Configurations, Address Schemes.

Module II: Network Protocols and Communication

Introduction, Network Protocols and Standards, Reference Models, Using Requests for Comments, Moving Data in the Network.

Module III: Application Layer and Transport Layer

Introduction, Application Layer Protocols, How Application Protocols Interact with End-User Applications, Well-Known Application Layer Protocols and Services, Transport Layer, Transport Layer Protocols, Introducing TCP and UDP, TCP Communication, UDP Communication.

Module IV: Network Layer, IP Addressing and Subnetting

Network Layer Protocols, Characteristics of the IP Protocol, IPv6 Packet, Routing, Routers, Configuring a Cisco Router, IPv4 Network Addresses, Types of IPv4 Addresses, IPv6 Network Addresses, Types of IPv6 Addresses, Subnetting IP Networks, Subnetting an IPv4 Network, Addressing Schemes, Design Considerations for IPv6, Subnetting an IPv6 Network.

Module V: Network Access and Ethernet Technology

Data Link Layer, Layer 2 Frame Structure, Media Access Control, Topologies, WAN Topologies, Physical Layer, Network Media, Ethernet, Ethernet Protocol, Address Resolution Protocol, LAN Switches. Create and Grow, Devices in a Small Network, Growing to Larger Networks, Keeping the Network Safe, Basic Network Performance, Managing IOS Configuration Files.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Text Readings

- Network Basics companion guide by Cisco Networking Academy, Cisco Press, Edition 1, December 2013
- Mark Dye Rick McDonald, Antoon Ruffi “Network Fundamentals, CCNA Exploration Companion Guide”, Cisco Press; Edition 1 December 2011

References

- Behrouz Forouzan., “Data Communication and Networking” McGraw-Hill Higher Education; 4 edition,2006
- William Stallings “Data and Computer Communication” Prentice Hall; 10 edition, 2013
- Andrew S. Tanenbaum “Computer Networks” Prentice Hall; 5 edition, 2010

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Introduction to Data Base Management System

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT132	5	30	70	100

Course Objectives:

- To expose the students to the fundamentals & basic concepts in Data Base Management Systems.
- To discuss architecture of Database Systems with concept of relational model & ER model.
- To explain techniques for database design, Normalization and database recovery and protection.

Course Contents:

Module I: Introduction to DBMS

Definition of DBMS, Data Independence, DBMS Architecture, Levels, Database Administrator, File System Approach Vs DBMS Approach, Advantages of Using a DBMS, Data Models, Schemas, and Instances.

Module II: Relational Database & ER Model

Relational System, Codd's Rule, Relational Model, Tables and Views, Entity, Types of Entity, Weak Entity Attributes, Entity sets, Entity – Relationship Diagrams, case study.

Module III: Relational Model Objects

Domains and Relations, Relational Data Integrity; Primary Key, Candidate Key, Foreign Key and their rules; Relational operators, Relational Algebra, Relational Calculus, SQL Language, Data definition, Data retrieval and update operations.

Module IV: Database Design

Definition of Functional Dependencies, Process of Normalization, First Normal Form, Second Normal Form, Third Normal Form. Boyce Codd Normal Form, Fourth Normal Form, Fifth Normal Form, case study.

Module V: Data Recovery & Protection

Recovery-Transaction recovery, System recovery, Media Recovery, Concurrency Control Techniques: Locking, Dead Lock, Introduction to Serializability, Security.

Text Readings

- Elmasri & Navathe, "Fundamental of Database Systems", Pearson Education, Seventh Edition, 2016

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Korth & Sudarshan," Database System Concepts",TMH, Sixth Edition, 2010
- C.J.Date," An Introduction to Database System", Pearson Education, Eighth Edition, 2009

References:

- Bipin C Desai," Introduction to Database Systems", Galgotia publications, Revised Edition, 2010
- Kevin Loney & Geroge Koch ,"Oracle 9i :The Complete Reference", TMH Edition 2002
- Ivan Bayross," SQL,PL/SQL The Programming Language Of Oracle", BPB Publications, Third Revised Edition, 2009.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Computational Statistics

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT139	5	30	70	100

Course Objectives:

- Provide the detailed knowledge of the characterization of all the useful discrete, absolutely continuous and singular distributions.
- Understand interrelations of various Statistical Models producing different families require further investigations.
- Formulate the mathematical/statistical models for real data set arising in various fields.
- Characterize a property which is possessed by a distribution and that distribution alone.

Course Contents:

Module I: Introduction to Computational Statistics

Concept of statistical population, attributes and variables (discrete and Continuous); Different types of scales – nominal, ordinal, ratio and interval; Primary data – designing a questionnaire and schedule, collection of primary data, checking their consistency; Secondary data, scrutiny of data for internal consistency and detection of errors of recording; Presentation of data : classification, tabulation, diagrammatic & graphical representation of grouped data; Frequency distributions, cumulative frequency distributions and their graphical representations, histogram, frequency polygon and Ogives, stem and leaf plot, box plot

Module II: Numerical Measures in Statistics

Measure of central tendency and dispersion, merits and demerits of these measures

Module III: Skewness and Kurtosis

Moments and factorial moments; Shephard's correction for moments; Skewness and Kurtosis and their Measures; Measures based on quartiles; Bivariate data; Method of least squares for curve fitting

Module IV: Correlation and Regression Analysis

Correlation and regression, rank Correlation (Spearman's and Kendall's measure); Intra-class correlation; correlation ratio; Partial and Multiple Correlation & Multiple Regression for Trivariate data

Module V: Association of Attributes

Association of attributes, Independence, Measure of association for 2x2 table; Chi-square, Karl Pearson's and Tschuprow's coefficient of association; Contingency tables with ordered categories.

Text Readings

- Goon, Gupta & Dasgupta: Fundamentals of statistics. Vol. I. The World Press Private Ltd., Calcutta.
- Yule, G.U. and Kendall, M.G.: An Introduction to the theory of statistics. Charles Griffin & Company Ltd.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Unix Operating System and Shell Programming

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT311	5	30	70	100

Course Objectives:

- The Objective of this course is to expose the students to the fundamentals and the concepts of Unix Operating System.
- This course will prepare the students to work on UNIX ENVIRONMENT as a technical user or system administrator of a powerful, fast growing, multitasking, open operating system which is currently used on all types of computers from micros to mainframes.
- This course introduces students to the fundamentals of the UNIX/Linux operating system and shell programming. It provides an overview of the history of UNIX/Linux and an explanation of operating systems. The course covers in detail basic commands, the vi editor, the file structure, the shell environment and shell scripts.

Course Contents:

Module I: Introduction

Introduction to Operating System, History of Unix, UNIX Family, Unix System Layered and Detailed Architecture: Concept of Files in UNIX, Absolute Path and Relative Path, UNIX file system structure, Types of shells (Bourne, BASH, KORN, C), Process and Process States, Inode, Introduction of basic system calls

Module II: Unix Commands

Telnet connect: Login, password, shell and commands, logout, current working directory, referring to home directories, Commands to move around by path concept, creating new directories, creating files –touch , cat ; copying files; moving files, Deleting files and directories; looking at files: cat, more, pg, less , head , tail; Cal, banner, file, wc, sort, cut, grep ,cmp, comm., diff ;Calculator: expr , bc; Getting online help; manual pages ; listing commands , meta characters ,Wildcards; hidden files; Standard input and output; redirecting input and output; filter; pipes; file permissions; user and group; Interpreting file permissions; Permission Dependencies; Changing permissions, Setting Permissions. Managing file links; hard links; symbolic links; jobs and process: process ID; foreground and background jobs; suspend and interrupt a process; killing jobs; changing password, exit.

Module III: VI Editor

Command mode, insert mode and last line mode; command to delete character, insert line; deleting text, command for moving the cursor; including other files; running shell commands; getting vi help; search and replace commands; changing and deleting text, Change word, Change line, Delete current line, Delete n lines, Delete remainder of Lines; copying and moving; Saving and Exiting.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module IV: Shell Programming

Shell as an interpreter; pattern matching; redirection; pipes; command substitution; shell variables, environment variables, Keywords, Assignment Statements, read, echo, Shell scripts and execution methods, Setting positional parameters (set command), Shift, metacharacters, arithmetic operators, logical and relational operators, Test Command: Numerical Test, File Test and String Test ; Control Flow through if, case ; Loops ;while, until , for

Module V: System Administration

Adding and Removing Users, Starting up and Shutting down the System, Disk Management, File System Mounting and Unmounting, Monitoring System Usage, Ensuring System Security

Text Readings

- UNIX AND SHELL PROGRAMMING, Yashwant P.Kanetkar , BPB Publication , 2002

References

- “Unix: Concepts and Application”, Sumitabha Das, TMH, Second Edition, 1998
- “Linux Programming by Examples: The Fundamentals”, Arnold Robbins, Pearson Education, First Edition, 2004 “Design of the Unix operating System”, Maurice J. Bach, PHI, First Edition, 1986
- Unix Shell Programming, by Stephen G. Kochan and Patrick Wood, Pearson Education ,3rd edition, 2007
- Introduction to UNIX, David I. Schwartz, Pearson Education, Second Edition , 2009
- UNIX SHELLS by Example, Ellie Quigley, Prentice Hall, Fourth Edition, 2008

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Python Programming

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT232	5	30	70	100

Course Objectives:

Provide in-depth knowledge of developing and debugging Python Programs.

- Illustrate and manipulate core data structures like Lists, Dictionaries, Tuples, and Strings.
- Understand the concept of files and exception handling

Course Contents:

Module I: Introduction

Basic concepts: Functional Programming, OOPS and Data Structures

Getting Started: Running Code in the Interactive Shell, Input, Processing and Output, Editing, Saving and Running a Script, Working of Python. Variables, Expressions and Statements: Values and Data Types, Variables, Keywords, String Literals, Escape Sequences, Operators and Operands, Expressions and Statements, Interactive mode and Script mode, Order of Operations, Comments

Module II: Conditional Statements and Loops

Modulus Operator, Boolean Expressions, Logical Operators, Conditional Execution “if statement”, Alternative Execution “else clause”, Chained Conditionals “elif clause”, Nested Conditionals, while statement, For loop, Break and Continue Statement

Module III: Functions and Recursion

Function Calls, Type Conversion Functions, Math Functions, Composition, Adding new functions, Parameters and 25 Arguments, Stack Diagrams, Importing modules with “from”, Recursion, Stack Diagram for Recursive Functions, Infinite Recursion, String Functions: Traversal, Comparison, Searching, Counting, Pre-defined String Functions, In Operator

Module IV: Lists, Dictionaries and Tuples

Lists: List as a Sequence, Traversing a list, List Operations, List Slices, List Methods, Map, filter and Reduce, Deleting Elements, Lists and Strings, Objects and Values, Aliasing, List Arguments

Dictionaries: Dictionary as a set of counters, Looping and Dictionaries, Reverse Look Up, Dictionaries and Lists, Memos, Global Variables, Long Integers

Tuples: Tuple Assignment, Tuples as return values, Variable Length argument tuples, Lists and Tuples, Dictionaries and Tuples, Comparing Tuples, Sequences of sequences

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module V: Files

Text files and their Formats, Reading from a file, Writing to a file, Accessing and Manipulating Files and Directories on the Disk, Format Operator, Filenames and paths
Exception Handling: Errors, Exceptions, Handling Exceptions, Raising Exceptions, Try.
Finally, The with Statement, Catching Exceptions, Databases, Pickling, Pipes

Text Readings

- Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011, Cengage Learning, ISBN: 978-1111822705.
- Python Crash Course: A Hands-On, Project-Based Introduction to Programming (2nd Edition) Author: Eric Matthes.
- Head-First Python: A Brain-Friendly Guide (2nd Edition)
- Learn Python the Hard Way: 3rd Edition.
- Python Programming: An Introduction to Computer Science (3rd Edition)

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Fundamentals of Digital Marketing

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT224	5	30	70	100

Course Objectives:

- This course is aim to produce graduates with a broad range of digital marketing,
- an in-depth understanding of how digital marketing is revolutionizing the current industry.
- to make students more effective in how they conduct business in the digital age.

Course Contents:

Module I: Introduction to Digital Marketing

- What is Digital Marketing? Types of Digital Marketing; The 7 C's of Digital Marketing; The Digital Revolution in Media Industries...and Who's Next?; Digital media Vs Traditional media; Digital Marketing Planning.

Module II: Search Engine Optimisation & Search Marketing (PPC)

- Search Engine Optimization - Site Supports, Sitemaps, XML Sitemap, Webmaster Tools, Website Engagement, User Experience, User Engagement, Site Speed, 404 errors , SEO Tools
- Search Marketing (PPC)-Quality score explained, Conversion Tracking, Understanding CPA Issues, Ad Positioning Strategy Bidding Approaches

Module III: Digital Display Marketing

- How to Find Suitable Websites, Researching Publishers and Websites, Google Display Planner Tool, Publisher and Website Resources, Match Audience with Publisher

Module IV: Email Marketing, Social Media Marketing and Mobile Marketing

- Email Marketing - Section 4 - When to Deliver, Email Reports and Analytics
- Social Media Marketing - Google+, Circles, Google+ Hangouts, Google+ Communities, +1 Button Google+ Definition, Google+ Chat, Google+ Business Pages, Google+ Plugins, Facebook Pages, Business Advertising using Facebook, Google Analytics
- Mobile Marketing - Mobile Search Analytics, In-App Analytics, Mobile Site Analytics, Flurry, Distimo, Google Analytics Dashboard, Mcommerce, Voice Input, Geo-Location, Privacy, Data Protection, Copyrights, Information Sources, Mobile Events.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module V: Analytics and Strategy & Planning

- Analytics - PPC Conversion Rate?, PPC Geo Locations, PPC Ecommerce Report, What PPC Phrases Are Working?, PPC Phrases Assisting Conversions, PPC Analysis
- Strategy & Planning

Text & References:

- Audience: Marketing in the Age of Subscribers, Fans and Followers [Kindle Edition] by Jeffrey K. Rohrs.
- Understanding Digital Marketing: Marketing Strategies for Engaging the Digital Generation Paperback – Import, 3 Jun 2014 by Damian Ryan
- The Art of Social Media “Power Tips for Power Users” by Guy Kawasaki and Peg Fitzpatrick

Any other Study Material:

- <http://digitalmarketinginstitute.com/subject-matter-experts/barry-adams>
- <http://digitalmarketinginstitute.com/topics/introduction-to-digital-marketing>
- <http://digitalmarketinginstitute.com/courses/pay-per-click-marketing-google-adwords>

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

IT Project Management

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT243	5	30	70	100

Course Objectives:

- The course presents a new management framework uniquely suited to the complexities of modern software development.
- The course provides a clear and proactive discussion of the economic, metrics and management strategies needed to plan and execute a software project successfully.
- This course also covers all the qualitative and quantitative aspects of project management with a practical treatment (case studies) of many managerial issues.
- Knowledge of Project Risk Management
- Knowledge of Quality Assurance related to Project implementation

Course Contents/Syllabus:

Module I : Introduction to Project Management

Descriptors/Topics

- Definition & objective of Project Management
- Characteristics of Projects
- Stages of Project Management
- Project Planning Process
- Establishing project organization
- Discuss the Success and Failures of Project

Module II Work Definition

Descriptors/Topics

- Defining work context
- Time Estimation method
- Project cost estimation & budgeting
- Project Risk Management

Module III : Project Planning

Descriptors/Topics

- Project Scheduling & Planning Tools
- WBS
- LRC
- Gantt chart
- CPM/PERT Networks
- Risk management plan
- HRM plan

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Procurement management system
- Communication management system

Module IV Project Implementation

Descriptors/Topics

- Project Monitoring & Control with PERT/Cost,
- Computer Applications in Project Management,
- Contract Management,
- Project Procurement Management,
- Quality Assurance related to Project implementation

Module V Project Monitoring & Control

Descriptors/Topics

- Level of Responsibility for Control- Business & Product Quality Controls,
- Integrated change control during the life of the project,
- Performance reporting, Deviation from specification,
- Errors & Quality Control

Text Reading:

1. Launching New Ventures: An Entrepreneurial Approach, 5th Edition, Kathleen R. Allen University of Southern California, ISBN-13: 9780547014562
2. Entrepreneurship: creating and managing new ventures, Bruce Lloyd, Pergamon Press, ISBN 0080371086
3. Start Run & Grow: A Successful Small Business, CCH, CCH Tax and accounting ,ISBN 0808012010
4. Managing New Ventures: Concepts and Cases in Entrepreneurship, By Anjan Raichaudhur, PHI, ISBN 978-81-203-4156-2
5. Technology Ventures: From Idea to Enterprise, Thomas H. Byers, Richard C. Dorf, Andrew Nelson, Science Engineering & Math;

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Fundamentals of Cloud Computing and Enterprises

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
IT425	5	30	70	100

Course Objective:

- An understanding of Concepts and infrastructure of cloud computing and its business applications.
- An understanding of opportunities and challenges of information management in complex business environment.
- To understand the role and responsibilities of professional field, how to deal with ethical, legal, security and social issues and responsibilities related to cloud computing.

Module I: Introduction

Defining the cloud for the Enterprise: Database as a service, Governance/Management as a service, Testing as a service, Storage as a service , Cloud service development, Cloud Computing Challenges Layers of Cloud Computing, types of cloud computing, Cloud Computing Features, Cloud Computing Security requirements, pros and cons, benefits

Module II: Cloud Computing For Everyone

Centralizing email communications, cloud computing for community Collaborating on Schedules, Collaborating on Grocery Lists, Collaborating on To-Do Lists Collaborating on Contact Lists, Collaborating on schedules, collaborating on group projects and events, cloud computing for corporation, mapping ,schedules managing projects, Collaborating on Marketing Materials, Collaborating on Expense Reports, Collaborating on Budgets, Collaborating on Financial Statements, Presenting on the Road, Accessing Documents on the Road.

Module III: Brining Governance to the clouds

People and processes, Governance for the clouds, Creating the Governance model: Define Polices, design Polices, Implement policies, Governance technology.

Module IV: Working from your Services to Clouds and Cloud Services

Defining Meta Services and Service, Creating the service directory, collaborating on calendars, Schedules and task management, exploring on line scheduling and planning, collaborating on event management, collaborating on contact management, collaborating on project management, collaborating on word processing, spreadsheets, and databases.

Module V: Outside Cloud Storing and Sharing

Evaluating online file storage, evaluating web conference tools, evaluating web mail services, Evaluating instant messaging, creating groups on social networks, Evaluating on line groupware, collaborating via blogs and wikis,

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Understanding cloud storage, exploring online book-marking services, exploring online photo editing applications, exploring photo sharing communities, controlling it with web based desktops.

Text & References:

1. Michael Miller, "Cloud Computing", Pearson Education, New Delhi, 2009.
2. David S. Linthicum," Cloud computing and SOA Convergence in your Enterprise.
3. Greg Schulz 2011, Cloud and Virtual Data Storage Networking, Auerbach Publications [ISBN: 978-1439851739]
4. EMC, Information Storage and Management [ISBN: 978-0470294215]
5. Klaus Schmidt, High Availability and Disaster Recovery [ISBN: 978-3540244608]

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Cyber and Information Security

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT136	5	30	70	100

Course Objectives:

- To provide a broad understanding of Cyber and Information Security.
- To provide the student with basic knowledge of cybercrime dynamics, cyber law & Intellectual property issues; explore legal & policy developments for dealing fraud using Cyber space.

Course Contents:

Module I Introduction of Information Security

- Introduction to Information, Computer and Network Security,
- Security Concepts, kinds of security breaches,
- Threats and Risks, Point of vulnerability,
- Attacks- Passive and Active, Security Services, Confidentiality, Authentication, Non-Repudiation, Integrity, Access Control, Availability,
- Model for Internetwork Security, Internet Standards and RFCs

Module II Cyber Security

- Sources of security threats, Motives, Target Assets,
- Consequence of threats, E-mail threats, Web threats, Hacking, Intruders, Insider threats
- Cyber Squatting, Cyber Stalking, Crime of deception, Content Oriented Online Crime, Malicious Software use and detection,
- Cyber Terrorism, Information warfare and surveillance, Virtual Crime, Online Frauds
- Identity Theft and Intellectual property theft, Network threats-Worms, Virus, Spam's, Ad-ware, Spy ware,
- Trojans and convert Channels, Backdoors, Bots, IP spoofing, ARP spoofing, Session hijacking, Sabotage, phishing, Zombie/Zombie Drone.

Module III Cyberspace and the Law & Cyber Forensics

- Security Engineering: Security Threat Management, Risk Assessment,
- Introduction to Cyber Forensics, Evaluation of crime scene & evidence collection,
- Security Policies, Risk Management, Procedure and Guidelines.
- Cyber Laws: Advantages, cyber lawyers, Jurisdiction and Sovereignty.
- The IT Act of India 2000
- Intellectual property rights, Ownership & Enforcement of IPR
- Defenses for Infringement
- Copy right objective , Transfer of copy right, practical aspect of licensing
- Benefits, jurisdictional Issues, copy right in digital media, patents in cyber world

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module IV Cryptography

- Introduction to Cryptography
- E-Commerce Security
- Message Authentication, Hash functions, Hashes and Message Digests
- Number Theory for Information Security
- Public Key Algorithms , Public-key Infrastructure, PKI Applications
- Cryptographic Protocols, Digital Signature
- Digital Watermarking and Steganography
- Biometric Security, Encryption, Symmetric Key Encryption, Data Encryption Standard (DES), Kerberos

Module V Security Management

- Introduction to Security Risk Management, risk assessment,
- Security Assurance Approaches: OCTAVE and COBIT approaches.
- Security Management of IT Systems: Network security management, Firewalls, IDS and IPS configuration management.
- Web and wireless security management.
- Security Models, Access control models, role-based and lattice models.
- Computer security log management, malware handling and vulnerability management programs.
- Specifying and enforcing security policies,
- Information security audit and principles of audit.
- Information Security Standards and Compliance: Overview of security standards ISO 17799 Standard, Legal and Ethical issues, PCI DSS, ISO27001.

Text Reading:

- Cryptography and Information Security: V.K. Pachghare, PHI
- Cyber Laws and IT Protection: Harish Chander, PHI
- Slay, J. and Koronios, A., IT Security and Risk Management, Wiley, 2006.
- Hossein Bidgoli, Information Security, Volume 3, Threats, Vulnerabilities, Prevention, Detection, and Management, Wiley, 2006
- Mark Merkow, Information Security : Principles and Practices, 1/e, Pearson Education
- Marjie T. Britz, Computer Forensics and Cyber Crime : An Introduction, 2/e, Pearson Education

References:

- William Stallings, Network Security Essentials (Applications and Standards) Pearson Education.
- Ortmeier, P. J. Security Management: An Introduction, 2nd edition, Prentice Hall., 2005
- Skoudis, Ed & Zeltser, and Lenny Malware: Fighting Malicious Code. Second Ed. Prentice Hall PTR., 2004
- Skoudis, Ed & Liston, Tom, Counter Hack Reloaded, Second Edition. Prentice Hall PTR. Plano, TX , 2006
- Wall, David, Cybercrime: The Transformation of Crime in the Information Age. Polity Publishing , 2007
- Ross J Anderson, Security Engineering: A Guide to Building Dependable Distributed Systems, 2008

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Introduction to Artificial Intelligence

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT361	5	30	70	100

Course Objectives:

- The primary objective of this course is to provide an introduction to the basic principles, techniques, and applications of Artificial Intelligence. The emphasis of the course is on teaching the fundamentals and not on providing a mastery of specific commercially available software tools or programming environments.
- Upon successful completion of the course, students will have an understanding of the basic areas of artificial intelligence search, knowledge representation, learning and their applications in design and implementation of intelligent agents for a variety of tasks in analysis, design, and problem- solving. Aim of this course is to know about Lisp and Prolog and use of these languages in AI. Graduate students are expected to develop some familiarity with current research problems and research methods in AI by working on a research or design project

Course Contents:

Module I: Introduction to AI and Problem Representation

Introduction: Artificial Intelligence (AI) and its importance, AI Problems (tic tac toe problem, water jug problems), Application area of AI.

Problem Representations: State space representation, problem-reduction representation, production system, characteristics and types of production system

Module II: Heuristic Search Techniques

Heuristic Search Techniques: AI and search process, brute force search, depth-first search, breadth-first search, time and space complexities, heuristics search, hill climbing, best first search, A* algorithm and beam search, AO search, constraint satisfaction

Module III: Game Playing

Game Playing: AI and game playing, plausible move generator, static evaluation move generator, game playing strategies, problems in game playing

Module IV: Logic and Knowledge Representation – Part 1

Knowledge Representation and Structured Knowledge: Associative networks, frame structures, conceptual dependencies and scripts

Module V: Logic and Knowledge Representation – Part 2

Propositional logic: syntax and semantics, First Order Predicate Logic (FOPL): Syntax and semantics, conversion to clausal form, inference rules, unification, and the resolution principles

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Text Readings

- Elaine Rich, Kevin Knight, Artificial Intelligence TMH (Any Edition).
- Max Barber, Logic Programming with Prolog, Springer, 2013

References

- Dan W. Patterson, Introduction to AI and Expert System, PHI
- V S Janakiraman, K Sarukesi, P Gopalakrishan, Foundations of Artificial Intelligence and Expert Systems, Macmillan India Ltd

Additional Reading:

- i. Introduction to Artificial Intelligence by Wolfgang Ertel and Nathanael T. Black, Springer, 2017
- ii. V S Janakiraman, K Sarukesi, P Gopalakrishan, Foundations of Artificial Intelligence and Expert Systems, Macmillan India Ltd.

Any other Study Material:

- iii. https://www.tutorialspoint.com/artificial_intelligence
- iv. www.nptel.ac.in
- v. https://swayam.gov.in/nd1_noc20_cs42/preview

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Fundamentals of E-Commerce

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT334	5	30	70	100

Course Objectives:

- This course intends to describe that the scope of e-Commerce market has evolved beyond the narrow buying and selling of goods to include services of all kinds including entertainment and communications that is making e-Commerce an integral part of everyone's daily life.
- This course will help the students to recognize that today the extended scope of eCommerce provides the opportunity to substantially enhance the daily lives of all individuals. Case studies based on Internet Marketing, Mobile Commerce, On-line education, EDI, e-banking understanding will prepare the students for current and future scenario
- The course is designed to help the student use theoretical frameworks of e-Commerce Infrastructure and major trends in e-Commerce virtual world to interpret case studies and implement the learnings in real-life scenarios on day to day basis.

Course Contents/Syllabus:

Module I: E-Commerce: A Revolution

Traditional commerce – an overview, Growth of Internet and the web, What is E-commerce? Origin and growth of e-commerce, Comparison between Traditional and Electronic commerce, advantages and Issues in electronic commerce, relation between e-Commerce and e-Business, digital convergence, Unique features of E-commerce technology: Ubiquity, Global reach, Universal standards, Richness ,Interactivity, Information Density, Personalization/customization, Social technology , Introducing Types of e-commerce , case study of traditional commerce vs e-commerce.

Module II: E-commerce business Models and concepts

Eight key elements of a Business model: value proposition, Revenue model, Market opportunity, competitive environment, competitive advantage, market strategy, organizational development, management team ; Business –to – Consumer (B2C) Business Model :e-tailer ,Business-to –Business (B2B) business model : E-distributor, e-Procurement, introduce supply chain management (SCM) ,Consumer-to-Consumer (C2C) Business Model , case study on Peer-to-Peer(P2P) Business model, Introduction of M-Commerce business models, Government –to – Citizen model

Module III: E-Commerce Infrastructure framework

Ecommerce framework, Terms related to Internet Technology: Internet protocols, DNS, URLs, Client/Server computing, Markup languages, Web servers and clients, web browsers, search engine, Intelligent agents (Bots), online forums and chat, blogs, podcasting, Internet telephony, Video Conferencing. What is Information Super highway? Components of I-Way (Information Super Highway), Public policy issues shaping the I-

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Way, Internet, Intranet and Extranet. How and why wireless technology is employed? Wireless Application Protocol benefits and limitations, mobile banking, case study of mobile commerce

Conceptual Framework of e-Business

e-Banking: Meaning, Importance and types of e-banking services. Traditional vs e-banking, process of e-banking, Advantages and disadvantages of e-banking, Status of e-banking in India. Case study of national and International banks

e-Trading: Meaning and importance of e-trading, traditional trading vs e-Trading, Operational aspects of e-trading, advantage of e-trading status of e-trading

Advertising and Marketing on Internet: New age of Information based marketing, On-line advertising paradigms: Active or Push based advertising, Passive or Pull based advertising, e-Cycle of Internet Marketing, Personalization, Search engine Optimization, tracking customers: log files, forms, cookies , e- CRM

On-Demand education and digital copyrights: On-line education and virtual classrooms, distance education and e-learning, training on demand, changing roles of Institutions: universities and colleges, Publishers, Authors, technological components of education on-demand.

Module IV: E-commerce Security environment:

Dimensions of E-Commerce security, security threats in the E-commerce environment: malicious code, unwanted programs, Phishing and Identity theft, Hacking and Cybervandalism, credit card fraud/theft, spoofing, spamming, Sniffing, Insider attacks, Denial of Service (DOS) and Distributed Denial of Service (DDoS) attacks
Introducing Technology solutions: Encryption, Secure Socket Layers (SSL), Firewalls

Module V: E-Commerce Payment Systems:

Traditional payment methods, Online Credit card Transactions, Credit card E-Commerce enablers, digital wallets, digital cash, digital signatures, electronic billing presentment and payment, Introduction to Electronic Data Interchange (EDI)

Textbooks:

- E-Commerce Essentials by Kenneth Laudon and Carol Traver ISBN-10 :0133544982 Prentice Hall,2013
- Electronic Commerce from Vision to Fulfillment”, by Elias M. Awad, Pearson Education, 3rd Edition, 2006

References:

- The Social Media Bible: Tactics, Tools and Strategies for Business Success 3rd edition by Lon Safko Publisher: Wiley,2012
- Introduction to E-Commerce: 3rd Edition by Efraim Turban, David King, Judy Lang; Publisher Prentice Hall,2010
- CRM at the speed of Light: Social CRM strategies, tools and techniques for engaging your customers: 4th edition by Paul Greenberg, McGraw Hill,2009

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- E-Business and e-Commerce How to Program: 1st edition by Harvey M. Deitel
Publisher: Prentice Hall,2000
- Digital Capital: Harnessing the Power of Business Webs: 1st edition by Cheryl Kimball publisher: Entrepreneur Press, 2000
- E-Business Strategies for Virtual Organizations by Janice Burn, Publisher Taylor andFrancis,2001
- E-Enterprise: Business Models, Architecture, and Components :1st edition by Faisal Hoque, Publisher: Cambridge UniversityPress,2000
- “Frontiers of Electronic Commerce” by Ravi Kalakota, AndrewWhinston., Addison Wesley , 4th Edition,2007
- “From EDI to Electronic Commerce: A Business Initiative” by Sokol, TMH,1995.
- IEEE Xplore : An E-commerce Model using Peer-to –Peer Technology an d personal blog author: Byeong-Thack Oh,Ho-jinPark
- IEEE Xplore: Business Models for Mobile Commerce services” requirement , design and the Future by Upkar Varshney ,Georgia State university

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Professional Ethics

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
PFE301	4	30	70	100

Course Objectives:

- Understand the concept of professional ethics.
- Identify ethical issues at the workplace.
- Learn to match code of ethics with appropriate profession.
- Understand the various theories of ethics.

Course Contents:

Module I – Philosophy and Ethics

Descriptors/Topics

- Introduction to philosophy; definition, nature and scope, concept, branches
- Origin of Ethics
- Ethics: definition, moral philosophy, nature of moral judgments and reactions.
- Theories of Ethics (Utilitarian Theory, Right Theory & Casuist Theory)
- Benefit of Ethics
- Freedom in ethical discourse

Module II: Ethical Issues and practices at Workplace

- **Descriptors/Topics**
- Ethical Dilemma's
- Challenges in ethical decision making
- Redressal of grievances
- Employee Rights
- Conflicts of Interest
- Employee Relationship at workplace

Module III: Code of Ethics:

- **Descriptors/Topics**
- Principle of Ethics
- Compliance based and values based code of ethics
- Professional obligation
- Role of regulatory authority
- Respect for Privacy
- Confidentiality
- Inform Consent and debriefing

Module IV: Sustainable Practices

- Green Practices
- Ethics to handle VUCA environment
- Importance of sustainability
- Sustainable Business practices
- Corporate Social Responsibility
- Inclusive development

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module V: Ethics in different Domain

- Role of ethics in different domain
- Ethics in Research, Medicine, Engineering, Sciences, Entrepreneurship, Psychology, Journalism, Management, law, Humanities etc.

Text & References:

John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003

Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001

Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd. New Delhi 2013.

A Global Standard for Professional Ethics: Cross-Border Business Concerns By Allen, Catherine; Bunting, Robert Journal of Accountancy, Vol. 205, No. 5, May 2008

Conflict of Interest in the Professions By Michael Davis; Andrew Stark Oxford University Press, 2001

Working Ethics: How to Be Fair in a Culturally Complex World By Richard Rowson Jessica Kingsley, 2006

Preferred Strategies for Learning Ethics in the Practice of a Discipline By Pettifor, Jean L.; Paquet, Stephanie Canadian Psychology, Vol. 43, No. 4, November 2002

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Internet of Things

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT136	5	30	70	100

Course Objectives:

- Aim of this course is to discuss and explain about the basics of the Internet and Internet of Things.
- Some of the major topics which are included in this course are overview, applications, potential & challenges, and architecture of Internet of Things with Privacy and Ethical issues.
- This course will examine and discuss IoT technology and market specific topics, relevant case studies of IoT.

Course Contents:

Module I: Introduction

Commonly used tools and Technologies
End Points, Network Services and System Architecture
Architectural design for Smart Devices, services and networks
IoT - Cloud Computing
Intro to Data Collection, Edge Computing & Fog Computing
IoT - System Design
Case Study : Industrial Applications
Hands on Raspberry Pi
Simulation Demo of an IoT System.

Module II: Communication and Network Technologies

Communication and networking requirements in IoT
Client - Server, P2P Model
IoT Sensors and Models of Communication
UDP/TCP/IP STACK - WiFi
BLUETOOTH
LoRa
Industrial and Commercial Networks
Introduction to MQTT
MQTT Demo
Case Study : Communication Technology

Module III: Realising IoT Hardware

Introduction to Embedded Systems
NFC
IoT Hardware Platforms
Microprocessors and Microcontrollers for IoT
Memory and Cache
Clocks and Interrupts
I/O Devices and Mode of Transfer
Buses - UART, I2C, SPI, USB
Raspberry Pi - Hardware Project

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module IV: IoT Big Data Processing

Distributed computing - Apache Spark
Real-time processing using tools like Spark Streaming
Kafka
Pre-processing big data for IoT applications

Module V: IoT Analytics

IOT security
Industrial and Commercial Networks
Common machine learning models for IoT
Exploratory Data Analysis
Predictive Analysis
Big Data Platforms - Hadoop, Storm and Spark
Usage of Databases
Real World Projects/ Hands on Project (2 Projects)

Text:

Behrouz Forouzan ,Data Communications and Networking ; Edition 5; 2012, Tata McGraw-Hill

A Hands-on-Approach by Vijay Madiseti , Arshdeep Bahga, Paperback: 446 pages
Publisher: VPT; 1 edition (August 9, 2014)

References:

<https://www.cisco.com/web/about/ac79/docs/innov/IoE.pdf>
<http://www.ipso-alliance.org/wp-content/media/6lowpan.pdf>

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education Bachelor of Computer Applications

Introduction to Enterprise Resource Planning

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT312	5	30	70	100

Course Objectives:

The course provides students with:

- A comprehensive understanding of the basic concepts of Enterprise Resource Planning (ERP) systems for manufacturing or service companies, and the distinctions among Material Requirement Planning (MRP), MRP II, and ERP systems.
- The ability to think critically about ERP systems, including understanding the principles underlying these systems, identifying their key components, and analyzing the relationships among these components.
- In-depth knowledge of major ERP components, such as material requirements planning, master production scheduling, and capacity requirements planning, and their roles in the overall ERP framework.
- Familiarity with commonly used ERP systems, along with an awareness of the benefits and limitations associated with implementing ERP systems.
- Knowledge of Supply Chain Management (SCM) principles and Business Process Reengineering (BPR) concepts, providing students with an understanding of how these concepts relate to and interact with ERP systems.

Course Contents:

Module I Introduction to Enterprise Resource Planning

Descriptors/Topics

Introduction of the term Business Process Reengineering (BPR) ,BPR Methodology, Current BPR Tools

Introduction to material requirement planning (MRP)

Definition of Enterprise Resource Planning (ERP); Evolution of ERP; Characteristics, Features, Components and needs of ERP; ERP Vendors; Benefits & Limitations of ERP Packages

Module II Enterprise Modeling and Integration of ERP

Descriptors/Topics

Need to focus on Enterprise Integration/ERP; Information mapping; Role of common shared Enterprise database; System Integration, Logical vs. Physical System Integration, Benefits & limitations of System Integration, ERP's

Role in Logical and Physical Integration

Module III ERP Architecture and Implementation Methodology of ERP

Descriptors/Topics

Generic Model of ERP system; Core Modules functionality; Types of ERP architecture, Client Server Architecture, Web-based Architecture, Service Oriented Architecture (SOA)

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

; Difficulty in selecting ERP, Approach to ERP selection, Request for Proposal approach, Proof-of-Concept approach; General Implementation Methodology of ERP, Vanilla Implementation; Evaluation Criteria of ERP packages; Project Implementation Team Structure

Module IV Supply Chain Management and ERP

Descriptors/Topics

Definition of Supply Chain Management (SCM); Stevens Model of Supply Chain Management; Aims of SCM; SCM Key Drivers; Key Issues, Benefits of SCM; ERP Vs SCM, Key SCM Vendors.

Module V

Descriptors/Topics

Introduction to SAP; SAP architecture, Scalability, SAP R/3 System and mySAP; Integrated SAP Model; A

Comparative assessment of ERP Packages

Text Reading:

1. Enterprise Systems For Management, Luvai F. Motiwalla, Jeff Thompson, Pearson Education., 2nd Ed., 2011.
2. Enterprise Resource Planning, Ravi Shankar, S.Jaiswal, Galgotia Publication Pvt. Ltd., 1st Ed., 1999.
3. Enterprise Resource Planning – Concepts and Practices by Vinod Kumar Garg & N K Venkatakrishna, PHI
4. Textbook of Enterprise Resource Planning by Mahadeo Jaiswal & Ganesh Vanapalli, Macmillan, 1/e 20

References:

1. CRM at the speed of Light : Social CRM strategies, tools and techniques for engaging your customers : 4th edition by Paul Greenberg , McGraw Hill ,2009
2. Supply Chain Management Casebook : The Comprehensive Coverage and Best Practices in SCM , by Chuck Munson , Pearson FT Press 2013
3. Definitive Guide to Supply Chain Best Practices, The Comprehensive Lessons and Cases in Effective SCM , by Robert Frankel , Pearson FT Press , 2014
4. Enterprise Resource Planning by Mary Sumner , Prentice Hall , 2005
5. Supply Management, David Burt, McGraw Hill Publications, 8th Ed., 2010

Additional Reading:

1. www.sap.com
2. www.oracle.com
3. www.microsoftdynamic.com
4. www.ssaglobal.com
5. www.epicor.com

Any other Study Material:

“ The Mobile ERP Revolution” , Compare Business Products

“ Solving Real Business Issues During the ERP Selection Process” , Sage

<http://www.erpgenie.com/publications/magazines.htm>

Additional study materials if required and found suitable will circulated in the form of cases from HBS, and other selected sources, relevant videos of solutions providers and from other sources as selected by the faculty

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Data Warehousing and Mining

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CIST341	5	30	70	100

Course Objective:

The design and management of data warehouse (DW) and Data Mining Process.

- Giving insights on how the Data Warehouse collects and integrates data, leading to knowledge discovery.
- Introducing the core concepts of data warehousing and data mining, its techniques, implementation, benefits, and outcome expectations from this new technology.
- Data Mining (DM) process for extracting meaningful information from large volumes of data generated in an organization.
- Identifying industry branches which most benefit from DM

Course Contents:

Module I Data Warehouse fundamentals

Defining the cloud for the Enterprise: Database as a service, Governance/Management as a service, Testing as a service, Storage as a service, Cloud service development, Cloud Computing Challenges Layers of Cloud Computing, types of cloud computing, Cloud Computing Features, Cloud Computing Security requirements, pros and cons, benefits

Module II Principles of dimensional modeling

Identifying Facts and Dimensions, Designing Fact Tables, Designing Dimension Table, Data Warehouse Schemas, OLAP Operations, Data Extraction, Cleanup & Transformation, Star, snowflake and galaxy schemas for multidimensional databases.

Architecture for a warehouse, Steps for construction of Data Warehouses, Data Marts, Metadata. Different OLAP operations, OLAP Server: ROLAP, MOLAP and HOLAP

Module III Data Mining

From Data warehousing to data mining, Motivation, Knowledge Discovery Process, objectives of Data Mining, the business context for DM, Process improvement, marketing and CRM, Tools of Data Mining

Module IV Data Mining Functionalities

Data preparation, Data Mining Techniques: Statistical techniques, Characterization and discrimination, Association and market basket analysis, Classification and Prediction, Cluster analysis, Outlier analysis.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module V Data Mining Applications

Text Mining, Spatial Databases, Web Mining. Case studies in building business environment. , Applications in telecommunications industry, retail, target marketing, fraud protection, health care, science, ecommerce, banking and finance.

Textbooks and References:

Textbooks:

Jiawei Han & Micheline Kamber, “Data Mining: Concepts & Techniques”, Morgan Kaufmann Publishers , 2002

- Paul Raj Poonia, “Fundamentals of Data Warehousing”, John Wiley & Sons, 2004.
- Sam Anahony, “Data Warehousing in the real world: A practical guide for building decision support systems”, John Wiley, 2004

Reference Books:

- Data Ware housing: Concepts, Techniques, Products and Applications, C.S.R. Prabhu, Prentice Hall of India, 2001.
- Sam Anahory, Dennis Murray. Data Warehousing in the Real World, Pearson, 2005.
- David Taniar , Progressive methods in Data Warehousing and Business Intelligence: Concepts and competitive analytics, Idea Group Inc, 2009.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Introduction to E-Governance

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CIST326	4	30	70	100

Course Objective:

Electronic Governance (e-Governance) seeks to transform public service delivery and citizens' participation in government decision processes for both social and economic benefits.

- This course to familiarise the students with the concept of e-Governance.
- This course aims to provide a basic understanding of e-governance strategies and frameworks .
- This course aims to provide understanding of e-Governance Infrastructure , preparedness and readiness.
- Conceptualisation of ideas and development of service delivery models for improving the quality of service to citizen.
- This course introduces National e-Governance Plan (NeGP) , Mission modes projects and Common Service Centre (CSC) - the major initiative of Government of India.
- This course aims to appraise the role of latest technologies in empowering Digital India Initiative

Course Contents

Module I: Basics of e-Governance

- Overview of e-Governance
- Advantages and Drawbacks of e-Governance
- Initiatives of e-Governance
- e-Governance: Policies, Strategies and Frameworks
- Information Society Concepts and Principles
- Introduction to ICT and e-Governance
- Technology and Society
- The State and Governance
- Development Policies and Globalisation
- Business Information Systems
- Government Process Re-engineering(GPR)
- Towards good governance through E-governance
- Introduction to e-Democracy
- Case study

Module II : e- Governance Architecture

- Planning and Implementing e-Governance
- Legal Framework of e-Governance
- Framework for Citizen engagement in e-Governance
- Business Models for Implementation of e-Governance
- Change Management and Capacity Building in e-Governance Projects

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

- Infrastructural preparedness :Legal , Human , Institutional , Technological
- Leadership and Strategic Planning
- Case Study

Module III : Introduction to National e- Governance Division (NeGD) and National e-Governance Plan (NeGP)

- Overview of National e-Governance Division
- Purpose of National e-Governance
- Mission Mode Projects- Central, State and Integrated
- e-Government Readiness
- Overview of National e-Governance Plan (NeGP)
- Digital India, Digital Divide, Common Service Centres
- m-Governance and Recent Initiatives by e-Government
- Mission Mode Projects- Central , State and Integrated
- Digital India , Digital divide , Common Service Centre
- Case Studies of e-Governance initiatives in different states of India

Module IV : e-Governance Technologies

- Information Management and Digital Archiving
- Security and Privacy in a Networked World
- Internet of Things: Smart Devices, Processes and Services
- Latest technologies empowering Digital India Initiatives, case studies
- Legal Aspects of Software and Database Protection
- Technological Barriers of e-Governance
- Pillars of Digital India
- Technical Change and Techno-economic Paradigms
- Case study

Module V : E-Governance Portals Around the Globe

- Overview of e-Governance Portals
- Types of e-Governance Portals
- Objectives of e-Governance Portals
- Effectiveness of e-Governance portals
- Measure of Effectiveness of Portals
- Study of e-Governance models of different countries
- Case Studies of e-Governance outside India

Text Books:

1. E-governance for Development: A Focus on India , Shirin Madon , Palgrave Macmillan , 2009
2. eGov 2.0 Policies, Processes & Technologies ,JaiJit Bhattacharya , Tata McGraw Hill , 2012
3. E-governance: case studies, Ashok Agarwal, University Press India, 2007
4. E-government: from vision to implementation: a practical guide with case studies, Subhash C. Bhatnagar, SAGE , 2004
5. E-Governance: Concepts And Case Studies, C.S.R. Prabhu ,PHI ,2011
6. E-Government: The science of the Possible, J. Satyanarayana , PHI, 2006
7. IT-e-Governance in India Kamallesh N. Agarwala, Murli D. Tiwari , Macmillan , 2002

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

References:

1. Electronic Governance and Cross-Boundary Collaboration: Innovations and Advancing Tools ,Yu-Che Chen (Northern Illinois University, USA) and Pin-Yu Chu (National Chengchi University, Taiwan), Publisher: Information Science Reference, 2011
2. Public Information Technology and E-Governance: Managing the Virtual State by G. David Garson, Publisher: Jones & Bartlett Learning, 2006
3. Global e-Governance: Advancing e-Governance Through Innovation and Leadership , by J Tubtimhin, Publisher: IOS Press, 2009
4. Innovations In e-Government: Governors And Mayors Speak-Out ,By Erwin Blackstone, Michael Bognanno & Simon Hakim
5. E-governance: A Global Perspective on a New Paradigm , edited by Toshio Obi, Publisher: IOS Press, 2007
6. Governance and Information Technology From Electronic Government to Information Government edited by Viktor Mayer-Schönberger and David Lazer, Publisher: Massachusetts Institute of Technology, 2007

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Fundamentals of Human Resource Management

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
HR201	4	30	70	100

Course Objective:

- Students will be able to appreciate the importance of human resource management as a field of study and as a central management function.
- Develop an understanding of the HRM function and its relation to other organizational functions.
- Learn the managerial skills involved in acquiring and maintaining a workforce that is both productive and high on maintenance factors such as loyalty and cohesiveness.
- Understand how the functions of human resource planning, job requirements, recruitment, selection, training, managerial development, career planning, performance appraisal, and compensation can be utilized in attaining organizational goals.
- Prepare learners for important personal career planning activities.
- Enhancing sensitivity to HRM issues so the learners will be able to identify the problem areas and resolve them more effectively, both as a manager and as an individual.

Course Contents:

Module I - Introduction To hrM

Introduction, Concept and Functions, Evolution (PM vs. HRM), Scope and Significance of Human Resource Management, Role and Responsibilities of the Human Resource Manager and essentials of Sound HR Policies.

Module II- Acquisition Of Human Resources

Objectives, Policies and Process of Human Resource Planning, Job Analysis, Recruitment (process, methods: internal, external), Selection (process, tests, interviews), Induction, Placement.

Module III- Development Of Human Resources

Training and Development (process, methods: On-the job, Off-the job), Evaluation of training and Performance Appraisal (concept, significance, process, methods- traditional and modern.

Module IV-Maintenance Of Human Resources

Job Evaluation: concept, process, Compensation: concept, components, Designing and Administering the Wage and Salary Structure, Grievance Procedure and Handling, Discipline, Attrition and Retention.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Module V- Current Trends In Hrm

Understanding People Analytics, HRIS (Human Resource Information System); Contemporary issues in HRIS, Introduction to Multigenerational Workforce, Flexible Workforce, Role of Technology in HRM.

Text & References:

Text:

- Basak, S. P. (2017). Human Resource Management: Text & Cases. New Delhi: Pearson

References:

- Rao, S. (2014). Essentials of Human Resource Management & Industrial Management: Text & Cases. New Delhi: Himalaya Publication.
- Armstrong, M. (2010). Handook of HRM Practice. USA: Kogan Page.
- Dessler, G. (2010). Human Resource Management. New Delhi: Prentice Hall.
- Robbins, D. A. (2010). Fundamentals of Human Resource Management. New Delhi: Wiley

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Blockchain Technologies

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT358	4	30	70	100

Course Objectives

- The main objective of this course is to make learners comfortable with the tools and techniques required in handling large amounts of datasets.
- To learn two programming languages namely Python and R.
- To get introduced to various data types, data structures, handling of files and libraries that we will use as we advance in the course.

Course Contents

Module I Understanding Data Science

Defining Data Science, What Data Scientists Do, Big Data and Data Mining, Deep Learning and Machine Learning, Data Science in Business, Careers and Recruiting in Data Science.

Module II Introduction to R

Data Import, Tidy Data, String Processing, Dates, Times, and Text Mining

Module III Data Wrangling

Data Import Overview, Reshaping Data, Combining Tables, Web Scraping

Module IV Introduction to Data science tools

Data Scientist's Toolkit, Open Source Tools, IBM Tools for Data Science, Github, Python, Libraries for Data Science

Module V IBM Watson studio and Jupyter notebook

Introduction to Python, Introduction to R Language, Introduction to SQL, API, Machine Learning Models, R Studio, Introduction to Jupyter Notebooks, SPSS Modeler

Text & References:

Statistical Methods for Machine Learning by Jason Brownlee

1. Hands-On Exploratory Data Analysis with Python by Suresh Kumar Mukhiya and Usman Ahmed

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Introduction to Data Science

COURSE CODE	CREDIT UNITS	CE Marks	ETE Marks	Total Marks
CSIT359	4	30	70	100

Course Objectives

The purpose of this course is-

Blockchain and Cryptocurrency is vastly discussed now days in all research domains to bring the decentralisation. This course is to understand Blockchain and its main application cryptocurrency. Students will learn how this system works and how can they utilise and what application can be build. After successful completion of this course, students will be familiar with blockchain and cryptocurrency concepts

Course Contents

Module I : Introductions

Basics: Overview of Blockchain, Distributed Database, Two General Problem, Byzantine General problem and Fault Tolerance, Hadoop Distributed File System, Distributed Hash Table, ASIC resistance, Turing Complete

Cryptography: Cryptography in Blockchain, Benefits of Cryptography in Blockchain, Types of Cryptography in Blockchain, Hash function, Digital Signature - ECDSA, Memory Hard Algorithm, Zero Knowledge Proof

Module II: Block Chain Technology

Introduction, Advantage Over Conventional Distributed Database, Blockchain Network, Mining Mechanism, Distributed Consensus, Merkle Patricia Tree, Gas Limit, Transactions and Fee, Anonymity, Reward, Chain Policy, Life of Blockchain Application, Soft and Hard Fork, Private and Public Blockchain

Module III : Distributed Consensus

Definition of Consensus Mechanism, Features of Consensus Mechanism, Ways to Achieving the Consensus Mechanism, Applications of Distributed Consensus.

Nakamoto Consensus, Proof of Work, Proof of Stake, Proof of Burn, Difficulty Level, Sybil Attack, Energy Utilisation and Alternate.

Module IV : Cryptocurrency and Cryptocurrency Regulations

History, Distributed Ledger, Bitcoin protocols - Mining strategy and rewards, Ethereum - Construction, DAO, Smart Contract, GHOST, Sidechain, Namecoin Stakeholders, Roots of Bitcoin, Legal Aspects - Cryptocurrency Exchange, Black Market and Global Economy.

Module V: Block Chain in Healthcare and IOT

Internet of Things, Healthcare, Domain Name Service and Future of Blockchain, Personal Identity Security, Logistics, Money Transfer, Smart Contracts.

AMITY UNIVERSITY RAJASTHAN

Amity Directorate of Online Education

Bachelor of Computer Applications

Text:

William Stallings, "Cryptography and Network security Principles and Practices", Pearson/PHI,2017.

William Stallings, Network Security Essentials (Applications and Standards), Pearson Education, India,2017

References:

1. W. Mao, "Modern Cryptography – Theory and Practice", Pearson Education,2011.
- 2.Charles P. Pfleeger, Shari Lawrence Pfleeger – Security in computing, Prentice Hall of India,2015.
2. Atul Kahate, Cryptography and Network Security, Tata Mc Grawhill, India, 2019