## KRISHNA UNIVERSITY

### B.Sc. Computer Science COURSE STRUCTURE

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<tr>
<th>Semester</th>
<th>Part</th>
<th>Subject</th>
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I YEAR I SEMESTER
COMPUTER FUNDAMENTALS AND MS OFFICE

Unit – I
Introduction to Computers
Input and Output Devices

Unit – II
Computer Memory and Processors
Number Systems and Computer Codes

Unit – III
Computer Software
Operating Systems

Unit – IV
Introduction to Algorithms and Programming Languages

MS Word:
Getting Started.
Understanding Word Basics. Editing and Formatting Text. Formatting Documents
Working with Graphic Objects.

Unit – V
Microsoft Excel:
Understanding Excel Basics. Formatting and Editing the Worksheet. Using Formulas
and Functions. Working with Charts.

Microsoft PowerPoint:
Understanding PowerPoint Basics. Formatting and Modifying Presentations. Enhancing
the Presentation.

TEXT BOOK:
1. Fundamentals Of Computers ” by REEMA THAREJA from OXFORD UNIVERSITY PRESS
2. Microsoft Office 2007 Fundamentals, 1st Edition By Laura Story, Dawna Walls (UNIT I,
   UNIT II, UNIT III, UNIT IV)

REFERENCE BOOK:
1. “Computer Fundamentals and Programming in C” by REEMA THAREJA from OXFORD
   UNIVERSITY PRESS
2. PC SOFTWARE UNDER WINDOWS by Puneet Kumar And Sushil Bhardwaj From Kalyani
   Publishers
I YEAR II SEMESTER
C - PROGRAMMING

Unit – I
Chapter 1. Introduction to Algorithms and Programming Languages
Chapter 2. Introduction to C

Unit – II
Chapter 3. Decision Control and Looping Statements
Chapter 4. Functions

Unit – III
Chapter 5. Arrays
Chapter 6. Strings

Unit – IV
Chapter 7. Pointers
Chapter 8. Structure, Union, and Enumerated Data Types

Unit – V
Chapter 9. Files

TEXT BOOK:
3. “Computer Fundamentals and Programming in C” by REEMA THAREJA from OXFORD UNIVERSITY PRESS

REFERENCE BOOK:

II YEAR III SEMESTER
OBJECT ORIENTED PROGRAMMING USING JAVA

UNIT-I:
Object Oriented Programming: Introduction to OOP, Objects and Classes, Characteristics of OOP, Difference between OOP and Procedure Oriented Programming, Summary
Introduction to Java Programming: Introduction, Features of Java, Comparing Java and other languages, Applications and Applets, Java Development Kit, More Complex Programs, Java Source file structure, Prerequisites for Compiling and Running Java Programs.

UNIT-II:
Java Language Fundamentals: The building Blocks of Java, Data types, variable declarations, wrapper classes, Operators and Assignment, Control structures, Arrays, Strings, The String Buffer Class.
Java as an OOP Language: Defining classes, Modifiers, Packages, Interfaces.

UNIT-III:
Exception Handling: Introduction, Basics of Exception Handling in Java, Exception Hierarchy, Constructors and Methods in Throwable class, Unchecked and checked
exceptions, Handling exceptions in Java, Exception and Inheritance, Throwing User defined Exceptions, Redirecting and Rethrowing Exceptions, Advantages of Exception Handling Mechanism.

**Multithreading:** Introduction: An Overview of Threads, Creating Threads, Thread Life cycle, Thread priorities and Thread scheduling, Thread synchronization, Thread groups, Communication of Threads.

**UNIT IV:**

**Files and I/O Streams:** An Overview of I/O streams, Java I/O, File streams, File Input stream and File output stream, Filter streams, Random Access File, Serialization.

**Applets:** Introduction, Java applications versus Java Applets, Applet Life cycle, Working with Applets, The HTML Applet Tag.

**UNIT V:**

**Database Handling using JDBC:** An Overview of DBMS, JDBC Architecture, working with JDBC, Processing Queries, The Transactions commit and Rollback, Handling Exceptions, Mapping Database types to java, Accessing Metadata, Sample Programs to Handle Database.

**The Abstract window Toolkit:** Introduction, Drawing with crystals class, class Hierarchy of AWT, Event Handling, AWT controls, Layout Managers, The Java2D, Java2d Shapes.

**TEXT BOOK:**

2. Programming In Java By Sachin Malhotra And Saurabh Choudhary From Oxford University Press

**REFERENCE BOOKS:**

1. E.Balagurusamy, “Programming with Java”, 3e, TMH,2007

**II YEAR IV SEMESTER**

**DATA STRUCTURES**

**UNIT I**

**PROBLEM SOLVING**


**UNIT II**

**LISTS, STACKS AND QUEUES**

Abstract Data Type (ADT) – The List ADT – The Stack ADT – The Queue ADT

**UNIT III**
TREES

UNIT IV
SORTING

UNIT V
GRAPHS

REFERENCE BOOKS :
in rows, where clause – Comparison Operators – SQL operators- Between, in, like Null value-is Null- Not operator-Multiple conditions-

check option- transfer data from old column to new column- Delete Rows – Delete from table – truncate – Query from tables- features of SQL – select statement, Groupby clause, orderby clause – Literal – Define – Double Ampersand(&&)-System table Dual and Tab.

Built-in Functions – Number Functions – Character Functions – Date Functions – Conversion functions – Group functions-

Joins – out join, self join – set operators – View – Define, Retrieve, rename and Drop View- DML operations using view- Advantage and disadvantages- Sequence – Create, alter, drop sequence – Index- Create, rename, rebuild and drop index.

UNIT III
Database Design
Functional Dependencies – Non-loss Decomposition – Functional Dependencies – First, Second, Third Normal Forms, Dependency Preservation – Boyce/Codd Normal FormMulti-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form

UNIT IV
Transactions

UNIT V

Text Books:

References:

WEB TECHNOLOGY

UNIT-I:

UNIT-II:

UNIT-III:

UNIT-IV:

UNIT-V:

TEXTBOOKS:
1. WEB TECHNOLOGIES TCP/IP to Internet Applications Architectures – Achyut S Godbole & Atul Kahate, 2007, TMH.

REFERENCE BOOKS:
1. INTERNET AND WEB TECHNOLOGIES – Rajkamal, TMH.
2. TCP/IP PROTOCOL SUITE – Behrouz A. Forouzan, 3rd edition, TMH.

CLOUD COMPUTING

UNIT I
INTRODUCTION & CONCEPTS
Introduction to cloud computing: introduction, characteristics of cloud computing, cloud models, cloud services examples, cloud-based services & applications.

CLOUD CONCEPTS & TECHNOLOGIES

UNIT II
CLOUD SERVICES & PLATFORMS
Compute Services, Storage Services, Database Services, Applications Services, Content Delivery Services, Analytics Services, Deployment & Management Services, Identity & Access Management Services, Open Source Private Cloud Software.

HADOOP & MAPREDUCE
Apache Hadoop, Hadoop MapReduce Job Execution, Hadoop Schedulers, Hadoop Cluster Setup

UNIT III
CLOUD APPLICATION DESIGN
Introduction, Design Considerations for Cloud Applications, Reference Architecture for Cloud Applications, Cloud Application Design Methodologies, Data Storage Approaches.

UNIT IV
PYTHON BASICS
Introduction, Installing Python, Python Data Types & Data Structures, Control flow, Functions, Modules, Packages, File Handling, Date/Time Operations, Classes 163.

UNIT V
PYTHON FOR CLOUD
Python for Amazon Web Services, Python for Google Cloud Platform, Python for Windows Azure, Python for MapReduce, Python Packages for Interest, Python Web Application Framework- Django, Designing a RESTful Web API.

CLOUD APPLICATION DEVELOPMENT IN PYTHON

TEXT BOOK:
III YEAR VI SEMESTER

ASP.NET

UNIT-I:

UNIT-II:

UNIT-III:

UNIT-IV:
ADO.NET - Connection Classes - Command Data Components - Data Adapter Components - Data Set Data Component - Data View Data Component - Data Grid Component.

UNIT-V:

TEXT BOOKS:
2. Professional ADO.NET Programming - Wrox, Bipin Joshi, Paul Dickinson.

MOBILE APP DEVELOPMENT

UNIT I
INTRODUCTION
Introduction to mobile applications - Embedded systems - Market and business drivers for mobile applications - Publishing and delivery of mobile applications - Requirements gathering and validation for mobile applications

UNIT II
BASIC DESIGN
Introduction – Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures – Achieving quality constraints - performance, usability, security, availability and modifiability.
UNIT III
ADVANCED DESIGN
Designing applications with multimedia and web access capabilities – Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications.

UNIT IV
TECHNOLOGY - ANDROID

UNIT V
TECHNOLOGY II - IOS
Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi - iPhone marketplace.

REFERENCES:

INFORMATION SECURITY

UNIT I
INTRODUCTION

UNIT II
SECURITY INVESTIGATION
Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues

UNIT III
SECURITY ANALYSIS
Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk
UNIT IV
LOGICAL DESIGN

UNIT V
PHYSICAL DESIGN

REFERENCE BOOKS:

PROGRAMMING PHP

UNIT I
Introduction to PHP
Language Basics
Functions

UNIT II
Strings
Arrays
Objects

UNIT III
Web Techniques
Databases
Graphics

UNIT IV
PDF
XML

UNIT V
Security
Web Services

TEXT BOOK
1. PROGRAMMING PHP by Kevin Tatroe, Peter MacIntyre, Rasmus Lerdorf FROM O'Reilly Media, Inc.
2. Beginning PHP and MySQL: From Novice to Professional by W. Jason Gilmore FROM Apress

**PROJECT WORK**

The project will be one semester duration. The student will be advised to approach different organizations involved in science communication activities as per interest and specialization of students, mostly located in the place of the study. They will have to carry out a project work related to the area of interest and submit a project report at the end of the semester. The students shall defend their dissertation in front of experts during viva-voce examinations.