DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

B.Tech. COMPUTER SCIENCE AND BUSINESS SYSTEMS

Regulations 2019

CHOICE BASED CREDIT SYSTEM

OPEN ELECTIVES

Sri Eshwar College of Engineering

(An Autonomous Institution)

(Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai)

Kondampatti (Post), Kinathukadavu,

Coimbatore – 641202

B.Tech. COMPUTER SCIENCE AND BUSINESS SYSTEMS

OPEN ELECTIVES

Sl. No.	Course Code	Course Title	Category	Contact Periods	L	T	P	C
1	U19CB601	Data Integration & Big data	OE	3	3	0	0	3
2	U19CB602	fundamentals of Software Project Management	OE	3	3	0	0	3
3	U19CB603	Introduction to Agile Software Development	OE	3	3	0	0	3
4	U19CB604	Business Communication and Ethics	OE	3	3	0	0	3
5	U19CB605	Free and Open Source Software	OE	3	3	0	0	3

U19CB601	DATA INTEGRATION & BIG DATA	L	T	P	C
		3	0	0	3

After completion of this course, the students will be able to

Outcomes

CO1	**(Understand)** Understand the Concepts of BI and ETL	**K2**
CO2	**(Understand)** Express knowledge of Talend Architecture and its various components	**K2**
CO3	**(Understand)** Outline the different integration process using advanced components	**K2**
CO4	**(Apply)** Interpret Big Data , Hadoop concepts and the benefits of integrating Talend with Hadoop	**K3**
CO5	**(Understand)** Understand various Hadoop Ecosytems	**K2**

MODULE I FUNDAMENTALS OF BI AND ETL 10

Introduction to Business problem Analysis–Business Intelligence ,Data warehousing, Data Dimensional model–Star and Snowflake schema , SCD Types–(Type I,II,III), Data models , Facts and Dimensions ETL – Introduction , Architecture, ETL Tools , Data Integration

MODULE II INTRODUCTION TO TALEND 8

Introduction – Architecture of TalendTool , Starting a Talend Tool , Creating and running first job Working with Components – File Components , MISC Components , System Components

MODULE III ADVANCED COMPONENTS 8

File Orchestration Components , Processing Components , Logs and Errors, Database Components – MySQL Component , Context Variables , Java Components , Joining Data Sources , Triggers and Dataflow connections

MODULE IV INTRODUCTION TO BIG DATA 9

Big Data in context ,Connecting to the Hadoop cluster – Reading and Writing Data in HDFS–Processing Data with Map Reduce – Processing Hive data in Standard Jobs

MODULE V HADOOP ECOSYSTEM 10

Introduction to Sqoop components – Tables and Databases , Introduction to Pig Components – Load and Store operations , Grouping and joining , Combining and splitting , Filtering and Sorting
Spark and Hbase -Basic Concepts.

TOTAL : 45 Hours

REFERENCES

1 www.help.talend.com

2 www.1keydata.com

3 https://partneracademy.talend.com

U19CB602	FUNDAMENTALS OF SOFTWARE PROJECT MANAGEMENT	L	T	P	C
		3	0	0	3

After completion of this course, the students will be able to

Outcomes

CO1	**(Understand)** Explain the various techniques for requirements, planning and managing a technology project.	**K2**
CO2	**(Apply)** Estimate the software effort and activity planning.	**K3**
CO3	**(Understand)** Explain the level of software risk and people management.	**K2**
CO4	**(Apply)** Prepare effective project scheduling work product.	**K3**
CO5	**(Apply)** Identify the latest industry knowledge, tools and comply to the latest global standards for project management.	**K3**

MODULE I INTRODUCTION 9

Introduction to Software Project Management - Software Projects - ways of categorizing software projects – problems with software projects – Project Life Cycle -Software Projects versus Other Types of Project – Contract Management and Technical Project Management – Activities – Plans, Methods and Methodologies – Requirement Specification – Management Control – Overview of Project

Planning – Introduction to Step Wise Project Planning – Programme Management and Project Evaluation.

MODULE II SOFTWARE EFFORT ESTIMATION AND ACTIVITY PLANNING 9

Software Effort Estimation: Problems with Over and Under Estimates – Basis of Software Estimating – Techniques – Expert Judgment – Cosmic Full Function Points – A Procedural Code Oriented Approach – COCOMO: A Parametric Model – Activity Planning: Objectives – Project Schedules – Projects and Activities – Sequencing and Scheduling Activities – Network Planning Models – Formulating A Network Model – Identifying Critical Path – Shortening the Project Duration – Identifying Critical Activities – Activity-on-arrow Networks.

MODULE III SOFTWARE RISK AND PEOPLE MANAGEMENT 9

Categories of Risk – Framework for Dealing with Risk – Risk Identification – Risk Assessment – Risk Planning – Risk Management – Evaluating Risks to the Schedule – Applying the PERT Technique – Monte Carlo Simulation – Critical Chain Concepts – Resource Allocation: Nature of Resources – Identifying Resource Requirements – Scheduling Resources – Creating Critical Paths – Counting the Cost – Cost Schedules – Scheduling Sequence.

MODULE IV SOFTWARE PROJECT AND CONTROL 9

Creating the Framework – Collecting the Data: Partial Completion Reporting – Risk Reporting – Visualizing Progress: Gantt chart – Slip chart – Ball Charts – The Timeline – Cost Monitoring – Earned Value Analysis – Prioritizing Monitoring – Getting the Project Back to Target – Change Control.

MODULE V Case Study - Devops 9

GITLAB – Introduction – Product manager – GITHUB : version & Repositry – Install git and create a GitHub account -Create a local git repository -Add a new file to the repo- Add a file to the staging environment – Create a new branch- Create a new repository on GitHub - Create a pull request (PR)- Merge a PR - Bask in your git glory.

TOTAL : 45 Hours

TEXTBOOKS

1 Hughes B., Cotterell M. and Rajib M., "Software Project Management", Sixth Edition, Tata McGrawHill, 2017

2 Chandramouli and Dutt, "Software Project Management", Pearson Education ,2015

REFERENCES

1 Pressman R. S., "Software Engineering – A Practitioner's Approach", Eighth Edition, McGraw Hill Publishers, 2015.

2 Ramanathan Krishnan., "Software Project Management ", Everest Publication, 2015

3 Ashfaque Ahmed, "Software Project Management: a process-driven approach",Boca Raton, Fla. : CRC Press, 2012

4 Mariot Tsitoara, "Beginning Git and GitHub: A Comprehensive Guide to Version Control, Project Management, and Teamwork for the New Developer "Apress, 2019.

U19CB603	**INTRODUCTION TO AGILE SOFTWARE DEVELOPMENT**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**

After completion of this course, the students will be able to

Outcomes	**CO1** **(Apply)** Implement a real software project that implements agile execution techniques	**K3**
	CO2 **(Apply)** Use Scrum with multiple, or distributed, project teams and Sprint with Sprint Reviews and Sprint Retrospectives.	**K3**
	CO3 **(Apply)** Articulate the agile principles, practices and deconstruct user stories into tasks.	**K3**
	CO4 **(Apply)** Design test plan document for agile testing.	**K3**
	CO5 **(Apply)** Describe the purpose and benefits of two or more agile execution methodologies.	**K3**

MODULE I OVERVIEW OF AGILE PROCESSES 9

Agile development - Classification of methods - Introduction and background - Agile Manifesto and Principles - Overview of Scrum - Extreme Programming - Feature Driven development - Lean Software Development - Agile project management - Design and development practices in Agile projects - Test Driven Development - Continuous Integration – Refactoring - Pair Programming.

MODULE II AGILE METHODOLOGY 9

Introduction to Scrum - Project phases - Agile Estimation - Planning game - Product backlog - Sprint backlog - Iteration planning - Initial Stages of Building a Requirement Document - Techniques for Requirements Elicitation - Burn down chart - Sprint planning and retrospective - Daily scrum - Scrum roles – Product Owner - Scrum Master - Scrum Team - Tools for Agile project management.

MODULE III AGILE DESIGN PRINCIPLES 9

User story definition - Characteristics and content of user stories - Agile design practices - Role of design Principles - Single Responsibility Principle - Open Closed Principle - Need and significance of Refactoring - Refactoring Techniques, Continuous Integration.

MODULE IV AGILE TESTING 9

The Agile lifecycle and its impact on testing, The agile alliances, Test-Driven Development (TDD), Testing user stories - acceptance tests and scenarios, Planning and managing testing cycle, Test automation, Tools to support the Agile tester, Agile testing – Nine principles and six concrete practices for testing on agile teams.

MODULE V APPLICATION OF AGILE METHODOLOGIES 9

Market scenario and adoption of Agile, Roles in an Agile project, Agile applicability, Agile in Distributed teams, Business benefits, Challenges in Agile, Risks and Mitigation, Agile projects on Cloud, Balancing Agility with Discipline, Agile rapid development technologies.

TOTAL : 45 Hours

TEXTBOOKS

1 Johnny Schneider, "Understanding Design Thinking, Lean and Agile", O'Reilly Media, 2017.

2 Agile Software Development, Principles, Patterns and Practices by Robert C. Martin Publisher: Prentice Hall, 2013.

3 Agile Testing: A Practical Guide for Testers and Agile Teams by Lisa Crispin, Janet Gregory Publisher: Addison Wesley,1 edition (December 30, 2008).

REFERENCES

1 Agile Software Development: The Cooperative Game By Alistair Cockburn Addison-Wesley Professional; 2 edition (19 October 2006)

2 User Stories Applied: For Agile Software by Mike Cohn Publisher: Addison Wesley, 1 edition (1 March 2004)

3 Agile Software Development with Scrum by Ken Schawber, Mike Beedle Publisher: Pearson Education, 2003.

U19CB605	FREE AND OPEN SOURCE SOFTWARE	L	T	P	C
		3	0	0	3

After completion of this course, the students will be able to

Outcomes	**CO1**	**(Understand)** Exposure to the context and operation of free and open source software (FOSS) communities and associated software projects.	**K2**
	CO2	**(Apply)** Demonstrate the installation of Linux by hard disk partioning and process of working with files	**K3**
	CO3	**(Analyze)** Analyze shell programming by working with variables, control structures and scripting.	**K4**
	CO4	**(Understand)** Learn some important FOSS tools and techniques	**K2**
	CO5	**(Apply)** Develop Open Source Database by configuring MYSQL Server and connecting to MYSQL with PHP.	**K3**

MODULE I Open-Source Software Overview 9

Introduction – Need and Advantage of Open-Source Software – Foss- Free Software Movement –Open Source Movement- Open Source Licensing Certification-OSS Development Model-Run a Free Software Project-Comparing OSS with other Software-OSS Licenses

MODULE II Open Source Operating System (LINUX) 9

Linux Installation and Hardware Configuration – Boot Process-The Linux Loader (LILO) - The Grand Unified Bootloader (GRUB) - Dual-Booting Linux and other Operating System - Boot-Time Kernel Options- X Windows System Configuration-System Administration – Backup and Restore Procedures Strategies for keeping a Secure Server.

MODULE III SHELL PROGRAMMING 9

Bash Shell Scripting, Executing Script, Working with Variables and Input, Using Control Structures, Handling signals, creating functions, working sed and gawk, working with web using shell script: Downloading web page, Converting Web page content to a text file, parsing data, working cURL.

MODULE IV PROGRAMMING TOOLS AND TECHNIQUES 9

Usage of design Tools like Argo UML or equivalent, Version Control Systems like Git or equivalent, – Bug Tracking Systems- Package Management Systems

MODULE V Open Source Database And Application 9

MySQL: Configuring MySQL Server, working with MySQL Databases, MySQL Tables, SQL Commands – INSERT, SELECT, UPDATE, REPLACE, DELETE. Date and Time functions in MySQL. PHP – MySQL Application Development: Connecting to MySQL with PHP, Inserting data with PHP, Retrieving data with PHP.

TOTAL : 45 Hours

TEXTBOOKS

1 Evi Nemeth, Garth Snyder, Trent R. Hein, Ben Whaley and Dan Mackin , "UNIX and Linux System Administration Handbook ", 5th Edition, Addison-Wesley Professional, 2017.

2 Julie C Meloni, "PHP, MySQL and Apache", Sixth Edition, Pearson Education, 2017.

3 Prof. Dayan and Ambawade, Deven Shah, "Linux Labs And Open Source Technologies" , Dream Tech Press, 2014.

REFERENCES

1 Wale Soyinka, Linux Administration- A beginner's Guide, Tata McGraw Hills, 2012

2 Fadi P. Deek and James A. M. McHugh, Open Source Technology and Policy, Cambridge University Press, 2007

3 Andrew M. St. Laurent, "Understanding Open Source and Free Software Licensing", O'Reilly Media, 2004.

4 Ellen Siever, Stephen Figgins, Robert Love, Arnold Robbins, "Linux in a Nutshell", Sixth Edition, OReilly Media, 2009.