

B VIII - 01

2020-21

**Dr G R DAMODARAN COLLEGE OF SCIENCE (AUTONOMOUS)
COIMBATORE - 641014**

**M.Sc (Information Technology)
(Under Choice Based Credit System)**

EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

| Programme Outcome | |
|--------------------------|--|
| PO1 | Apply the knowledge of computer programming, computing specialization and appropriate domain knowledge to construct computing models for the identified problems. |
| PO2 | Ability to categorize and analyze the nature of a problem and implement problem solving with computational thinking. |
| PO3 | Design and assess systems, components, or procedures that meet specific needs with suitable consideration for societal considerations. |
| PO4 | Utilize the research oriented knowledge and research techniques including experimentation, data analysis and interpretation, and formation of the information to provide applicable results. |
| PO5 | Identify and apply the appropriate computing/simulation tools and techniques for system implementations. |
| PO6 | Recognize and commit to professional ethics and cyber regulations and norms of computing professional practices. |
| PO7 | Apply the knowledge of the computing principles to design and develop projects in multidisciplinary environments. |
| PO8 | Proficient in the application development with necessary domain knowledge. |
| PO9 | Effective communication skills to interact with the technical community and the society by documentations and presentations. |
| PO 10 | Acquire analytical and managerial skills to develop employment potential. |

| Programme Specific Outcome | |
|-----------------------------------|--|
| PSO1 | Ability to understand the emerging Information Technology concepts. |
| PSO2 | Ability to design and develop applications for user specific requirements with latest development tools. |
| PSO3 | Ability to get an insight and learn advanced tools and technology for mobile application development. |
| PSO4 | Ability to understand the security mechanisms for computing systems. |
| PSO5 | Ability to learn and apply the cutting edge technologies for application development. |

G. Reddy

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SCHEME OF EXAMINATIONS

| Sem | Part | Course Code | Course Title | Credits | MARKS | | | Hrs/ week | Exam Duration (Hrs) | Category |
|-----|------|-------------|--|---------|-------|-----|-------|--------------|---------------------------|-----------|
| | | | | | CA | TEE | Total | | | |
| I | III | 20163A | CORE:MODERN OPERATING SYSTEMS | 4 | 25 | 75 | 100 | 5 | 3 | THEORY |
| I | III | 20163B | CORE :ADVANCED DBMS | 4 | 25 | 75 | 100 | 5 | 3 | THEORY |
| I | III | 20163C | CORE: PYTHON PROGRAMMING | 4 | 25 | 75 | 100 | 5 | 3 | THEORY |
| I | III | 20163D | CORE: OBJECT ORIENTED ANALYSIS AND DESIGN | 4 | 25 | 75 | 100 | 5 | 3 | THEORY |
| I | III | 20163P | CORE:ADVANCED DBMS LAB | 2 | 40 | 60 | 100 | 5 | 3 | PRACTICAL |
| I | III | 20163Q | CORE:PYTHON PROGRAMMING LAB | 2 | 40 | 60 | 100 | 5 | 3 | PRACTICAL |
| II | III | 20263A | CORE:SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| II | III | 20263K | Online Course: SWAYAM/NPTEL | 4 | | | | 4 | | |
| II | III | 20263B | CORE:MOBILE TECHNOLOGY | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| II | III | 20263C | NON MAJOR:APTITUDE * | 3 | 25 | 75 | 100 | 4 | 3 | PRACTICAL |
| II | III | ELECTIVE | ELECTIVE - I | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| II | III | 20263P | CORE:SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE LAB | 2 | 40 | 60 | 100 | 5 | 3 | PRACTICAL |
| II | III | 20263Q | CORE:MOBILE TECHNOLOGY LAB | 2 | 40 | 60 | 100 | 5 | 3 | PRACTICAL |
| III | III | 20363A | CORE:INTERNET OF THINGS | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| III | III | 20363B | CORE:WEB PROGRAMMING | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| III | III | 20363C | CORE:CYBER SECURITY INTELLIGENCE | 4 | 25 | 75 | 100 | 4 | 3 | THEORY |
| III | III | 20363S | CORE:PROJECT I | 6 | 25 | 75 | 100 | 6 | | PRACTICAL |
| III | III | 20363D | NON-MAJOR :SOFT SKILLS * | 3 | 25 | 75 | 100 | 3 | 3 | PRACTICAL |

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| | | | | | | | | | |
|-----|-----|--------|-----------------------------|-----------|------------|-------------|-------------|-----------|---|
| III | III | 20363K | Online Course: SWAYAM/NPTEL | 4 | | | 4 | | |
| III | III | 20363P | CORE: WEB PROGRAMMING LAB | 2 | 40 | 60 | 100 | 5 | 3 |
| IV | III | 20463S | CORE: PROJECT II | 20 | 25 | 75 | 100 | | |
| | | | TOTAL | 90 | 550 | 1350 | 1900 | 90 | |

| Sem. | Part | Subject Code | Subject Name |
|-------------------|------|--------------|--|
| ELECTIVE I | | | |
| II | III | 20263U1 | ELECTIVE I : ETHICAL HACKING AND NETWORK DEFENSE |
| II | III | 20263U2 | ELECTIVE I: INFORMATION SECURITY |
| II | III | 20263U3 | ELECTIVE I: CLOUD COMPUTING |
| II | III | 20263U4 | ELECTIVE I: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS |

* a part of the course is Self Study & Both CA and TEE Marks will be evaluated Internally

Online course: This can be availed by the students at anytime during that particular year of study. Students are expected to produce certificates from SWAYAM/NPTEL

Project I and Project II

Marks split up:

| | |
|-----------------------|------------------|
| I Project Review | 10 |
| II Project Review | 15 |
| Project Documentation | 25 |
| Viva Voce | 50 |
| Total | 100 Marks |



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EFFECTIVE FOR THE STUDENTS ADMITTED DURING THE ACADEMIC YEAR 2020-2021

MAPPING OF COURSES WITH PROGRAMME OUTCOME LEVELS

| Course Code | Course Title | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|-------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 20163A | CORE:MODERN OPERATING SYSTEMS | 3 | 1 | 2 | 1 | 1 | | 2 | 2 | | |
| 20163B | CORE :ADVANCED DBMS | 1 | 2 | 1 | 3 | 3 | | 3 | 3 | | 1 |
| 20163C | CORE: PYTHON PROGRAMMING | 1 | 3 | 1 | 2 | 2 | | 3 | 3 | | 2 |
| 20163D | CORE: OBJECT ORIENTED ANALYSIS AND DESIGN | 1 | 2 | 2 | 2 | 3 | | 3 | 3 | | 1 |
| 20163P | CORE:ADVANCED DBMS LAB | 2 | 3 | | | 3 | | 3 | 3 | | 1 |
| 20163Q | CORE:PYTHON PROGRAMMING LAB | 2 | 3 | | | 3 | | 3 | 3 | | 1 |
| 20263A | CORE:SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE | 1 | 2 | 2 | 2 | 3 | | 3 | 3 | | 2 |
| 20263B | CORE:MOBILE TECHNOLOGY | 2 | 2 | 1 | | 3 | | 2 | | 2 | 2 |
| 20263C | NON MAJOR:APTITUDE * | 2 | 3 | 1 | | | | | | 3 | 3 |
| 20263U1 | ELECTIVE I : ETHICAL HACKING AND NETWORK DEFENSE | 2 | | 3 | | 1 | 3 | 2 | | | 2 |
| 20263U2 | ELECTIVE I: INFORMATION SECURITY | 2 | | 3 | | 1 | 3 | 2 | | | 2 |
| 20263U3 | ELECTIVE I: CLOUD COMPUTING | 2 | 2 | 2 | 3 | 2 | | 2 | 1 | 1 | 1 |
| 20263U4 | ELECTIVE I: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS | 3 | 2 | 3 | 2 | 3 | | | 1 | | |
| 20263P | CORE:SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE LAB | 2 | 3 | | | 3 | | 3 | 3 | | |
| 20263Q | CORE:MOBILE TECHNOLOGY LAB | 2 | 3 | | | 3 | | 3 | 3 | | 1 |
| 20363A | CORE:INTERNET OF THINGS | | 2 | 3 | 2 | 2 | 2 | 3 | | | 3 |
| 20363B | CORE:WEB PROGRAMMING | 1 | 2 | 1 | 2 | 2 | | 3 | 3 | | 2 |
| 20363C | CORE:CYBER SECURITY INTELLIGENCE | 2 | | 3 | | 1 | 3 | 2 | | | 3 |
| 20363S | CORE:PROJECT I | 3 | 3 | 3 | | 3 | | | 2 | 2 | 3 |
| 20363D | NON-MAJOR :SOFT SKILLS * | 2 | 3 | 1 | | | | | | 3 | 3 |
| 20363P | CORE: WEB PROGRAMMING LAB | 2 | 3 | | | 3 | | 3 | 3 | | 3 |
| 20463S | CORE: PROJECT II | 3 | 3 | 3 | | 3 | 3 | | 2 | 2 | 3 |

Indicators: 1. Reasonable 2. Significant 3. Strong

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|----------------------------------|---------|----------------------|---------------|-------------|
| FIRST | 20163A | CORE:MODERN OPERATING SYSTEMS | 4 | Theory | - | 100 |

Objective of the Course:

This course recollects the Operating system concepts and advances to the Modern Operating System theories and products.

UNIT I: Operating System Concepts – an Overview

(Teaching hours: 8)

Processes – Address Spaces – Files – I/O units – Protection – The Shell – System Calls – System calls for Process Management – System Calls for File Management – System Calls for Directory Management – Operating System Structure – Client/Server Model – Virtual Machines

UNIT II: Processes and Interprocess Communication

(Teaching hours: 8)

The Process Model – Process Creation – Process Termination – Process States – Interprocess Communication – Race Conditions – Critical Regions – Mutual Exclusion with busy waiting – Sleep and wake up – Semaphores – Message Passing. Scheduling: Scheduling in Interactive Systems – Scheduling in Real time Systems – Classical IPC Problems: The Dining Philosophers Problem. Memory Management – Swapping – Managing Free memory

UNIT III: Multimedia Operating Systems

(Teaching hours: 8)

Multimedia Files – Video Encoding – Audio Encoding- Video Compression – Audio Compression – Multimedia Process Scheduling: Scheduling Homogeneous Processes – General Real time Scheduling – Earliest Deadline First Scheduling Caching

UNIT IV: Multiple Processor Systems

(Teaching hours: 8)

Multiple Processors – Hardware – Operating System Types. Multi Computers: Hardware – Distributed Shared Memory. Virtualization: Requirements for virtualization – Memory Virtualization – I/O Virtualization – Virtual machines on Multicore CPUs. Distributed Systems: Network Hardware – Network Services and Protocols – Grids. The Security Environment – Threats – Intruders – Accidental Data Loss.

UNIT V: Case Study

(Teaching hours: 8)

LINUX – Overview – Goals – Interfaces to Linux – The Shell – Linux Utility Programs – Kernel Structure – Processes in Linux – Fundamental Concepts – System Calls – Memory Management in Linux – Fundamental Concepts – System Calls – I/O in Linux – Networking – Security in Linux – System Calls.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | Remember and Rethink the Operating System Concepts with modern design and updates. | K1 & K2 |
| CO2 | Inquire the Process Management and Interprocess Communication with a Classical Example. | K2 |
| CO3 | Apply and associate the CO1 and CO2 on Multimedia Operating Systems. | K2 & K3 & K4 |
| CO4 | Enhance the Operating Systems to Multiple Processor machines and explore Virtualization. | K4 |
| CO5 | Correlate the Modern updates with a Case Study on Linux Operating System | K4 & K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 3 | | | | | 1 | 1 | 1 | | 1 |
| CO2 | 2 | | 2 | 1 | | | | | | |
| CO3 | 3 | 1 | 2 | | | 1 | | | | |
| CO4 | 3 | 1 | | | 2 | | | | | |
| CO5 | | 2 | 3 | 1 | 2 | 1 | 2 | 1 | | 1 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|---------------------------|------------------------------|--------------------|-------------------------------|
| S.No | Title | Author | Publishers | Publication Year & Edition |
| 1 | Modern Operating System | Andrew S.Tanenbaum | Pearson Education | 2008, 3 rd Edition |
| 2 | Operating System Concepts | Silberschatz , Galvin, Gagne | Wiley Publications | 2018, 9 th Edition |

Pedagogy:Lecture, PPT presentation, Assignment.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---------------------|---------|----------------------|---------------|-------------|
| FIRST | 20163B | CORE: ADVANCED DBMS | 4 | Theory | - | 100 |

Objective of the Course: The objective of this course is to give students a basic understanding of the concepts, techniques and applications of open source database management technology. Students will have hands-on experience to use and develop open source database applications..

UNIT I: Architectures of Database Systems

(Teaching hours: 8)

Database system architectures: Centralized systems – Client/Server systems – Parallel and Distributed systems. Advanced Querying: Decision-support systems – Data mining – Data warehousing – Directories and categories

UNIT II: Storage and File Structure

(Teaching hours: 8)

Storage and File Structure: File Organization – Organization of Records in Files - Data Dictionary storage – Database Buffer. PL/SQL: Triggers- Procedures- Functions-Packages-Cursors-Exception handling.

UNIT III: Transactions and Distributed Databases

(Teaching hours: 8)

Transactions: Concept – A simple Transaction Model – Storage structure – Transaction Atomicity and Durability – Transaction Isolation – Serializability - Transaction Isolation and Atomicity. Distributed Databases: Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions – Commit Protocols – Concurrency control in Distributed database – Availability – Distributed Query Processing – Cloud-based Databases

UNIT IV: Document Oriented Databases

(Teaching hours: 8)

Introduction to MongoDB: Using Java Script Object Notation – Creating or Generating a Unique Key: Database, Collection, Document, Support for dynamic queries, Storing binary data, Replication, Sharding, Updating information In-place – Terms used in RDBMS and MongoDB: Create and Drop database – Data types.

UNIT V: Queries in MongoDB

(Teaching hours: 8)

MongoDB Query Language: Insert method, Save method, Update method, Remove method, Find method, Dealing with NULL values, Count, Limit, Sort and Skip, Arrays, Aggregate function, MapReduce Function

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | Briefs on the various database architectures | K1, K2 |
| CO2 | Provides the knowledge on data storage and retrieval in a database. It also provides the theoretical knowledge on the concepts of PL/SQL | K2, K3 |
| CO3 | Gives insight on the concept of transactions and how they are performed on a Distributed environment | K3, K4 |
| CO4 | Introduces the concepts on unstructured databases namely MongoDB | K5 |
| CO5 | Provides knowledge on the queries used in MongoDB to retrieve data | K5 |

Note: K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 1 | | 2 | | | | | | | |
| CO2 | | 2 | | 3 | | | 3 | | | |
| CO3 | | 2 | 2 | | 1 | | | 2 | | |
| CO4 | | | | 3 | | | 3 | | | |
| CO5 | | | | 3 | | | 3 | 2 | | 2 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|----------------------------------|--|-----------------------|-------------------------------|
| S.No. | Title | Author | Publishers | Publication Year & Edition |
| 1 | Database System Concepts | Abraham Silberchatz, Henry F.Korth, S.Sudharshan | Tata McGraw Hill | 2011, 6 th Edition |
| 2 | ORACLE 9i-The Complete Reference | Kevin Loney, George Koch | Oracle Press | 2018, 1 st Edition |
| 3 | Big Data and Analytics | Seema Acharya, SubhashiniChellappan | Wiley Insdia Pvt. Ltd | 2015, 1 st Edition |

Pedagogy: Lecture, PPT presentation, Assignment, Quiz, Group Discussion

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---------------------------|---------|----------------------|---------------|-------------|
| FIRST | 20163C | CORE : PYTHON PROGRAMMING | 4 | Theory | - | 100 |

Objective of the subject: The main objective of this paper is to enable the students to read and write simple Python programs in Anaconda Platform, to develop Python programs with conditionals and loops, to define Python functions and call them, to use Python data structures - lists, tuples, dictionaries, to gain knowledge on Machine Learning using Python.

UNIT I: Basics of Anaconda and Python Programming (Teaching Hours : 8)

Ecosystem of Anaconda: Introduction-Miniconda-Anaconda Cloud. **Anaconda Installation:** Installing Anaconda-Testing Python-Using IPython.

Introduction to Python: Python Features- Downloading and Installing Python- Running Python.

Python Basics: Statements and Syntax-Variable Assignment- Identifiers and Keywords-Basic Style Guidelines.

UNIT II:Python Objects (Teaching Hours : 9)

Python Objects: Built-in-types, Standard Type Operators-Value comparison-Object Identity Comparison-Boolean-Standard Type Built-in Functions-Categorizing the Standard Types-Miscellaneous Types- Unsupported Types.

Numbers: Integers-Double Precision Floating Point Numbers-Complex Numbers-Operators-Built-in Factory Functions. **Strings:** Sequences-Strings-Strings and Operators- String-Only Operators-Built-in Functions-String Built-in Methods-Special Features of Strings.

UNIT III:Lists, Tuples and Dictionaries (Teaching Hours :9)

Lists: Lists-Operators- Built-in Functions-Lists Built-in Methods-Special Features of Strings.

Tuples: Tuples- Tuple Operators and Built-in Functions-Special Features of Tuples.

Dictionaries:Mapping Type:Dictionaries-Mapping Type Operators-Mapping Type Built-in Functions-Built-in Methods.

UNIT IV: Conditions and Loops (Teaching Hours : 7)

If Statement-if-else Statement-else-if Statement-While Statement-for Statement-break-continue Statement-pass Statement-else Statement -iter() Function- List Comprehension-General Expressions.

UNIT V: Machine Learning using Python (Teaching Hours :7)

Introduction to Analytics and Machine Learning –Machine Learning-Framework for Developing Machine Learning Models-Python Stack for Data Science.

Descriptive analysis: Dataset Description using Data Frame in Python- Loading Dataset into Pandas Data Frame-Displaying First few Records of Data Frame-Finding Summary of the Data Frame-Slicing and Indexing of the Data Frame-Values and Cross Tabulation-Sorting Data Frame by Column Values.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Understand the Anaconda platform and the basics of Python programming | K1,K2 |
| CO2 | Demonstrate the concept of Python objects, Numbers and Strings. | K1,K2,K3 |
| CO3 | Understand the concepts of Lists, Tuples and Dictionaries. | K1,K2,K3 |
| CO4 | Learn the concepts of conditional and looping structures in Python. | K1,K2,K3,K4,K5 |
| CO5 | Understand the concept of Machine Learning using Python and applying Descriptive analysis to work with Data Frames. | K1,K2,K3,K4,K5 |

Note: K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | 2 | | | | | | 2 | | |
| CO2 | 2 | 2 | | | | | 3 | 3 | | |
| CO3 | 1 | | | | 3 | | 2 | 2 | | |
| CO4 | 1 | 2 | | | 2 | | 3 | 3 | | |
| CO5 | 1 | 2 | 2 | 2 | 2 | | 3 | 3 | | 1 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|---|------------------------------------|-------------------------------|----------------------------|
| S.No. | Title | Author | Publishers | Publication Year & Edition |
| 1 | Hands-On Data Science with Anaconda | Dr. Yuxing Yan, James Yan | Packt Publishing | First Edition, 2018 |
| 2 | Core Python Programming | Wesley J. Chun | Pearson Education Publication | Second Edition, 2009 |
| 3 | Programming in Python 3: A Complete introduction to the Python Language | Mark Summerfield | Addison-Wesley Professional | 2010 |
| 4 | Machine Learning Using Python | Manaranjan Pradhan, U.Dinesh Kumar | Wiley Publications | First Edition, 2019 |

Pedagogy: PPT presentation, e-content , seminar, Assignment

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|----------|-------------|--|---------|----------------------|---------------|-------------|
| FIRST | 20163D | CORE : OBJECT ORIENTED ANALYSIS AND DESIGN | 4 | Theory | - | 100 |

Objective of the Course: This course gives guidance on the construction of object oriented systems. It helps in understanding the fundamental concepts and notations of object oriented analysis and design.

UNIT I: Basics of Object Oriented Systems Development

(Teaching hours: 8)

Object Oriented Systems Development: Two orthogonal views of software – object oriented systems development methodology – object orientation – overview of unified approach - object oriented philosophy – objects – objects are grouped in classes – attributes: object state and properties – object behavior hierarchy – objects respond to messages – object oriented concepts in relation with the case study – case study.

UNIT II: OOSD Lifecycle and Methodologies

(Teaching hours: 8)

Object oriented systems development lifecycle: The software development process- building high quality software - Object oriented systems development: A use-case driven approach – reusability.

Object oriented methodologies: Towards the unification of the methodologies – survey of some Object oriented methodologies – Rumbaugh model – Booch methodology – Jacobson methodology -patterns – Framework – The unified Approach.

UNIT III: UML Basics and OO Analysis

(Teaching hours: 8)

Unified modeling Language: Static and Dynamic models – UML Introduction – UML Diagrams – UML class diagram – Use case-diagram – UML Dynamic modeling – Model management – UML Extensibility – UML metamodel. Object oriented analysis, process and identifying use cases: Analysis as a difficult activity – business object analysis – use-case driven object oriented analysis- business process modeling – use case model- developing effective documentation – case study.

UNIT IV: Classification of OOA and Identification of Objects

(Teaching hours: 8)

Object Oriented Analysis classification: Classification Theory – Approaches for identifying classes – noun phrase approach – common class patterns approach – use case driven approach – classes, responsibilities and collaborators – naming classes. Identifying object relationships, attributes and methods: Associations – Super-sub relationships – a part of relationship aggregation – case study – class responsibility – defining attributes – object responsibility – defining methods.

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UNIT V: OOD Axioms and Designing Classes

(Teaching hours: 8)

Object oriented design process and design axioms: object oriented design process – object oriented design axioms – corollaries.

Designing classes: Object oriented design philosophy – UML object constraint language – designing classes – class visibility- refining attributes – designing methods and protocols – designing attributes and methods for case study – Packaging and managing classes.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Explains different views of software development and the applications of object oriented concepts in software development | K1, K2 |
| CO2 | Teaches how to build high quality software using object orientation and analyses various OO Methodologies | K1, K2, K4 |
| CO3 | Study on various UML diagrams used in designing the system and to learn different processes involved in analysis of objects | K2, K3 |
| CO4 | Provides knowledge on the approaches used in identifying classes, objects and the relationships between objects | K4, K3 |
| CO5 | Explains the design process, design axioms and OO design philosophy. | K1, K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 3 | | | | | | 2 | 1 | | |
| CO2 | 2 | 3 | | 2 | | | 2 | 2 | | |
| CO3 | | 3 | | 2 | 3 | | | 2 | 2 | |
| CO4 | 2 | 2 | | 1 | | | | 3 | | |
| CO5 | 2 | 2 | | 1 | | | 1 | 1 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

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| Reference Books | | | | |
|------------------------|-------------------------------------|---------------|-------------------|---------------------------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Object Oriented Systems Development | Ali Bahrami | Tata McGraw- Hill | 2012, Twelfth Reprint |
| 2 | UML Distilled | Martin Fowler | Pearson | 2012, III Edition, Twelfth Impression |

Pedagogy:Lecture, PPT presentation, Seminar, Assignment.



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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|-------------------------|---------|-------------------|------------|----------|
| FIRST | 20163P | Core: ADVANCED DBMS LAB | 2 | Practical | - | - |

Objective of the course: This course gives a hands-on experience on implementing PL/SQL concepts like Procedures, Functions etc. The potential of the non-structured databases like MongoDB is also experimented here.

Write the program for the following PL/SQL concepts

1. Referential Integrity in SQL.
2. Assertions.
3. Triggers.
4. Implicit and Explicit Cursors.
5. Exception Handling.
6. Procedures.
7. Functions.

MongoDB

8. Database creation, conforming existing DB, Listing all DBs and dropping a DB using MongoDB.
9. Use Count, Limit, Sort and Skip in MongoDB.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO | This course gives a hands-on experience on implementing PL/SQL concepts like Procedures, Functions etc. The potential of the non-structured databases like MongoDB is also experimented here. | K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO | 3 | 3 | | 2 | 2 | | 3 | 3 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

Pedagogy: PPT presentation, Demonstration

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|------------------------------|---------|----------------------|------------|----------|
| FIRST | 20163Q | CORE: PYTHON PROGRAMMING LAB | 2 | Practical | - | - |

Objective of the subject: The main objective of this paper is to enable the students to perform programming concepts of Python and manipulation of Data Frames in Anaconda Platform.

The implementation of the following concepts.

1. Input Output Operations
2. Operators
3. String Operations
4. Functions
5. Looping
6. Branching
7. Lists
8. Tuples
9. Dictionaries
10. Loading Dataset in Data Frame
11. Displaying Records in Data Frame
12. Slicing of Data Frame

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO | Development of Python Programs using the basic program structures, Lists, Tuples and Dictionaries. Demonstrate the loading, displaying dataset in Data Frame and slicing of Data Frame using Python. | K2,K3,K4,K5 |

Note: K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO | 3 | 3 | | 2 | 3 | | 3 | 3 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

Pedagogy: PPT presentation, Demonstration

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|--|---------|-------------------|------------|----------|
| SECOND | 20263A | CORE : Software Project Management And Quality Assurance | 4 | Theory | - | 100 |

Objective of the Course:

This course highlights on the methods of project planning like Step Wise planning, PRINCE2 method of project planning. It gives an idea on project's activities, management, project analysis, technical planning, risk management, managing people, organizing teams and software quality in project planning.

UNIT I: Software Project Management- An Overview

(Teaching hours: 8)

Introduction – Project – Software Projects versus other types of projects – Activities - Some ways of categorizing software projects – Management – Problems with software projects – Setting Objectives - Requirement Specification – Stepwise Project Planning. Project Evaluation: Strategic Management – Technical assessment – Cost – Benefit Analysis – Cash Flow Forecasting – Cost – Benefit Evaluation Techniques – Risk Evaluation.

UNIT II: Process Models and Estimation

(Teaching hours: 8)

Project analysis and technical planning: Choosing technologies – Technical plan contents list – choice of process models, structure vs. speed of delivery – the waterfall model – the V-process model – spiral model - software prototyping. Software estimation: Introduction – problems with over – and under – estimates – basis for software estimation - Effort estimation techniques. Activity Planning: objectives – project schedules – Project and activities – Network planning models.

UNIT III: Risk Management and Monitoring

(Teaching hours: 8)

Risk management: Risk – Managing Risk – Evaluating Risk. Resource allocation: Nature of Resources – Resource Requirement – Scheduling Resources – Creating Critical Path - Counting the Cost. Monitoring and control: creating framework – Collecting Data – Visualizing Progress – Cost Monitoring – Prioritizing Monitoring – change control.

UNIT IV: Managing People

(Teaching hours: 8)

Managing people and organizing teams : Understanding behavior – Organizational behavior : a background – Selecting the right person for the job – Instruction in the best methods – Motivation – The Oldham-Hackman job characteristics model – Working in groups – Becoming a team – Decision making – Leadership – organizational structure – dispersed and virtual team.

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UNIT V: Software Quality

(Teaching hours: 8)

Software Quality: Software quality in project planning – defining software quality – Practical software quality measures – Product versus process quality management – External standards – Techniques to help enhance software quality – Quality plans. Small Projects: Some problems with student projects – Content of a project plan.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Know the terms and definitions of Software Project Management | K1 & K2 |
| CO2 | Inquire the software process models and activity planning | K1 & K2 |
| CO3 | Figure out the possible risks of a Project and Monitoring | K2 & K3 & K4 |
| CO4 | Evolve into the People Management and Decision Making | K4 |
| CO5 | Explore the concepts Software Quality | K4 & K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 1 | 3 | | | | 1 | 3 | 3 | | 1 |
| CO2 | 3 | 2 | 2 | 1 | | | 2 | 2 | | |
| CO3 | 2 | | | | | | 2 | 2 | | |
| CO4 | | | | | | | 3 | 3 | | |
| CO5 | | 2 | 2 | 1 | 2 | 1 | 2 | 2 | | 1 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|-----------------------------|-------------------------------|------------------|-------------------------------|
| S.No | Title | Author | Publishers | Publication Year & Edition |
| 1 | Software Project Management | Bob Hughes and Mike Cotterell | Tata McGraw-Hill | 2012, 5 th Edition |

Pedagogy:Regular Lecture methods, Using PPT and Projectors, Seminar component as teams, Assignments

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|-------------------------|---------|-------------------|------------|----------|
| SECOND | 20263B | CORE: MOBILE TECHNOLOGY | 4 | Theory | - | 100 |

Objective of the Course:

To learn mobile application concepts and executing the applications through Android studio and to publish the android applications.

UNIT I: Creating a simple Android Application

(Teaching hours: 8)

All about Android: Versions – Java-XML-Linux-The android system architecture. Creating first app-Starting the Android Studio IDE-Launching and running first application. Examining a Basic Android app- A project's files

UNIT II: Adding Activities to Android Application

(Teaching hours: 8)

Improving the application: Improving the layout - Localizing application-Responding to check box events – Displaying Images-Sending in the order. Android Activities: All about Activities – Intents – Using a Context- The Activity lifecycle-lifecycle methods.

UNIT III: Creation of Layouts and Menus

(Teaching hours: 8)

Android layouts: Linear layout – Relative layout-Table layout-Grid layout-Frame layout-Using a scroll view. Menus: Options Menu-Context menu-Popup menu –Simple notification.

UNIT IV: Data Persistence and Database Connectivity

(Teaching hours: 8)

Designing user interface with views: Using basic views-Using list views to display long lists– Displaying pictures and menus with views- Data Persistence: Saving and loading user preferences-Persisting data to files-Creating and Using Databases.

UNIT V: Advanced concepts and Publishing Android Applications

(Teaching hours: 8)

Content providers: Sharing data in android - Using a content provider. Messaging: SMS Messaging – Sending Email. Location based services: Obtaining the maps API key – Displaying the map – Getting location data. Publishing android applications: Preparing for publishing – Deploying APK files.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | Provides insight on the versions of Android in the market and enables to build a simple Android Application | K1 |
| CO2 | Improving the simple Application by adding activities and intents | K2, K3 |
| CO3 | Enriching the application including layout and menus | K3, K4 |
| CO4 | Usage of more views and implementation of Database connectivity | K4, K5 |
| CO5 | Working with the advanced concepts of Android such as SMS, Email creation and publishing the mobile applications | K4, K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | 3 | 2 | | | 1 | 1 | | | |
| CO2 | 3 | 2 | | | 1 | 2 | | | | |
| CO3 | | | 2 | 3 | 2 | | | 1 | 1 | 3 |
| CO4 | 3 | | | 2 | | 2 | 2 | 2 | | 3 |
| CO5 | | 2 | 1 | 2 | | | 1 | 1 | | 3 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|---|----------------|--------------------|----------------------------|
| S.No. | Title | Author | Publishers | Publication Year & Edition |
| 1 | Android Application Development for Dummies | Barry Burd | Wiley IndiaPvt Ltd | 2015, Second |
| 2 | Beginning Android 4 Application Development | Wei – Meng Lee | John Wiley | 2012, First |

Pedagogy:Lecture, PPT presentation, Assignment, Seminar.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---------------------|---------|-------------------|------------|----------|
| SECOND | 20263C | NON MAJOR: APTITUDE | 3 | Practical | - | - |

Objective of the course: This course highlights on improving the aptitude ability of the student and to understand technical and logical work outs like ratio and proportion, C Programming, OOPS concepts, Sequence and Series and Probability.

UNIT I: Ratio and Proportion

(Teaching Hours: 8)

Ratio and proportion – Indices – Logarithms. Sequence and Series – Arithmetic and geometric progressions. Algebra – Average.

UNIT II: Problems on Ages (Teaching Hours: 8)

Problems on Ages – Clocks & Calendars – Mixtures & Alligations – Time & Work – Time & Distance – Profit & Loss.

Coding and Decoding - Blood Relations- Cubes and Dice - Analogy- Ranking- Arithmetical reasoning.

UNIT III: Statistical description of data

(Teaching Hours: 8)

Statistical description of data – Textual, Tabular & Diagrammatic representation of data – Data Sufficiency – Probability and Expected Value by Mathematical Expectation.

UNIT IV: C Programming

(Teaching Hours: 8)

C Programming – Fundamental concepts – Data types – Functions - Structure and Union – Pointers – Exception handling – problem solving in C.

UNIT V: C++ Programming

(Teaching Hours: 8)

Object Oriented C++ - Classes – Objects – Object oriented Paradigms: Data Abstraction – Encapsulation – Inheritance – Polymorphism – Abstract Classes – Virtual classes.

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Course Outcome mapping with Knowledge level

| Course outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | To analyze the concepts of ratio & proportion and understands the concepts of sequence and series. | K2, K3, K4 |
| CO2 | To apply the concepts of profit & loss , Time and work, time and distance in real life problems | K2, K4, K5 |
| CO3 | Understand and implement data interpretation, Probability concepts. | K1, K4, K5 |
| CO4 | To gain knowledge on the fundamentals of C programming. | K2, K4, K5 |
| CO5 | To gain knowledge on the fundamentals of object oriented C++ concepts. | K2, K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analyzing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | | 3 | | | | | | | | 1 |
| CO2 | | | 2 | | | | | | | 1 |
| CO3 | | | | 3 | 1 | | | | | 1 |
| CO4 | 3 | 1 | | | | 3 | | | | 2 |
| CO5 | 3 | | 1 | | 3 | | | | | 2 |

Indicators: 1. Reasonable 2. Significant 3.Strong

Reference Books

| S.No. | Title | Author | Publishers | Year of Publications |
|-------|--|-----------------------|----------------------|----------------------|
| 1 | Quantitative Aptitude | R.S.Aggarwal | S.Chand& Company | 2007 |
| 2. | Quick Arithmetic | AshishAggrwal | S.Chand& Company | 2007 |
| 3. | Quantitative Aptitude for Competitive Examinations | R.S.Aggarwal | S.Chand& Company | 2017 |
| 4. | C Programming with Problem solving | Jones, Jacqueline | Dreamtech Publishers | 2006 |
| 5. | Let us C++ | Kanetkar, Yashavant P | BPB Publications | 2005 |

Pedagogy: Lecture, Assignment, seminar.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---|---------|----------------------|---------------|-------------|
| SECOND | 20263U1 | ELECTIVE I:ETHICAL HACKING AND NETWORK DEFENSE | 4 | Theory | - | 100 |

Objective of the Course: This course gives an idea to learn how to protect networks by using an attacker's knowledge to compromise network security, by understanding what tools or methodologies a hacker uses to break in to a network, security testers can protect a system from these attacks

UNIT I: Network and Computer Attacks

(Teaching hours: 8)

Ethical Hacking Overview: Introduction to Ethical Hacking - Things you can do Legally and cannot do Legally - Overview of TCP / IP - IP Addressing - Overview of Numbering Systems – Network and Computer Attacks: Malicious Software - Protecting Against Malware Attacks – Intruder Attacks on Networks and Computers - Addressing Physical Security.

UNIT II: Foot Printing and Social Engineering

(Teaching hours: 8)

Foot Printing and Social Engineering: Using Web Tools for Foot Printing – Conductive Competitive Intelligence - Using Domain Name Service (DNS) Zone Transfers - Introduction to Social Engineering - Port Scanning: Introduction to Port Scanning - Types of Port Scans - Using Port Scanning Tools - Conducting Ping Sweeps - Understanding Shell Scripting.

UNIT III: Operating System vulnerabilities

(Teaching hours: 9)

Programming for Security Professionals: Understanding Practical Extraction and Report Language (Perl) - Understanding Object Oriented Programming Concepts - Vulnerabilities in Microsoft Services - Linux OS Vulnerabilities - Remote Attacks on Linux Systems – Countermeasures against Linux Remote Attacks.

UNIT IV: Hacking Web Servers and Wireless Networks

(Teaching hours: 8)

Hacking Web Servers: Understanding Web Applications: Understanding Web Application Vulnerabilities - Tools of Web Attackers and Security Testers - Hacking Wireless Network: Understanding Wireless Technology - Understanding Wireless Network Standards - Understanding Authentication - Understanding Wardriving - Understanding Wireless Hacking.

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UNIT V: Cryptography**(Teaching hours: 7)**

Cryptography: Understanding Cryptography Basics - Understanding Symmetric and Asymmetric Algorithms - Understanding Public Key Infrastructure - Understanding Cryptography Attacks - Understanding Network Security Devices - Understanding Intrusion Detection Systems (IDSs) - Understanding Honey pots.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | An overview of ethical hacking, TCP/IP network, IP addressing, types of malicious software are discussed | K1, K2 |
| CO2 | A study on footprinting, port scanning and its types, shell scripting and tools used. | K2,K3,K4 |
| CO3 | To understand the Practical Extraction and Reporting Language, Object oriented programming concepts and different operating system vulnerabilities | K2,K3,K5 |
| CO4 | To impart knowledge on wireless network, network standards, web applications and their vulnerabilities | K2,K3,K4 |
| CO5 | Detailed study on symmetric, asymmetric algorithm, cryptographic attacks and intrusion detection | K3,K4,K5 |

Note:

K1 - Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | | 2 | | 3 | 3 | | 2 | 1 | 1 |
| CO2 | 1 | 1 | 2 | | 3 | 1 | | 2 | 1 | 1 |
| CO3 | 3 | 3 | 3 | 1 | 3 | 1 | | 2 | 1 | |
| CO4 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 2 | | |
| CO5 | 3 | 3 | 3 | 3 | 1 | 3 | 3 | 2 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|--|-------------------------|--|----------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Ethical Hacking and Network Defense | Michael T.Simpson | Cengage Learning India Private Limited | 2009 |
| 2 | Ethical Hacking and Penetration Step by Step with Kali Linux | RassoulGhaznavi - zadeh | Primedia E - launch LLC | 2014 |

Pedagogy:Lecture, PPT presentation, seminar, Assignment, Quiz, Group Discussion

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|----------------------------------|---------|----------------------|---------------|-------------|
| SECOND | 20263U2 | ELECTIVE I: INFORMATION SECURITY | 4 | Theory | - | 100 |

Objective of the course: This course covers the concepts related to Security in Computing.

UNIT I: Basics of Computer Security

(Teaching Hours:8)

Introduction to computer security: Basic concepts threat models common security goals. Cryptography and cryptographic protocols, including encryption, authentication, message authentication codes, hash functions, one-way functions, public-key cryptography, secure channels, zero knowledge in practice, cryptographic protocols and their integration into distributed systems and other applications.

UNIT II: Security mechanisms in operating system

(Teaching Hours:8)

Operating system security: Memory protection, access control, authorization, authenticating users, enforcement of security, security evaluation, trusted devices, digital rights management.

UNIT III: Security mechanisms in Network

(Teaching Hours:8)

Network Security: Firewalls, intrusion detection systems, viruses and worms, web security. Case studies: DNS, IPsec.

UNIT IV: Security mechanisms in Software

(Teaching Hours:8)

Software Security: Secure software engineering, defensive programming, buffer overruns and other implementation flaws.

UNIT V: Case studies

(Teaching Hours:8)

Language-based security: Analysis of code for security errors, safe languages, and sand boxing techniques. Case Studies: Privacy, mobile code, digital rights management and copy protection, trusted devices, denial of service and availability, network based attacks, security and the law, electronic voting.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Basics of information security and cryptography concepts | K1 |
| CO2 | Understanding memory protection, authentication, access control | K1, K2 |
| CO3 | Apply Firewalls for information security, intrusion detection and web security. Case studies on DNS, IPsec. | K3 |
| CO4 | Analyse defensive programming, buffer overruns and other implementation flaws. | K4 |
| CO5 | Analyse code for security errors, safe languages. Case Studies on Privacy, copy protection, trusted devices, network based attacks. | K3,K4,K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | | | | 1 | | | | | |
| CO2 | | | | 2 | | | | | | |
| CO3 | | | | | 3 | | | | | |
| CO4 | | | | | | | 2 | | | |
| CO5 | | | | | 3 | | | | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|--|--|-------------------|-------------------------------|
| S.No. | Title | Author | Publishers | Publication Year & Edition |
| 1 | Security in computing | Charles P Pfleeger and Shari Lawrence Pfleeger | Prentice Hall | 2007, Fourth Edition |
| 2 | Security Engineering: A Guide to Building Dependable Distributed Systems | Ross J. Anderson and Ross Anderson | Wiley | 2001 |
| 3 | Computer Security Basics | Debby Russell and G.T.Gangemi | O'Reilly Media | 2006, 2 nd edition |
| 4 | Information Security Fundamentals | Thomas R. Peltier and John Blackley | Prentice Hall | 1996, 2 nd edition |
| 5 | Cryptography and Network Security Principles and Practice | William Stallings | Pearson Education | 2014, 6 th edition |

Pedagogy:Lecture, PPT presentation, Assignment.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|-----------------------------|---------|----------------------|------------|----------|
| SECOND | 20263U3 | ELECTIVE I: CLOUD COMPUTING | 4 | Theory | - | 100 |

Objective of the course: This course gives overview, features and capabilities of Cloud Computing, Cloud Architecture, Cloud Security concerns, Cloud supporting software environments.

UNIT I:**(Teaching Hours:8)**

Cloud Platform Architecture: Cloud Computing and Service models: Public, Private and Hybrid clouds – Cloud Ecosystem and Enabling Technologies – Infrastructure-as-a-Service – Platform-as-a-Service – Software-as-a-Service.

UNIT II:**(Teaching Hours:8)**

Data-Center Design and Interconnection Networks: Warehouse-Scale Data-Center Design – Data-Center Interconnection Networks – Modular Data Center in Shipping containers – Interconnection of modular data centers – Data-Center management issues.
 Architectural design of compute and storage clouds: A Generic Cloud Architecture Design – Layered Cloud Architectural Development – Virtualization Support and Disaster Recovery – Architectural Design Challenges.

UNIT III:**(Teaching Hours:8)**

Public Cloud Platforms: Public Cloud and Service Offerings – Google App Engine (GAE) – Amazon Web Services (AWS) – Microsoft Windows Azure.
 Inter-Cloud Resource Management: Extended Cloud Computing Services – Resource Provisioning and Platform Deployment – Virtual Machine Creation and Management – Global Exchange of Cloud Resources.

UNIT IV:**(Teaching Hours:8)**

Cloud Security and Trust Management: Cloud Security Defense Strategies – Distributed Intrusion/Anomaly Detection – Data and Software Protection Techniques – Reputation-Guided Protection of Data Centers.
 Cloud Programming and Software Environments: Features of Cloud: Cloud Capabilities and Platform Features.

UNIT V:**(Teaching Hours:8)**

Programming the Google App Engine – Google File System – BigTable, Google's NOSQL System.
 Programming on Amazon EC2 – Amazon Simple Storage Service – Amazon Elastic Bck Store and SimpleDB. MicroSoft Azure Programming Support: SQLAzure – Azure Tables.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | To understand the different types of cloud architectures and models. | K1 |
| CO2 | Understanding memory protection, authentication, access control | K1, K2 |
| CO3 | Analyze the public cloud platforms and Inter-cloud resource management. | K2, K3 |
| CO4 | Analyze the security measures for cloud environments | K2, K4 |
| CO5 | To learn programming in Google App Engine, Amazon EC2 and SQLAzure. | K3, K4, K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | | | | | | | | | |
| CO2 | | | | 2 | | | | | | |
| CO3 | | | 2 | | 3 | | | | | |
| CO4 | | | 2 | | 3 | | 2 | | | |
| CO5 | | | | | 3 | | | | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Text Books | | | | |
|-------------------|---------------------------------|--|--|----------------------------|
| S.No. | Title | Author | Publishers | Publication Year & Edition |
| 1 | Distributed and Cloud Computing | Kai Hwang, Geoffrey C. Fox, Jack J. Dongarra | Morgan Kaufmann Publishers (Imprint of Elsevier) | 2014 |

Pedagogy:Lecture, PPT presentation, Assignment, Seminar.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---|---------|----------------------|---------------|-------------|
| SECOND | 20263U4 | ELECTIVE I: ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS | 4 | Theory | - | 100 |

Objective of the subject: This paper discusses the Artificial Intelligence techniques and problem handling mechanism using artificial intelligence tools and also focuses on basics of knowledge management and expert systems.

UNIT I: Introduction to AI

(Teaching Hours: 7)

Introduction: AI problems - AI techniques - Criteria for Success- Problem spaces- Search: State space search - Production systems - Problem characteristics - Issues in design of search- Deployment of AI in Industries.

UNIT II: Searching Techniques in AI

(Teaching Hours: 9)

Heuristic Search Techniques: Generate and test - Hill Climbing - Best-first, Problem reduction, Constraint Satisfaction - Means-end analysis, Robotics Process Automation (RPA).

UNIT III: Knowledge representation in AI

(Teaching Hours: 8)

Knowledge representation issues: Representations and mappings - Approaches to knowledge representations - Issues in knowledge representations - Frame problem.

UNIT IV: Predicate logic in AI

(Teaching Hours: 8)

Using Predicate logic: Representing simple facts in logic - Representing Instants and Isa Relationships - Computable functions and predicates – Resolution - Natural deduction.

UNIT V: Expert systems in AI

(Teaching Hours: 8)

Representing knowledge using Rules: Procedural Vs Declarative knowledge - Logic Programming - Forward Vs Backward Reasoning – Matching - Control knowledge. Expert systems: Representing and using domain knowledge – Expert system shells - Knowledge acquisition.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO1 | Learn about the artificial intelligence problem and the characteristics of the problem space | K1,K2 |
| CO2 | Demonstrate the fundamentals of heuristic search techniques. | K2,K3 |
| CO3 | Identify the issues in knowledge representation | K2 |
| CO4 | Understand the problem solving using predicates. | K2,K3,K4,K5 |
| CO5 | Describe the concepts of expert systems. | K2,K3 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 2 | 3 | 1 | 2 | 2 | | 2 | 1 | | |
| CO2 | 2 | 2 | 3 | 2 | | | | | | |
| CO3 | 1 | | 2 | | | | | | | |
| CO4 | 3 | 3 | 2 | 3 | | | | | | |
| CO5 | 1 | | 2 | 2 | | | | 1 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|-------------------------|--|-------------------|----------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Artificial Intelligence | Elaine Rich, Kevin Knight, Shivashankar B Nair | Pearson Education | Fourth Reprint, 2010 |

Pedagogy:Lecture, PPT presentation, Assignment.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---|---------|----------------------|---------------|-------------|
| SECOND | 20263P | CORE: SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE LAB | 2 | Practical | - | -- |

Objective of the course: This practical course covers the class diagram, object diagram, use case diagram, activity diagram, component diagram and case transition diagram applied on developing models of a system.

Using any of the following Applications,

- Accounting for a shop.
- Payroll Management.
- Result Management of a Student.
- Hospital Administration.
- Banking.

1. For any given system, identify the requirements and prepare a Software Requirement Specification. The functional and non-functional requirements can be classified.
2. For any given system, analyze and prepare a detailed schema design. The schema may portrait the limitations, constraints and relationships of the system.
3. For any given system, generating the Step wise project planning with the activities enlisted, duration for each activity.
4. For any given system, generate a networking planning model for depicting the activities as blocks over time using Gantt chart.
5. For any given system, generate a networking planning model for depicting the activities as blocks over time using PERT.
6. For any given system, generate the timeline chart for depicting the progress of the project using timeline chart.
7. Analyze any given system, for its financial requirements and prepare an effective budget/cost-estimate using PERT chart to show the critical path.
8. Prepare a Standard Quality Plan.

Note:

Develop a project / case study using the above applicable concepts.



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MAPPING OF COURSES WITH PROGRAMME OUTCOME LEVELS

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|-----------------------|---|------------------------|
| CO | Apply the acquired theoretical knowledge of Software Project Management into the tools for a specific problem domain with Quality Assurance | K2, K3, K4, K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|-----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-------------|
| CO | 2 | 3 | | 2 | 2 | | 3 | 3 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

Pedagogy: PPT presentation, Demonstration

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|-----------------------------|---------|----------------------|------------|----------|
| SECOND | 20263Q | CORE: MOBILE TECHNOLOGY LAB | 2 | Practical | - | - |

Objective of the Course:

This practical course will train the students to work in Android Smart Phone environment.

1. Develop an application that uses GUI components, Font and Colors.
2. Develop an application that uses Layout Managers and event listeners.
3. Develop a native calculator application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that makes use of database.
6. Develop a native application that uses GPS location information.
7. Implement an application that writes data to the SD card.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|--|-----------------|
| CO | Build the code, compile, execute and debug mobile applications using the Java for Android programming language and Eclipse to develop programs using advanced programming concepts | K5 |

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO | 3 | 3 | | 2 | 2 | | 3 | 3 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

Pedagogy: PPT presentation, Demonstration

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|--------------------------|---------|----------------------|---------------|-------------|
| THIRD | 20363A | CORE: INTERNET OF THINGS | 4 | Theory | - | 100 |

Objective of the Course: This course highlights on physical design, logic design, enabling technologies of Internet of Things, IoT system management and design methodology, Introduction to Python Programming, IoT physical devices and cloud offerings.

UNIT I: Overview and Design Methodology

(Teaching hours: 8)

Introduction to internet of things: Introduction - Physical design of IoT - Logical design of IoT - IoT Enabling Technologies - IoT Levels and Deployment templates.
 IoT Design Methodology - case study on IoT system for weather monitoring - Motivation for using python.

UNIT II:IoT Management with NETCONF-YANG

(Teaching hours: 8)

IoT system Management with NETCONF - YANG: Need for IOT System Management - Simple Network Management Protocol - Network Operator Requirements - NETCONF - YANG - IoT system Management with NETCONF – YANG.

UNIT III: Python

(Teaching hours: 8)

IoT Systems - Logical Design using Python: Introduction - Installing Python - Python data types and Data structures - Control Flow - Functions - Modules - Packages - File handling - Date and Time - Classes - Python Package of Interest for IoT.

UNIT IV:IoT Devices

(Teaching hours: 8)

IoT Physical devices and end points: Basic building blocks of an IoT device - Exemplary device Raspberry Pi - About the board - Linux on Raspberry Pi - Raspberry Pi interfaces - Programming Raspberry Pi with Python - Other IoT devices.

UNIT V: Case Study

(Teaching hours: 8)

Case Studies: Home Automation: Smart lighting - Cities: Smart Parking - Environment: Air pollution monitoring - Agriculture: smart irrigation - Productivity application: IoT Printer.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Introduction to Internet of Things, logical and physical design, IoT enabled technologies and their design methodology | K1, K2 |
| CO2 | To understand the NETCONF-YANG model, need for IoT management, network protocols | K2,K3,K4 |
| CO3 | A brief introduction to the Python language data types, control structures, file handling, classes and various packages in Python | K2,K3,K4,K5 |
| CO4 | To brief on Raspberry pi board, interfaces to Raspberry pi and programming using Python | K2,K3,K4,K5 |
| CO5 | Case study on applications of IoT devices in the fields like agriculture, home automation, pollution monitoring, smart parking | K3,K4,K5 |

Note:

K1 - Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | | 1 | 3 | 2 | | 1 | | 2 | | |
| CO2 | 1 | | 3 | | 3 | | | | | |
| CO3 | 3 | | | | 3 | | | 1 | | |
| CO4 | 2 | 3 | 1 | | 3 | | 3 | 1 | | |
| CO5 | 1 | 3 | 3 | 2 | 1 | | 3 | | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|--|--------------------------------|--|----------------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Internet of Things-A hands on approach | ArshdeepBahga, Vijay Madisetti | Universities Press | 2014 |
| 2 | Internet of Things: A Preamble | C. Divya, P. Edith Linda | Kalaikathir Publications ISBN 978 - 81 - 927985 - 8 - 5 | First Edition, August 2019 |

Pedagogy:Lecture, PPT presentation, seminar, Assignment, Quiz, Group Discussion

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|------------------------|---------|----------------------|---------------|-------------|
| THIRD | 20363B | CORE : WEB PROGRAMMING | 4 | Theory | - | 100 |

Objective of the course: To understand .NET frame work concepts, web application development in .NET, creating dynamic web pages using various controls.

UNIT I: .NET Framework

(Teaching hours: 8 Hrs)

The .NET Framework: Web Development – The .NET Framework - .NET Languages – The Common Language Runtime - .NET Class Library. Developing ASP.NET Applications: Creating Websites – Designing a web page –The anatomy of a web form – Writing Code – Debugging.

UNIT II: Web Forms

(Teaching hours: 8 Hrs)

Web Forms: The anatomy of an ASP.NET Application – Server Controls – HTML Control Classes – The Page Class – Application Events – ASP.NET Configuration. Web Controls: Stepping Up to Web Controls – Web Control Classes – List Controls – Table Controls – Web Control Events and AutoPostBack – A Simple Webpage.

UNIT III: Validation and ADO.NET

(Teaching hours: 9 Hrs)

Building Better Web Forms: Validation: Understanding Validation - The Validation Controls. Rich Controls: The Calendar – The AdRotator – Pages with Multiple Views. Working with Data: ADO.NET Fundamentals: Configuring Database-SQL Basics-Data Provider Model: Direct Access – Disconnected Access.

UNIT IV: Data binding

(Teaching hours: 8 Hrs)

Understanding Data Binding: Data binding - Data source binding: Binding data to page properties-Binding data to control properties-Binding data to an array list-Binding methods-Binding to a data view. Working with data grids: Using a data grid example-Using the columns property-Paging data grid-Sorting data grid.

UNIT V: Templates

(Teaching hours: 7 Hrs)

Using Templates: Templates: Repeater control-Data list control -Data grid control. Creating Templates: Combining templates with the repeater control -Combining templates with data list control - Combining templates with the Data grid control.



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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Understanding the .NET Framework, the Common Language Runtime. | K2 |
| CO2 | Understanding and applying the anatomy of an ASP.NET and creating A Simple Webpage. | K1, k2, k3 |
| CO3 | Building Better Web Forms and Validating it. | K3, K5 |
| CO4 | Understanding Data Binding | K2 |
| CO5 | Creating Templates and Using Templates. | K2, K3, K4 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 1 | 2 | 2 | | 1 | | | | | 2 |
| CO2 | 2 | | | | 2 | | | 2 | | |
| CO3 | | | 3 | | | | 2 | 3 | | |
| CO4 | 1 | 2 | | | | | | 3 | | |
| CO5 | 1 | 1 | | | | | 1 | 2 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|--------------------------------|--------------------|--------------------------|----------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Beginning ASP.NET 4 in VB 2010 | Matthew MacDonald, | Apress, Berkeley USA, | 2011 |
| 2 | ASP.NET Bible | MridulaParihar | Wiley Publishing Inc.USA | 2006 |

Pedagogy:Lecture, PPT presentation, Assignment, Seminar.

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|-----------------------------------|---------|-------------------|------------|----------|
| THIRD | 20363C | CORE: CYBER SECURITY INTELLIGENCE | 4 | Theory | - | 100 |

Objective of the Course:

This course broadly discusses on Cyber Threats and Cyber Security Intelligence required in handling these threats effectively. It also covers Cyber Security Ethics and Laws and Cyber Defense Mechanisms.

UNIT I: Cyber Threats & Cyber Threat Intelligence

(Teaching hours: 8)

Cyber Threats - Background - Sources and Types of Cyber Threats- Potential Risk factors of Cyber Threats- Implications of Cyber Threats -An Overview of Threat Intelligence-Key Characteristics-Need for Threat Intelligence-Impact of Threat Intelligence –Applicability-Threat Detection Rules- Risk Reduction through Threat Intelligence - Understanding and Implementing Threat Intelligence.

UNIT II: Cyber Security Architecture

(Teaching hours: 7)

Identity and Access Management-Security Information and Event Management-Planning, Design and Implementation of Security Architecture-Global Architectural Approach-Multifaceted Cyber Security-Cyber Security Monitoring and Management.

UNIT III: Cyber Security Ethics and Cyber Laws

(Teaching hours: 8)

Evolution of Cyber Ethics- Promoting Ethical Behavior- Importance of the Cyber Law-Morality and Law in Cyber Space- Cyber Crime Trends-Cyber Security Standards and Frameworks-BSI Standards on IT and Cyber Security-Coordination of the Framework Implementation.

UNIT IV: Handling Cyber threats through Security Intelligence

(Teaching hours: 8)

Cyber Threat Life cycle- Necessity and the Importance of Security Intelligence -Challenges of Cyber Threat Intelligence - Controlling Privileged Access and Mitigating Insider Threats-Fighting Cyber Attacks through Security Intelligence- Cyber Attacks: Prevention and Proactive measures

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UNIT V: Cyber Defense Mechanisms

(Teaching hours: 9)

Cyber Self Defense- Cyber Attack Techniques and Defense Mechanisms- Cyber Defense Planning Model- Cyber Supply Chain Security- Cyber Supply Chain Security Principles- Key Cyber Supply Chain Risks- DDOS Attacks and Cyber Defense: Flooding or Volumetric Attacks- Amplification Attacks- Resource Depletion Attacks- Diversion or Ransom Attacks- Defending against DDoS Attacks- Securing Industrial Control Systems - Implementation of Application White Listing - Ensuring a Proper Configuration / Patch Management - Reduction in the Attacks on the Surface Area

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | Sources of cyber Threats and Impact of threat Intelligence along with Threat detection rules are discussed | K1,K2 |
| CO2 | Implementation of Cyber security Architecture with Multifaceted approach | K1,K3 |
| CO3 | Significance of Cyber Security Ethics, Laws, Standards and Frameworks | K2,K3 |
| CO4 | Importance and challenges of Cyber Security Intelligence and handling of Cyber threats through Cyber Security Intelligence. | K4,K5 |
| CO5 | Creating Cyber Defense Model and Defending against DDos Attacks | K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | 1 | | 2 | | | | | | 2 | |
| CO2 | | 1 | | 2 | | | | | | 3 |
| CO3 | | 2 | | | 1 | | | 3 | | |
| CO4 | | 2 | 3 | | | 3 | 3 | | | |
| CO5 | | 1 | 2 | | | 3 | | | 2 | 2 |

Indicators: 1. Reasonable 2. Significant 3.Strong

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| Reference Books | | | | |
|------------------------|---|--|----------------------------------|----------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Combating Cyber Threats through Cyber Security Intelligence | Dr.S.Sujatha, Dr.N.SudhaBhuvaneswari | Kalaikathir Publications | 2017 |
| 2 | Cyber Security Essentials 2011. | James Graham, Richard Howard, and Ryan Olson | Auerbach Publications, CRC Press | 2011 |

Pedagogy:Lecture, PPT presentation, Assignment, Seminar.



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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|------------------------|---------|----------------------|---------------|-------------|
| THIRD | 20363D | NON MAJOR: SOFT SKILLS | 3 | Practical | - | - |

Objective of the course: This course content guides and helps students to improve skills such as Communication, Body Language, Presentation, and Written Communication Skills.

UNIT I: Introduction to Soft Skills

(Teaching Hours: 8)

Soft skills with special focus on ITES: Soft skills - Communication skill as soft skill – Ability to express and explain – Clear and Lucid method of expression - Logical Reasoning.

UNIT II: Body Language

(Teaching Hours: 8)

Body language - Motivation - Lead – Appeal – Benefits - Goal setting.

Telephone etiquette - Holding and answering – Voice modulation – Greetings – Salutation.

UNIT III: Presentation Skills

(Teaching Hours: 8)

Presentation Skills - Planning – Preparation and delivery – Eye contact – Feed back - Interview skills. Dress code – Manners – Attending Voice Interview.

UNIT IV : Written Communication Skills

(Teaching Hours: 8)

Written Communication Skills: Verbal Reasoning - Writing a resume - Preparation of Video Resume - Without error – visual presentation - Time and stress Management. Prioritize work – schedule timings – listening to music and yoga for reducing the stress

UNIT V: Professional Ethics

(Teaching Hours: 8)

Professional Ethics: Respect views, sentiments – Leadership Skill - Trust, share and stay together – accept responsibility – take up challenges.

Search Engines, grammar checking using tools, Article rewriting, Plagiarism checker.

Experiential Learning Cycle.

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Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO1 | To promote creativity, capability and competence through IT soft skills | K2,K3 |
| CO2 | To provide broad range of body language and telephone ethics | K1,K2,K3 |
| CO3 | Preparing the students to develop the skills of delivering the content and facing the interview | K1,K2,K3 |
| CO4 | Practice and perform professional written communication, time and stress management | K1,K2,K3 |
| CO5 | To provide broad range of information technology skills like technical, logical, analytical thinking and leadership quality | K2,K3,K4,K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO1 | | | | | | 2 | | 3 | 3 | 1 |
| CO2 | | | | | | | | 3 | | 3 |
| CO3 | | | | | | 1 | | 3 | 3 | 1 |
| CO4 | 1 | | | | | 2 | | 2 | 2 | 1 |
| CO5 | | 2 | | | | | 2 | | 2 | 3 |

Indicators: 1. Reasonable 2. Significant 3.Strong

| Reference Books | | | | |
|-----------------|--|---|---------------------|-------------------------------|
| S.No. | Title | Author | Publishers | Year of Publications |
| 1 | Interviewing in Action Relationships, Process & Change | Bianca Cody Murphy, Carolyn Dillon, Brooks/Cole | | 2003 |
| 2 | Test of Reasoning | Edgar Thorpe | Tata McGraw Hill | 2007, 4 th edition |
| 3 | Developing Communication Skills | Krishna Mohan, MeeraBanerji | Macmillan India Ltd | 2004 |

Pedagogy: PPT presentation, e-content, Seminar, Assignment, Group Discussion

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| Semester | Course Code | Course Title | Credits | Theory/ Practical | Problems % | Theory % |
|----------|-------------|---------------------------|---------|----------------------|---------------|-------------|
| THIRD | 20363P | CORE: WEB PROGRAMMING LAB | 2 | Practical | - | -- |

Objective of the course: The lab sessions includes creation of web pages using ASP.NET, manipulation with web controls and multiple format display using ADO.NET.

1. Creating Web pages.
2. Web controls with ASP.NET.
3. Validation controls.
4. Ad rotator web control.
5. Calendar web control.
6. GridView control ADO.NET
7. Manipulation of Data with Data Grid (MS-Access)
8. Manipulation of Data with Data Grid(SQL Server)
9. Combining Templates with Repeater Control.
10. Combining Templates with Data list Control.

Note:

Develop a project / case study using the above applicable concepts.

Course Outcome mapping with Knowledge level

| Course Outcome | CO Statement | Knowledge level |
|----------------|---|-----------------|
| CO | Acquire basic knowledge to develop and execute Web applications | K5 |

Note:

K1- Remembering; K2 – Understanding; K3 – Applying; K4 – Analysing; K5 – Creating & Evaluating.

Course Outcome mapping with Programme outcome:

| Course outcome | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 |
|----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| CO | 3 | 3 | | 2 | 2 | | 3 | 3 | | |

Indicators: 1. Reasonable 2. Significant 3.Strong

Pedagogy: PPT presentation, Demonstration