DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Semester: III **Year: 2020-2021**

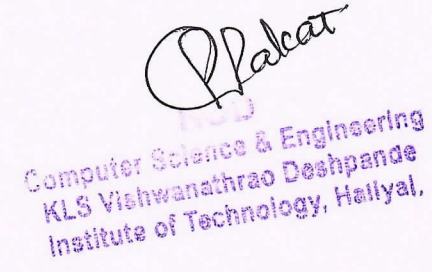
Course Title	**Advanced C**		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal AssessmentMarks	05		

COURSE LEARNING OBJECTIVES:

1. To learn the concept of dynamic Memory allocation
2. To learn concept of Command line Arguments and files
3. To Solve Real world problems.

Course Content (Syllabus)

MODULE-1 **Dynamic memory allocation and files** Dynamic Memory Allocation. Function Pointers, command line Arguments, Files: File concepts, file modes, file opening ,file closing, file reading ,file writing.	10 Hrs
MODULE-2 **Hands on activity** Code snippets on various programming features	10 Hrs
MODULE-3 **SOLVING REAL WORLD PROBLEMS (PROJECTS)** Customer Billing System, Bank Management System, Quiz Game, Typing Tutor,Library Management System	10 Hrs



DEPARTMENT OF COMPUTER SCIENCE & ENGGINEERING

Syllabus

Semester: V **Year: 2020-2021**

Course Title	HIBERNATE		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

Course Learning Objectives: This course will enable students to

1. Create dynamic HTML content with servlets and Java Server Pages.
2. Make servlets and JSP work together.
3. Access Database with JDBC
4. Design and build robust and maintainable web applications.

Course Content (Syllabus)

MODULE-1 **Module 01 - Java Servlet, Java Server Pages, JDBC,** **Java Servlet:** Servlets API, Interfaces, and Methods, Servlet Lifecycle, Configure and Deploy Servlet, ServletRequest, ServletResponse, ServletConfig, ServletContext, Servlet Scopes, Attributes, and Collaboration, Session Management, Listeners in Java EE, Filters in Java EE, **JSP**: JSP Lifecycle, Creating and Working with JSP Elements, Working with JSP Standard Action, JSTL and Custom Tag Libraries. **JDBC**: CallableStatement, ResultSet, ResultSet Meta-Data, Database Meta-Data, Transactions in JDBC, Connected & Disconnected Architecture (JDBCRowset, CachedRowSet)	10 Hrs
MODULE-2 **Hibernate:** Introduction to Hibernate, Introduction to Hibernate, Hibernate CRUD Operation, Hibernate Queries and Relationship, Hibernate Queries and Relationships, Mapping Relationship with Hibernate. Hibernate Framework, Object relational Mapping (ORM) Tool, Java ORM Frameworks, Supported Databases, Supported Technologies, what is JPA? Advantages of Hibernate Framework, Hibernate Architecture, Elements of Hibernate Architecture	10Hrs
MODULE-3 **Hands-on Activity on the Above Topics** Code Snippets, Analysis of Code	10Hrs

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Semester: VII **Year: 2020-2021**

Course Title	**Deep Learning**		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal AssessmentMarks	05		

Course Learning Objectives:

- Understand the context of neural networks and deep learning
- Know how to use a neural network
- Have a working knowledge of neural networks and deep learning

Course Content (Syllabus)

MODULE-1 **Introduction to Neural Networks** Basics: Biological Neuron, Idea of Computational units, McCulloch-Pits unit and Thresholding logic, Linear Perceptron, Perceptron learning Algorithm, Linear separability, convergence theorem for perceptron learning algorithm. Feedforward Networks: Multilayer perceptron, Gradient Descent, Backpropagation, Empirical Risk minimization, regularization, autoencoders. Deep Neural Networks: Difficulty of training deep neural networks, greedy layerwise training.	10 Hrs
MODULE-2 **Deep Neural Networks - 1** Better Training of NN: Newer optimization methods for NN, second order methods for training, saddle point problem in NN, Regularization methods. Recurrent Neural Networks: Backpropagation through time, LSTM, Gated recurrent units, Bidirectional LSTM, Bidirectional RNNs. Convolution Neural Networks: LeNet, AlexNet.	10 Hrs
MODULE-3 **Deep Learning Algorithms** Generative Models: Restrictive Boltzman Machines, Introduction to MCMC and Gibbs Sampling, gradient computations in RBMs, Deep Boltzmann machines. Recent Trends: Variational Autoencoders, Generative Adverserial Networks, Mutitask deep learning, Multi-view deep learning Applications: Vision, NLP, Speech	10 Hrs

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Syllabus

Semester: IV **Year: 2020-2021**

Course Title	**OBJECT ORIENTED MODELLING Using UML**		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

Course Learning Objectives: This course will enable students to

1. To demonstrate how it contrast with previous programming approaches.
2. To know the characteristics are required by an OO approach.
3. To know how object oriented approach support multiple inheritances.
4. To learn state modeling is differ from class modeling.
5. To understand the usage of StarUML tool.

Course Content (Syllabus)

Module – 1 : INTRODUCTION, MODELING CONCEPTS, CLASS MODELING What is Object Orientation? What is OO development? OO themes; Evidence for usefulness of OO development;. MODELING AS DESIGN TECHNIQUE: Modeling; abstraction; The three models. Class Modeling: Object and class concepts; Link and associations concepts; Generalization and inheritance; A sample class model; Navigation of class models	10 Hrs
MODULE-2 **Module-2 : ADVANCED CLASS MODELING, STATE MODELING** ADVANCED OBJECT AND CLASS CONCEPTS; Association ends; N-ary associations; Aggregation; Multiple inheritance; Metadata; Constraints; Derived data; STATE MODELING: Events, States, Transitions and Conditions; State diagrams; ADVANCED STATE MODELING: Nested state diagrams; A sample state model; INTERACTION MODELING: Use case models; Sequence models; Activity models. Use case relationships;	10Hrs
Module-3 : Modelling using StarUML StarUML : Introduction , Basic Concepts, Managing Project , Editing Elements, Formatting Diagram, Annotation Elements, Managing Extensions, User Interface, Validation Rules, Keyboard Shortcuts, TouchBar (MacBook), Customization, Working with UML Diagram, Modelling Examples with Hands on.	10Hrs

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Syllabus

Semester: VI **Year: 2020-2021**

Course Title	**INTRODUCTION TO PHYSICAL NETWORKING A HANDS-ON APPROACH**		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

Course Learning Objectives: This course will enable students to

1. To understand basics of Computer Networks.
2. To work about the need to learn Networking

Course Content (Syllabus)

MODULE-1 **Introduction to Network Cabling** Introduction Cables, Hubs and Switches, Routers and Servers and Clients. Types of Cables, Twisted pair, coaxial and OFC. Hands on Moving Bits Across the Wire, Twisted Pair Cabling. Crimping, punching and Testing cat6 cables.	06 Hrs
MODULE-2 **Designing of Home Networks and Small LANs** Network Ports and Patch Panels. Ethernet and MAC Addresses What is an IP address? Introduction to subnetting. Commands you need: ipconfig, ping and traceroute, nslookup, arp, setting up of servers etc.	10 Hrs
MODULE-3 **Practical Implementation of Cabling to design new Laboratories in KLS VDIT.** CIVIL CAED LAB, NAIN Centre, Various Staff Rooms Report submission and evaluation.	14 Hrs

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Semester: VIII **Year: 2020-2021**

Course Title	Introduction to Data Science with R Programming		
Total Teaching Hours	30	Teaching Hours/Week	3
Internal Assessment Marks	05		

Course Learning Objectives:

- To understand basics of R Language.
- To work with R Studio environment.
- To know the basics of data science fundamentals.

Course Content (Syllabus)

MODULE-1 **INTRODUCTION TO R** R Basics, Installing R, R Programming Language - Operators, Printing Values, Basic Data Types, Control Structures, Functions, Reading Data.	08 Hrs
MODULE-2 **Data Science Foundations - 1** Data Cleansing - Identifying Data Types, Data Entry Errors, Missing Values, Data Visualization – Scatter plots, Bar plots and Pie charts, Creating Plots Using qplot(), Interactive Visualizations Using Shiny.	08 Hrs
MODULE-3 **Data Science Foundations - 2** **Exploratory Data Analysis** - Summary Statistics, Getting a Sense of Data Distribution - Box Plots, **Regression** – Introduction, Parametric Regression Models - LR, Non Parametric Regression Models - LWR, **Classification** - Parametric Classification Models - Naive Bayes, Non parametric Classification Models - Nearest Neighbors, **Text Mining** - Common Text Preprocessing Tasks, Term Document Matrix, Text Mining Applications.	14 Hrs

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