U23

THIRUVALLUVAR UNIVERSITY

SERKKADU, VELLORE–632115

B.Sc. INFORMATION SYSTEM MANAGEMENT

SYLLABUS

FROM THE ACADEMIC YEAR

2023 – 2024

Introduction

B.Sc. Information System Management

Education is the key to development of any society. Role of higher education is crucial for securing right kind of employment and also to pursue further studies in best available world class institutes elsewhere within and outside India. Quality education in general and higher education in particular deserves high priority to enable the young and future generation of students to acquire skill, training and knowledge in order to enhance their thinking, creativity, comprehension and application abilities and prepare them to compete, succeed and excel globally. Learning Outcomes-based Curriculum Framework (LOCF) which makes it student-centric, interactive and outcome-oriented with well-defined aims, objectives and goals to achieve. LOCF also aims at ensuring uniform education standard and content delivery across the state which will help the students to ensure similar quality of education irrespective of the institute and location.

Computer Science is the study of quantity, structure, space and change, focusing on problem solving, application development with wider scope of application in science, engineering, technology, social sciences etc. throughout the world in last couple of decades and it has carved out a space for itself like any other disciplines of basic science and engineering. Computer science is a discipline that spans theory and practice and it requires thinking both in abstract terms and in concrete terms. Nowadays, practically everyone is a computer user, and many people are even computer programmers. Computer Science can be seen on a higher level, as a science of problem solving and problem solving requires precision, creativity, and careful reasoning. The ever-evolving discipline of computer science also has strong connections to other disciplines. Many problems in science, engineering, health care, business, and other areas can be solved effectively with computers, but finding a solution requires both computer science expertise and knowledge of the particular application domain. Computer science has a wide range of specialties. These include Computer Architecture, Software Systems, Graphics, Artificial Intelligence, Computational Science, and Software Engineering. Drawing from a common core of computer science knowledge, each specialty area focuses on specific challenges. Computer Science is practiced by mathematicians, scientists and engineers. Mathematics, the origins of Computer Science, provides reason and logic. Science

provides the methodology for learning and refinement. Engineering provides the techniques for building hardware and software.

The Students completing this programme will be able to present Software application clearly and precisely, make abstract ideas precise by formulating them in the Computer languages. Completion of this programme will also enable the learners to join teaching profession, enhance their employability for government jobs, jobs in software industry, banking, insurance and investment sectors, data analyst jobs and jobs in various other public and private enterprises.

LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORK GUIDELINES BASED REGULATIONS FOR UNDER GRADUATE PROGRAMME	
Programme:	**B.Sc., Information System Management**
Programme Code:	
Duration:	**3 years [UG]**
Programme Outcomes:	**PO1: Disciplinary knowledge:** Capable of demonstrating comprehensive knowledge and understanding of one or more disciplines that form a part of an undergraduate Programme of study **PO2: Communication Skills:** Ability to express thoughts and ideas effectively in writing and orally; Communicate with others using appropriate media; confidently share one's views and express herself/himself; demonstrate the ability to listen carefully, read and write analytically, and present complex information in a clear and concise manner to different groups. **PO3: Critical thinking:** Capability to apply analytic thought to a body of knowledge; analyse and evaluate evidence, arguments, claims, beliefs on the basis of empirical evidence; identify relevant assumptions or implications; formulate coherent arguments; critically evaluate practices, policies and theories by following scientific approach to knowledge development. **PO4: Problem solving: Capacity** to extrapolate from what one has learned and apply their competencies to solve different kinds of non-familiar problems, rather than replicate curriculum content knowledge; and apply one's learning to real life situations. **PO5: Analytical reasoning**: Ability to evaluate the reliability and relevance of evidence; identify logical flaws and holes in the arguments of others; analyze and synthesize data from a variety of sources; draw valid

	conclusions and support them with evidence and examples, and addressing opposing viewpoints. **PO6: Research-related skills**: A sense of inquiry and capability for asking relevant/appropriate questions, problem arising, synthesising and articulating; Ability to recognise cause-and-effect relationships, define problems, formulate hypotheses, test hypotheses, analyse, interpret and draw conclusions from data, establish hypotheses, predict cause-and-effect relationships; ability to plan, execute and report the results of an experiment or investigation **PO7: Cooperation/Team work:** Ability to work effectively and respectfully with diverse teams; facilitate cooperative or coordinated effort on the part of a group, and act together as a group or a team in the interests of a common cause and work efficiently as a member of a team **PO8: Scientific reasoning**: Ability to analyse, interpret and draw conclusions from quantitative/qualitative data; and critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective. **PO9: Reflective thinking**: Critical sensibility to lived experiences, with self awareness and reflexivity of both self and society. **PO10 Information/digital literacy:** Capability to use ICT in a variety of learning situations, demonstrate ability to access, evaluate, and use a variety of relevant information sources; and use appropriate software for analysis of data. **PO 11 Self-directed learning**: Ability to work independently, identify appropriate resources required for a project, and manage a project through to completion. **PO 12 Multicultural competence:** Possess knowledge of the values and beliefs of multiple cultures and a global perspective; and capability to effectively engage in a multicultural society and interact respectfully with diverse groups. **PO 13: Moral and ethical awareness/reasoning**: Ability to embrace moral/ethical values in conducting one's life, formulate a position/argument about an ethical issue from multiple perspectives, and use ethical practices in all work. Capable of demon starting the ability to identify ethical issues related to one‟s work, avoid unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, not adhering to intellectual property rights; appreciating environmental and sustainability issues; and adopting objective, unbiased and truthful actions in all aspects of work. **PO 14: Leadership readiness/qualities:** Capability for mapping out the tasks of a team or an organization, and setting direction, formulating an inspiring

	vision, building a team who can help achieve the vision, motivating and inspiring team members to engage with that vision, and using management skills to guide people to the right destination, in a smooth and efficient way. **PO 15: Lifelong learning:** Ability to acquire knowledge and skills, including „learning how to learn", that are necessary for participating in learning activities throughout life, through self-paced and self-directed learning aimed at personal development, meeting economic, social and cultural objectives, and adapting to changing trades and demands of work place through knowledge/skill development/reskilling.
Programme Specific Outcomes:	**PSO1**: To enable students to apply basic microeconomic, macroeconomic and monetary concepts and theories in real life and decision making. **PSO 2**: To sensitize students to various economic issues related to Development, Growth, International Economics, Sustainable Development and Environment. **PSO 3**: To familiarize students to the concepts and theories related to Finance, Investments and Modern Marketing. **PSO 4**: Evaluate various social and economic problems in the society and develop answer to the problems as global citizens. **PSO 5:** Enhance skills of analytical and critical thinking to analyze effectiveness of economic policies.

	PO 1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
PSO 1	Y	Y	Y	Y	Y	Y	Y	Y
PSO 2	Y	Y	Y	Y	Y	Y	Y	Y
PSO3	Y	Y	Y	Y	Y	Y	Y	Y
PSO 4	Y	Y	Y	Y	Y	Y	Y	Y
PSO 5	Y	Y	Y	Y	Y	Y	Y	Y

3 – Strong, 2- Medium, 1- Low

Highlights of the Revamped Curriculum:

- Student-centric, meeting the demands of industry & society, incorporating industrial components, hands-on training, skill enhancement modules, industrial project, project with viva-voce, exposure to entrepreneurial skills, training for competitive examinations, sustaining the quality of the core components and incorporating application oriented content wherever required.
- The Core subjects include latest developments in the education and scientific front, advanced programming packages allied with the discipline topics, practical training, devising mathematical models and algorithms for providing solutions to industry / real life situations. The curriculum also facilitates peer learning with advanced mathematical topics in the final semester, catering to the needs of stakeholders with research aptitude.

- The General Studies and Mathematics based problem solving skills are included as mandatory components in the 'Training for Competitive Examinations' course at the final semester, a first of its kind.
- The curriculum is designed so as to strengthen the Industry-Academia interface and provide more job opportunities for the students.
- The Industrial Statistics course is newly introduced in the fourth semester, to expose the students to real life problems and train the students on designing a mathematical model to provide solutions to the industrial problems.
- The Internship during the second year vacation will help the students gain valuable work experience, that connects classroom knowledge to real world experience and to narrow down and focus on the career path.
- Project with viva-voce component in the fifth semester enables the student, application of conceptual knowledge to practical situations. The state of art technologies in conducting a Explain in a scientific and systematic way and arriving at a precise solution is ensured. Such innovative provisions of the industrial training, project and internships will give students an edge over the counterparts in the job market.
- State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature are incorporated as Elective courses, covering conventional topics to the latest - Artificial Intelligence.

Value additions in the Revamped Curriculum:

Semester	Newly introduced Components	Outcome / Benefits
I	**Foundation Course** To ease the transition of learning from higher secondary to higher education, providing an overview of the pedagogy of learning Literature and analysing the world through the literary lens gives rise to a new perspective.	➢ Instill confidence among students ➢ Create interest for the subject
I, II, III, IV	**Skill Enhancement papers** (Discipline centric / Generic / Entrepreneurial)	➢ Industry ready graduates ➢ Skilled human resource ➢ Students are equipped with essential skills to make them employable
		➢ Training on language and communication skills enable the students gain knowledge and exposure in the competitive world.
		➢ Discipline centric skill will improve the Technical knowhow of solving real life problems.
III, IV, V & VI	Elective papers	➢ Strengthening the domain knowledge ➢ Introducing the stakeholders to the State-of Art techniques from the streams of multi-disciplinary, cross disciplinary and inter disciplinary nature ➢ Emerging topics in higher education/ industry/ communication network / health sector etc. are introduced with hands-on-training.

IV	Elective Papers	➢ Exposure to industry moulds students into solution providers ➢ Generates Industry ready graduates ➢ Employment opportunities enhanced
V Semester	Elective papers	➢ Self-learning is enhanced ➢ Application of the concept to real situation is conceived resulting in tangible outcome
VI Semester	Elective papers	➢ Enriches the study beyond the course. ➢ Developing a research framework and presenting their independent and intellectual ideas effectively.
Extra Credits: **For Advanced Learners / Honors degree**		➢ To cater to the needs of peer learners / research aspirants
Skills acquired from the Courses	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill	

Credit Distribution for UG Programmes

Sem I	Credit	H	Sem II	Credit	H	Sem III	Credit	H	Sem IV	Credit	H	Sem V	Credit	H	Sem VI	Credit	H
Part 1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	Part..1. Language – Tamil	3	6	5.1 Core Course – \CC IX	4	5	6.1 Core Course – CC XIII	4	6
Part.2 English	3	6	Part..2 English	3	6	Part..2 English	3	6	Part..2 English	3	6	5.2 Core Course – CC X	4	5	6.2 Core Course – CC XIV	4	6
1.3 Core Course – CC I	5	6	2..3 Core Course – CC III	5	5	3.3 Core Course – CC V	5	5	4.3 Core Course – CC VII Core Industry Module	5	5	5. 3.Core Course CC -XI	4	5	6.3 Core Course – CC XV	4	6
1.4 Core Course – CC II	5	5	2.4 Core Course – CC IV	5	5	3.4 Core Course – CC VI	5	5	4.4 Core Course – CC VIII	5	5	5. 4.Core Course –/ Project with viva-voce CC -XII	4	5	6.4 Elective -VII Generic/ Discipline Specific	3	5
1.5 Elective I Generic/ Discipline Specific	3	5	2.5 Elective II Generic/ Discipline Specific	3	6	3.5 Elective III Generic/ Discipline Specific	3	4	4.5 Elective IV Generic/ Discipline Specific	3	5	5.5 Elective V Generic/ Discipline Specific	3	4	6.5 Elective VIII Generic/ Discipline Specific	3	5
1.6 Skill Enhancement Course SEC-1	2	2	2.6 Skill Enhancement Course SEC-2	2	2	3.6 Skill Enhancement Course SEC-4, (Entrepreneurial Skill)	1	1	4.6 Skill Enhancement Course SEC-6	2	2	5.6 Elective VI Generic/ Discipline Specific	3	4	6.6 Extension Activity	1	-
1.7 Skill Enhancement -(Foundation Course)	2	2	2.7 Skill Enhancement Course –SEC-3	2	2	3.7 Skill Enhancement Course SEC-5	2	2	4.7 Skill Enhancement Course SEC-7	2	2	5.7 Value Education	2	2	6.7 Professional Competency Skill	2	2
						3.8 E.V.S.	2	2				5.8 Summer Internship /Industrial Training	2				
	23	**32**		**23**	**32**		**24**	**32**		**23**	**32**		**26**	**30**		**21**	**30**
Total – 140 Credits																	

Choice Based Credit System (CBCS), Learning Outcomes Based Curriculum Framework (LOCF) Guideline Based Credit and Hours Distribution System for all UG courses including Lab Hours

First Year – Semester-I

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses [in Total]	13	16
Part-4	Skill Enhancement Course SEC-1	2	2
	Foundation Course	2	2
		23	**32**

Semester-II

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	16
Part-4	Skill Enhancement Course -SEC-2	2	2
	Skill Enhancement Course -SEC-3 (Discipline / Subject Specific)	2	2
		23	**32**

Second Year – Semester-III

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	15
Part-4	Skill Enhancement Course -SEC-4 (Entrepreneurial Based)	1	1
	Skill Enhancement Course -SEC-5 (Discipline / Subject Specific)	2	2
	E.V.S	2	2
		24	**32**

Semester-IV

Part	List of Courses	Credit	No. of Hours
Part-1	Language – Tamil	3	6
Part-2	English	3	6
Part-3	Core Courses & Elective Courses including laboratory [in Total]	13	16
Part-4	Skill Enhancement Course -SEC-6 (Discipline / Subject Specific)	2	2
	Skill Enhancement Course -SEC-7 (Discipline / Subject Specific)	2	2
		23	**32**

Third Year
Semester-V

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based	22	26
Part-4	Value Education	2	2
	Internship / Industrial Visit / Field Visit	2	2
		26	**30**

Semester-VI

Part	List of Courses	Credit	No. of Hours
Part-3	Core Courses including Project / Elective Based & LAB	18	28
Part-4	Extension Activity	1	-
	Professional Competency Skill	2	2
		21	**30**

Consolidated Semester wise and Component wise Credit distribution

Parts	Sem I	Sem II	Sem III	Sem IV	Sem V	Sem VI	Total Credits
Part I	3	3	3	3	-	-	12
Part II	3	3	3	3	-	-	12
Part III	13	13	13	13	22	18	92
Part IV	4	4	3	6	4	1	22
Part V	-	-	-	-	-	2	2
Total	23	23	22	25	26	21	**140**

***Part I. II, and Part III components will be separately taken into account for CGPA calculation and classification for the under graduate programme and the other components. IV, V have to be completed during the duration of the programme as per the norms, to be eligible for obtaining the UG degree.**

Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or Overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate	
	between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

B.Sc., INFORMATION SYSTEM MANAGEMENT

Second Year – Semester – III			
Part	**List of courses**	**Credits**	**No. of Hrs**
PART I	**Language – Tamil III**	**3**	**6**
PART II	**English III**	**3**	**6**
PART III	**Core Course 5 –Relational Database Management Systems**	**5**	**5**
	Core Course 6 – RDBMS LAB	**5**	**5**
	Elective Course 3 (Generic / Discipline Specific) **(Choose any one from the following list)** A. **Statistical Methods and its Applications I** B. **Cost Accounting I**	**3**	**5**
Part IV	**Skill Enhancement Course SEC 4** **Office Management**	**1**	**1**
	Skill Enhancement Course SEC 5 **Quantitative Aptitude**	**2**	**2**
	Environmental Studies (EVS)	**2**	**2**
TOTAL		**24**	**32**

Second Year – Semester – IV			
Part	**List of courses**	**Credits**	**No. of Hrs**
PART I	**Language** – Tamil IV	3	6
PART II	English IV	3	6
PART III	**Core Course 7** –Programming in Java	5	5
	Core Course 8 – Programming in Java Lab	5	5
	Elective Course 4(Generic / Discipline Specific) **(Choose any one from the following list)** A. Statistical Methods and Its Applications II B. Cost Accounting II	3	6
Part IV	**Skill Enhancement Course SEC 6** Basics of Event Management	2	2
	Skill Enhancement Course SEC 7 Organizational Behaviour	2	2
TOTAL		**23**	**32**

Third Year – Semester – V			
Part	**List of courses**	**Credits**	**No. of Hrs**
Part III	**Core Course 9** – Principles of Management	4	5
	Core Course 10 – Python Programming	4	5
	Core Course 11 –Python Programming Lab	4	5
	Core Course 12 / Project with Viva Voce – Project – Individual	4	5
	Elective Course 5 (Generic / Discipline Specific) A. **Operating System** B. **Software Engineering**	3	4
	Elective Course 6 (Generic / Discipline Specific) **A. Business Ethics** **B. Business Law**	3	4
Part IV	**Value Education**	2	2
	Summer Internship/ Industrial Training Summer Vacation at the end of IV Semester activity	2	-
TOTAL		**26**	**30**

Third Year – Semester – VI			
Part	**List of Courses**	**Credits**	**No. of Hrs**
Part III	**Core Course 14 Mobile Application Development**	4	6
	Core Course 15 Mobile Application Development Lab	4	6
	Core Course 15 Tally Lab	4	6
	Elective Course 7 (Generic / Discipline Specific) **A. Big Data Analytics** **B. Internet of Things and its applications**	3	5
	Elective Course 8(Generic / Discipline Specific) **A. Enterprise Resource planning** **B. Human Resource Management**	3	5
Part IV	**Professional Competency Skill Enhancement Course** **Advanced Excel**	2	2
	Extension Activity	1	
TOTAL		**21**	**30**

SECOND YEAR – SEMESTER – III

CORE 5: RELATIONAL DATABASE MANAGEMENT SYSTEM

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC5	5	0	0	III	5	5	25	75	100

Learning Objectives	
LO1	To understand the basic DBMS models and architecture
LO2	To learn how to query and normalize the database.
LO3	To study the data base design, transaction Processing and Management and Security Issues.

Unit	Contents	No. of Hours
I	Introduction to Databases: Introduction – Characteristics of the Database Approach – Actors on the Scene – Workers behind the scene – Advantages of using DBMS Approach. Overview of database and Architectures: Data Models, Schemas, and Instances – Three-schema Architecture and Data Independence – Database languages & Interfaces – Database System Environment– Centralized & Client Server Architecture for DBMS - Classification of DBMS.	15
II	Basic Relational Model: Relational Model Concepts – Relational Model Constraints and Relational Database Schemas – Update Operations, Tractions, Dealing with Constraint Violations – Formal Relational Languages: Unary Relational Operations: SELECT and PROJECT – Relational Algebra Operations from Set Theory – Binary Relational Operations: JOIN and DIVISION – Examples of Queries in Relational Algebra.	15
III	Conceptual Data Modeling using the ER Model: Using High-Level Conceptual Data Models for Database Design – An example DB application – Entity Types, Entity Sets, Attributes, and Keys – Relationship Types, Relationship sets, Roles, and Structural Constraints – Weak entity types – Example- Mapping a Conceptual Design into Logical Design: Relational Database Design using ER- Relational Mapping – Mapping EER Model Constructs to Relations	15
IV	Functional Dependencies and Normalization for Relational Database: Functional Dependencies – Definition of Functional Dependency – Normal Forms based on Primary Keys – Normalization of Relations – First Normal Form – Second Normal Form – Third Normal Form – BCNF- Fourth Normal Form- Fifth Normal Form.	15

V	SQL: The Relational Database Standard: Data definition, Constraints, and schema changes in SQL – Basic Queries in SQL – More complex SQL Queries – Insert, delete and update statements in SQL – Views in SQL. PL/SQL: Introduction to PL/SQL – More on PL/SQL – Error Handling in PL/SQL – Oracle's Named Exception Handlers – Stored Procedures and Functions – Execution of Procedures and Functions – Advantages – Procedures Vs. Functions – Syntax for Creating Procedures and Functions – Deleting a Stored Procedure or Function – Oracle Packages – Database Triggers – Types Of Triggers – Deleting a Trigger – Raise-Application Error Procedure	**15**
TOTAL		**75**

CO	**Course Outcomes**
CO1	Outline the fundamental RDBMS concepts and PL/SQL
CO2	Apply database operations, mapping, normalization, SQL and
CO3	Analyze the requirements to implement relational database PL/SQL concepts
CO4	Evaluate the database based on various models and normalization.
CO5	Design and construct normalized tables and manipulate it effectively using SQL and PL/SQL database objects.

Textbooks

➢	RamezElmasri, Shamkant B. Navathe (2014), ―Database Systems‖, Sixth edition, Pearson Education, New Delhi.
➢	Ivan Bayross (2003 Reprint), SQL, PL/SQL-The Programming Language of Oracle, Second Revised Edition, BPB Publications, New Delhi.

Reference Books

1.	Abraham Silberschatz, Henry F.Korth, S.Sudarshan, Database System Concepts, Tata McGraw Hill Publication, 4th Edition.

NOTE: Latest Edition of Textbooks May be Used

Web Resources

1.	http://srikanthtechnologies.com/books/orabook/ch1.pdf
2.	Http://www.tmv.edu.in/pdf/Distance_education/BCA%20Books/BCA%20IV%20SEM/BCA-428%20Oracle.pdf
3.	http://www.tutorialspoint.com/sql/sql-rdbms-concepts.htm

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	2	2	3	3	3
CO2	3	3	2	3	3	3
CO3	3	3	3	3	3	2
CO4	3	3	2	3	3	3
CO5	3	3	2	3	3	2
Weightage of course contributed to each PSO	15	14	11	15	15	13

SECOND YEAR – SEMESTER – III

CORE COURSE 6: RDBMS LAB

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC6	0	0	5	III	5	5	25	75	100

Learning Objectives

LO1	Understand the basics of SQL and how to write simple queries to retrieve and manipulate data in a database.
LO2	Learn how to use more advanced SQL features, such as joins, subqueries, and aggregate functions, to perform complex data operations.
LO3	Learn how to write PL/SQL code to automate tasks and implement business logic within a database.
LO4	Develop proficiency in using SQL Developer and other tools to develop and test SQL and PL/SQL code.
LO5	Understand best practices for database security

List of Exercises

Demonstrate the following commands

SQL:

1. DDL Commands

2. DML Commands

3. DCL Commands

4. SQL Built-in functions

5. Using Sub Queries

PL/SQL:

6. Simple programs using PL/SQL

7. Procedures

8. User-defined functions

9. Exception Handling

10. Triggers

TOTAL	**75**

CO	Course Outcomes
CO1	Choose appropriate SQL queries and PL/SQL blocks for the database.
CO2	Implement SQL and PL/SQL blocks for the given problem effectively.
CO3	Analyze the problem and Exceptions using queries and PL/SQL blocks.
CO4	Validate the database for normalization using SQL and PL/SQL blocks.
CO5	DesignDatabasetables,createProcedures,user-definedfunctionsandTriggers.

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**2**	**2**	**2**	**3**	**3**	**2**
CO2	**3**	**3**	**2**	**3**	**2**	**3**
CO3	**2**	**3**	**3**	**3**	**2**	**3**
CO4	**2**	**3**	**2**	**3**	**3**	**3**
CO5	**2**	**2**	**2**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**11**	**13**	**11**	**15**	**13**	**13**

SECOND YEAR – SEMESTER – III

ELECTIVE COURSE 3 A - STATISTICAL METHODS AND ITS APPLICATIONS I

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC3	4	0	0	III	3	4	25	75	100

COURSE OBJECTIVES:

To develop the students 'ability to deal with numerical and quantitative issues in business.
To enable the use of statistical techniques wherever relevant.

UNIT-I: INTRODUCTION 12Hrs

Statistics – Definitions – Functions of Statistics – Scope and Limitations of Statistics –Collection of Data – Primary and Secondary Data - Methods of Collecting Primary Data- Differences between Primary Data and Secondary Data – Sources of Secondary Data.

UNIT-II: 12Hrs

Classification – Objectives of Classification – Characteristics of a Good Classification- Types of Classification- Tabulation –Objectives of Tabulation – Components of a Good Table–Rules regarding the construction of a Table - Difference Between Classification and Tabulation.

UNIT-III: MEASURESOFCENTRALTENDENCY 12Hrs

Properties of a Good Average – Measures of Central Tendency or Averages – Arithmetic Mean (AM) – Meaning – Computation of AM– Median – Meaning – Computation of Median – Mode - Meaning- Computation of Mode - Geometric Mean - Harmonic Mean - Merits and Demerits of various Measures of Central Tendency.

UNIT-IV:MEASUREOF DISPERSION 12Hrs

Properties of a Good Measure of Variation – Absolute and Relative Measure of Dispersion – Method of Studying Variation – Range – Quartile Deviation – Mean Deviation – Standard Deviation – Merits and Limitations of Measures of Dispersion.

UNIT-V:MEASUREOFSKEWNESS

12Hrs

Karl Pearson's Coefficient - Meaning and Methods of Karl Pearson's Coefficient of Skewness- Bowley's Coefficient of Skewness- Meaning and Methods of Bowley's Coefficient.

DISTRIBUTION OF MARKS: THEORY–20%,PROBLEMS–80%

TEXTBOOKS:

S.no	Author	Titleofthebook	Publications	Year of Publication
1	P.A.Navnithan	BusinessStatisticsand Operations Research	JaiPublishers	2009
2	S.P.Rajagopalan	BusinessStatisticsand Operations Research	TataMcGrawHill	2009
3	K.Alagar	BusinessStatistics	TataMcGrawHill	2010
4	P.N.AroraAmit AroraS. Arora	BusinessStatistics	S.Chand Publications	2008

REFERENCEBOOKS:

S.No	Author	Titleof thebook	Publications	Year of publication
1.	SharpeDeVeauxVell eman	BusinessStatistics	PearsonPublication	2014
2.	RobertA.Donnelly	BusinessStatistics	Pearson Publications	2014
3.	Jaggia/ Kelly	BusinessStatistics communicating with numbers	MCGrawHill Education	2015
4.	BowermanO'connellMurp hree	BusinessStatistics in Practice	MCGrawHill Education	2016
5.	LevineSzabat Stephan	BusinessStatistics	Pearson	2015
6.	DavidF.Groebner PatrickW.Shannon Phillip C. Fry	BusinessStatistics	Pearson	2017

COURSE OUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	Co Statement	Knowledge Level (K1-K4)
CO1	To understand the concepts of statistics	**K2**
CO2	To provide practical exposure on calculation of Measure of Central tendency	**K3**
CO3	To provide exposure to the concept of variability and measure the spread or dispersion, understand it, and identify its causes to provide a basis for action.	**K4**
CO4	To understand and examine the data distribution through measures of skewness.	**K3**

Knowledge Level: K1-Remember; K2–Understand; K3-Apply; K4–Analyze

MAPPINGWITHPROGRAMMEOUTCOMES:

Cos	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	S	S	M
CO2	M	S	S	S	M	S
CO3	S	M	M	M	M	M
CO4	M	S	S	S	S	M

S-Strong M-Medium L-Low

SECOND YEAR – SEMESTER – III

ELECTIVE COURSE 3 B – COST ACCOUNTING I

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC3	4	0	0	III	3	4	25	75	100

COURSEOBJECTIVES:

Themainobjectiveofthiscourseistodevelopconceptualunderstandingofthe fundamentals of cost accounting system.

To make the students prepare the cost related accounts to the prescribed standards.

ToenablethestudentstotakeuphigherstudieslikeCA,ICWAandACSwitheaseand confidence.

UNIT-I: INTRODUCTION 12 HOURS

Definition of Cost, Costing, and Cost Accounting - Nature and Scope of Cost Accounting – Objectives and Functions – Fundamental Principles of Cost Accounting - Advantages and Limitations –Difference between Financial Accounting and Cost Accounting – Installation of Costing System -Essentials of a Good Cost Accounting System –Classification of Costs - Methods and Techniques Costing -Cost Unit- Cost Centre- Elements of Cost- Cost Sheet and Tenders.

UNIT-II:MATERIALS 12 HOURS

Material Control – Objectives of Material Control – Advantages of Material Control-Purchase of Material -Purchase Procedure – Storing of Material - Stores Control – Duties and Responsibilities of Storekeeper - Classification and Codification of Materials – Determination Material/Stock Levels – EOQ-Maximum, Minimum, Re-order, Average and Danger level-Pricing of Material Issues - FIFO, LIFO, HIFO-Base Stock- Average Price Methods: Simple and Weighted Average Price Method-Standard Price method.

UNIT-III:LABOUR 12 HOURS

Labour cost -Control over Labour Cost - Labour Turnover-Causes, Methods of Measurement and Reduction of Labour Turnover- Calculation of Idle and Over Time-Methods of Wage Payment and Incentive Schemes-Time and Piece Rate- Taylor's, Merricks and Gantt's Task- Premium Bonus System- Halsey, Rowan and Emerson's Plans- Calculation of Earnings of Workers.

UNIT-IV:OVERHEADS 12 HOURS

Overheads- Classification of Overheads – Allocation and Apportionment of Overhead Costs –Basis of Apportionment of Overheads - Primary and Secondary Distribution of Overheads –Direct Re-distribution Method -Step Ladder Method – Repeated DistributionMethod-SimultaneousEquationMethod-TrialandErrorMethod-ComputationofMachineHour Rate and LabourHourRate.

UNIT-V:OPERATIONCOSTING 12 HOURS

Operating Costing- Meaning and Definition- Operating Costing in some Service Industries- Transport Costing - Costing for Cinema Theatres- Costing for Lodging Houses- Costing Procedure.

DISTRIBUTIONOFMARKS: 80%PROBLEMS AND 20%THEORY

TEXTBOOKS:

S.No	Author	Title of the book	Publisher	Year of Publications
1	T.S.Reddy&Hari Prasad Reddy	Cost Accounting	Margham Publication, Chennai	2019
2	Sangeetkedia	CostandManagement accounting	Pooja law Publishingco.	2019
3	TulsianP.C.and Tulsian Bharat	CostAccountingfor CA	S.Chand	2019
4	ShuklaM.C.and Grewal T.S	Cost Accounting	S.Chand	2019
5	Dr.S.N.Maheswarian d Dr.S.N.Mittal	Cost Accounting	Mahavir publication	2019

REFERENCEBOOKS:

S.No	Author	Title of the book	Publisher	Year of Publications
1.	S.P.Jain &Narang	Cost Accounting	Kalyani Publishers, NewDelhi	2019
2.	S.N.Maheshwari	Principle of Cost Accounting	S.Chand& Sons,New Delhi.	2019
3.	TulsianP.CandTulsianBharat	Cost Accounting	TataMcGraw Hill	2019
4.	Dr.A.Murthy&Dr.S.Gurusamy	Cost Accounting	Vijay Nicole ImprintsPvt.ltd.	2019
5.	Jawaharlal,Seemasrivastav& Manish singh	Cost Accounting	Mc.GrawHill	2019
6.	KalpeshAshar	Cost Accounting and Management	Vibrant Publishers	2019
7.	Bhabatushbanerjee	Cost Accounting Theory and Practice	Eastern Economy Edition	2018
8.	Prof.M.L. Agarwal andDr. K.L. Gupta	Cost accounting	SathiyaBhawan Publications	2018
9.	S.P.Gupta, Ajay Sharma,Dr.SahadevSwaim	Cost and Management Accounting	VK publishers	2019

10.	J.K.Mithra	Cost and Management Accounting I	OxfordHigher Education	2019

COURSEOUTCOMES:

On the successful completion of the course, the students will be able,

CO Number	CO Statement	Knowledge Level(K1–K5)
CO1	To understand the basic concepts and practical application of cost accounting and prepare cost sheet	**K2**
CO2	To acquire complete knowledge on the concept of materials, store keeper, inventory control and to prepare accounts for material issues under various prices as per the accounting standards.	**K2**
CO3	To gain knowledge for calculating the labour remuneration and incentives under various methods.	**K3**
CO4	To get expertise in allocation, absorption and apportionment of overhead costs.	**K2**
CO5	To have comprehension knowledge in the preparation of transport costing and operation cost sheet as per the standards.	**K2**

MAPPINGWITHPROGRAMME OUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	M	S
CO2	S	S	M	M	S	M
CO3	M	S	M	M	S	M
CO4	S	M	M	S	M	S
CO5	M	S	S	M	M	M

S-Strong;M-Medium;L-Low

SECOND YEAR – SEMESTER – III

SKILL ENHANCEMENT COURSE 4 – OFFICE MANAGEMENT

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
SEC 4	1	0	0	III	1	1	25	75	100

Course Objectives:

1. To understand the concepts and basic functions of Office.
2. To know the responsibilities and skills required of an office manager.
3. To develop the knowledge of Location, Layout and the Environment of an Office.
4. To learn about various types of office furniture and it suses.
5. To attain the skill of records management.

UNIT– I **3 Hours**

Office - Meaning and scope - Office Functions -Qualifications of Office Manager - Office Management - Definition - Elements of Office Management - Functions of Office Management.

UNIT– II **3 Hours**

Location of an Office-Office Accommodation-Office Layout-Office Environment.

UNIT– III **3 Hours**

Office Furniture - Factors considered in selecting office furniture - Types of office furniture - Office Appliances and Equipment - Importance - Merits and Demerits - Typewriter - Duplicators - Photo Copier - Franking Machine - Communication Equipment : Dictaphone - Intercom - Telephone - Telex - Fax - PABX - PBX - Uses of Computers in Office .

UNIT– IV **3 Hours**

Mail service - Handling Inward Mail Service - Handling Outward Mail Service - Communications - Internal and external communication - Mechanical Devices for Oral Communication - Mechanical Devices for written Communication - Office Forms - Principles of Forms Design - Form Control - Continuous Stationery.

UNIT– V **3 Hours**

Records Management - Objectives - Filing - Definition - Essentials of a good filing system - Centralized and Decentralized Filing System - Methods of Filing - Classification of Files - Indexing - Definition - Types.

Text Books

1. N.S, Raghunathan -OfficeManagement - Margham Publications, Chennai

2. C.B.Gupta- OfficeOrganisation andManagement, SultanChand & Sons.
3. V.Balachandran and V.Chandrasekaran - Office Management - Vijay Nicole ImprintsPrivate Limited,Chennai.
4. P.K.Ghosh-OfficeManagement -SultanChand& Sons.
5. PillaiR.S.N,Bhagwathi.V-OfficeManagement,S.ChandPublications

ReferenceBooks

1. DenyerJC-OfficeManagement,Macdonald&Evans.
2. LittlefieldCLand Peterson RL- ModernOffice Management,ADrienMaisonneuve.
3. Leffingowell&Robinson–TextBookofOfficeManagement,McGrawHill.
4. ChopraR.K -OfficeManagement,HimalayaPublishingHouse.
5. AroraS.P–OfficeOrganisation andManagement-VikasPublishingHouse.
6. Dr.T.S.Devanarayan,N.S.Raghunathan-Office Management
7. R.C.Agarwal,Dr.PiyushShalya,OfficeManagement SBPD.
8. Thatheya.M- OfficeManagement,CharulathaPublications.

E- Materials

- https://www.kopykitab.com/Office-Management-by-Bagavathi-And-R-S-N-Pillai
- https://www.researchgate.net/publication/323731787_Office_Management
- alison.com › tag› office-administration
- study.com›office_manager_courses
- snacknation.com›blog›office-manager-training

CourseOutcome

1. After the study of Unit1, the student understands the concepts and basic functions of an office and responsibilities and skills required by the office manager.
2. AfterthestudyofUnit2,the student attains the knowledge of Location, Layout and the environment of an Office.
3. After the study of Unit3, the student gains knowledge of various types of office furniture and its uses.
4. After the study of Unit4the student can handle mail services.
5. After the study of Unit5,the student learns the skill of records management.

Mappingwith Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	**M**	**M**	M	**S**	**S**	**S**	**S**	**S**	S
CO2	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	S
CO3	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**M**	S
CO4	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**M**	S
CO5	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**M**	S

PO–Programme Outcome,
CO– Course outcome S –
Strong , M – Medium, L –
Low

SECOND YEAR – SEMESTER – III

SKILL ENHANCEMENT COURSE 5 – QUANTITATIVE APTITUDE

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
SEC 5	2	0	0	III	2	2	25	75	100

Course Objective	
C1	To understand the basic concepts of numbers
C2	Understand and apply the concept of percentage, profit & loss
C3	To study the basic concepts of time and work, interests
C4	To learn the concepts of permutation, probability, discounts
C5	To study about the concepts of data representation, graphs

UNIT	Details	No. of Hours	Course Objective
I	Numbers-HCF and LCM of numbers-Decimal fractions-Simplification-Square root and cube roots - Average-problems on Numbers.	6	CO1
II	Problems on Ages - Surds and Indices - percentage - profits and loss - ratio and proportion-partnership-Chain rule.	6	CO2
III	Time and work - pipes and cisterns - Time and Distance - problems on trains -Boats and streams - simple interest - compound interest - Logarithms - Area-Volume and surface area - races and Games of skill.	6	CO3
IV	Permutation and combination-probability-True Discount-Bankers Discount – Height and Distances-Odd man out& Series.	6	CO4
V	Calendar - Clocks - stocks and shares - Data representation - Tabulation – Bar Graphs-Pie charts-Line graphs.	6	CO5
	Total	**30**	

Course Outcomes		Programme Outcome
CO	On completion of this course, students will	
1	understand the concepts, application and the problems of numbers	PO1
2	To have basic knowledge and understanding about percentage, profit & loss related processings	PO1, PO2

3	To understand the concepts of time and work	PO4, PO6
4	Speaks about the concepts of probability, discount	PO4, PO5, PO6
5	Understanding the concept of problem solving involved in stocks	PO3, PO8
Text Book		
1	"QuantitativeAptitude",R.S.AGGARWAL.,S.Chand&CompanyLtd.,	
Web Resources		
1.	https://www.javatpoint.com/aptitude/quantitative	
2.	https://www.toppr.com/guides/quantitative-aptitude/	

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong M-Medium L-Low

SECOND YEAR – SEMESTER – IV

CORE COURSE 7: PROGRAMMING IN JAVA

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC7	5	0	0	IV	5	5	25	75	100

Learning Objectives	
LO1	To provide knowledge on fundamentals of object-oriented programming
LO2	To have the ability to use the SDK environment to create, debug and run servlet programs

Unit	Contents	No. of Hours
I	FundamentalsofObject-OrientedProgramming:Introduction–ObjectOrientedParadigm–ConceptsofObject–OrientedProgramming–BenefitsofOOP–Evolution:JavaHistory-JavaFeatures-DiffersfromCandC++-OverviewofJavaLanguage:JavaProgram-Structure–Tokens–JavaStatements–JavaVirtualMachine–CommandLineArguments	15
II	Constants,VariablesandDataTypes–OperatorsandExpressions–Decisionmaking andBranching–Looping– Arrays - Strings – Collection Interfaces and classes	15
III	Classes objects and methods: Introduction – Defining a class – Method Declaration –Constructors - Method Overloading – Static Members – Nesting of methods – Inheritance –Overriding– Final variables and methods– Abstract methods and classes	15
IV	MultipleInheritance:DefiningInterfaces–ExtendingInterfaces–ImplementingInterfaces – Packages: Creating Packages – Accessing Packages – Using a Package – Managing Errors and Exceptions-Multithreaded Programming	15
V	Layout Managers -JDBC – Java Servlet: - Servlet Environment Role – Servlet API –Servlet Life Cycle –Servlet Context–HTTP Support–HTML to Servlet Communication	15
	TOTAL	75

CO	Course Outcomes
CO1	Outline the basic terminologies of OOP, programming language techniques, JDBC and Internet programming concepts
CO2	Solve problems using basic constructs, mechanisms, techniques and technologies

	of Java
CO3	Analyseandexplainthebehaviorofsimpleprogramsinvolvingdifferenttechniquessuch asInheritance,Packages,Interfaces,ExceptionHandlingandThreadandtechnologiessu chasJDBCandServlets
CO4	Assess various problem-solving strategies involved in Java to develop a high-level application.
CO5	DesignGUIbasedJDBCapplicationsandabletodevelopServletsusingsuitableOOP concepts and techniques
Textbooks	
➢	E. Balagurusamy, ―"Programming with Java", TataMc-Graw Hill, 5th Edition.
➢	C Xavier,"JavaProgramming – A Practical Approach", Tata McGrawHill Edition Private Ltd
Reference Books	
1.	Herbert Schildt, ―"The complete reference Java", TataMc-Graw Hill, 7th Edition.
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
1.	NPTEL & MOOC courses titled Java https://nptel.ac.in/courses/106105191/
2.	https://www.geeksforgeeks.org/
3.	https://www.tutorialspoint.com/java/

CO/PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**2**	**2**	**2**	**2**
CO2	**2**	**3**	**2**	**2**	**2**	**2**
CO3	**2**	**3**	**3**	**3**	**2**	**2**
CO4	**2**	**3**	**2**	**2**	**2**	**2**
CO5	**3**	**3**	**2**	**2**	**2**	**2**
Weightage ofcoursecontributedtoeach PSO	**12**	**14**	**11**	**11**	**10**	**10**

SECOND YEAR – SEMESTER – IV

CORE 8:JAVA PROGRAMMING--LAB

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC8	0	0	5	IV	5	5	25	75	100

Learning Objectives	
LO1	Develop Java programs that use variables, conditional statements, loops, arrays, and functions to solve problems.
LO2	Use object-oriented programming (OOP) concepts, such as classes, objects, inheritance, and polymorphism, to develop Java programs.
LO3	Write Java code that interacts with databases to perform database operations, such as inserting, updating, and retrieving data.

List of Exercises

1. Basic Programs
2. Arrays and Strings
3. Classes and Objects
4. Interfaces
5. Inheritance
6. Packages
7. Exception Handling
8. Threads
9. Working with Database using JDBC
10. Web application using Servlet

TOTAL	75

CO	Course Outcomes
CO1	Identify and explain the way of solving the simple problems
CO2	Use appropriate software development environment to write, compile and run Object-oriented Java programs
CO3	Analyze the application development requirements and identify the necessary building blocks And mechanisms of Java needed to build the application
CO4	Test for defects and validate a Java program with different inputs
CO5	Design, develop and compile Core Java, GUI Applications that utilize OOPs concepts

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CO1	3	1	2	1	1	2
CO2	2	2	2	2	2	2
CO3	2	2	2	2	2	2
CO4	3	2	2	3	2	2
CO5	3	3	2	3	3	2
Weightage of course contributed to each PSO	13	10	10	11	10	10

SECOND YEAR – SEMESTER – IV

ELECTIVE COURSE 4 A - STATISTICAL METHODS AND ITS APPLICATIONS II

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC4	3	0	0	IV	3	3	25	75	100

COURSE OBJECTIVES:

To develop advanced statistical applications.
To gain knowledge of the data and its relevance in business applications.

UNIT-1:CORRELATION 9 Hrs

Correlation – Definition – Types of Correlation – Properties of Correlation Coefficient - Methods of Studying Correlation – Uses of Correlation - Karl Pearson's Coefficient of Correlation – Spearman's Rank Correlation Coefficient.

UNIT-II:REGRESSION
9 Hrs

Regression Equations- Definition – Regression Lines and Equations – Properties of Regression Coefficients – Uses of Regression – Differences between Correlation and Regression - Computation Regression Coefficients.

UNIT-III:INDEX NUMBER 9Hrs

Index Number – Definition – Characteristics of Index Numbers – Uses of Index Numbers – Types of Index Numbers – Price Index – Quantity Index – Value Index – Problems in the Construction of Index Numbers – Methods of Constructing Index Numbers – Unweighted Index Numbers – Simple Average of Price Relative Method – Weighted Index Numbers –Test of Adequacy of Index Number Formulae Unit Test – Time Reversal Test – Factor Reversal Test.

UNIT-IV:TIME SERIES 9Hrs

Time series – Definition – Utility of Time Series Analysis – Components – Measurement of Trend - Semi Average- Moving Averages- Method of Least Squares –Measurement of Seasonal Variations - Simple Average Method.

UNIT-V:INTERPOLATION 9Hrs

Interpolation–Definition–Newton(Forwardonly)–Lagrange's–Binominal Expansion.

DISTRIBUTIONOFMARKS:PROBLEMS–80%;THEORY–20%

TEXT BOOKS:

S.No	Author	TitleofThe Book	Publications	YearofPublication
1	R.S.N. Pillai andBagavathi	Business Statistics	S.Chand	2008
2	P.R.Vittal	Business Statisticsand Operations Research	MarghamPublication	2012

REFERENCEBOOKS:

S.No	Author	TitleofTheBook	Publications	Year Of Publication
1	P.A.Navnithan	BusinessStatisticsand Operations Research	JaiPublishers	2009
2	S.P.Rajagopalan	BusinessStatisticsand Operations Research	TataMcGrawHill	2009
3	K.Alagar	BusinessStatistics	TataMcGrawHill	2010
4	P.N. AroraAmit Arora S.Arora	BusinessStatistics	S.Chand	2008

COURSEOUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	Co Statement	Knowledge Level (K1-K4)
CO1	To identify the relationship and association between variables In the data set through correlation and regression analysis to formulate the strategy in business.	**K2**

CO2	To interpret and use a range of index numbers commonly Used in the business sector.	**K3**
CO3	To understand and apply the concept to the analysis of time Series data in various contexts.	**K2**
CO4	To understand the importance of Interpolation and curve Fitting and its application to solve problems.	**K2**

Knowledge Level: K1-Remember; K2–Understand; K3Apply;K4–Analyze

MAPPINGWITHPROGRAMME OUTCOMES:

Cos	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	S	M	M	S	S	M
CO2	M	S	S	S	M	S
CO3	S	S	S	M	M	S
CO4	M	S	S	S	S	M

S-Strong M-Medium L-Low

SECOND YEAR – SEMESTER – IV

ELECTIVE COURSE 4B – COST ACCOUNTING II

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC4	3	0	0	IV	3	3	25	75	100

COURSEOBJECTIVES:

- The main objective of this course is to develop conceptual understanding of the fundamentals of cost accounting system.
- To make the students prepare the cost related accounts to the prescribed standards.
- To enable the students to take up higher studies like CA, ICWA and ACS with ease and confidence.

UNIT-I: CONTRACTCOSTING 9 HOURS

Definition – Features-Types of Contracts-Fully Completed Contracts- Incomplete Contracts –Differences between Contract Costing and Job Costing - Recording of Costs of Contracts-WorkCertifiedandUncertified-PreparationofContractAccount-CostPlusContract-EscalationClause**.**

UNIT-II:PROCESSCOSTING 9 HOURS

FeaturesofProcessCosting-DistinctionbetweenJobCostingandProcessCosting-Costing Procedure under Process Accounts - Normal Loss, Abnormal Loss and Abnormal GainTreatments- Inter-process Profits – Equivalent Production - Joint Products and By Products.(SimpleProblems)

UNIT-III:MARGINAL COSTING-I 9 HOURS

DefinitionofMarginalCosting-CharacteristicsofMarginalCosting-AdvantagesandLimitations of Marginal Costing-Marginal Costing and Absorption Costing-Cost Volume ProfitAnalysis(CVP)-FixedCost-VariableCost–Profit-VolumeRatio(P/VRatio)-BreakEvenAnalysisand BreakEven Point-Margin ofSafety-Break-EvenCharts.

UNIT-IV:MARGINALCOSTING-II 9 HOURS

Application of Marginal Costing-Profit Planning – Pricing Decisions -Key Factor- Makeor Buy Decision- Selection of Suitable Product/Sales Mix- Effects of changes in Selling Price-Maintaining a Desired Level of Profit- Plant Merger Decision-Export Decision – DiscontinuanceofaProductLine.

UNIT-V:COSTAUDIT 9 HOURS

CostAudit–Meaning–Need-Objectives–Functions–Types-Advantages-Limitations-Cost Audit Procedure- Qualification of a Cost Auditor-Appointment and Removal ofaCostAuditor-Rights,Duties andLiabilities ofa CostAuditor.

DISTRIBUTIONOFMARKS:80%PROBLEMSAND20%THEORY

TEXTBOOKS:

S.No	Author	Title	Publisher	Year of Publications
1	T. S. Reddy &HariPrasadReddy	CostAccounting	Margham Publication, Chennai	2019
2	Sangeetkedia	Costandmanagement accounting	Poojalaw publishingco.	2019
3	TulsianP.C.and TulsianBharat	Costaccountingfor CA	S.Chand	2019
4	ShuklaM.C.and GrewalT.S	Costaccounting	S.Chand	2019
5	Dr.S.N.Maheswari andDr.S.N.Mittal	Costaccounting	Mahavir publication	2019

REFERENCEBOOKS:

S.No	Author	Title	Publisher	Year of Publications
1	Jawaharlal,Seemasrivastav& Manishsingh	CostAccounting	Mc.Graw Hill	2019
2	S.P.Jain&Narang	CostAccounting	KalyaniPublishers,NewDelhi	2019
3	S.N.Maheshwari	Principle of CostAccounting	S.Chand& Sons, NewDelhi.	2019
4	TulsianP.C	CostAccounting	TataMcGraw Hill	2019
5	Dr.A.Murthy&Dr.S.Gurusamy	CostAccounting	VijayNicole ImprintsPvt.ltd.	2019
6.	KalpeshAshar	Cost AccountingandManagement	Vibrant Publishers	2019

COURSEOUTCOMES:

Onthesuccessfulcompletionof thecourse studentswillbeable,

CO Number	COStatement	Knowledge Level(K1– K5)
CO1	To understand the Concepts and Accounting standards ofcontracts.	**K2**
CO2	To gain knowledge in the preparation of Process Accounts withNormalloss,AbnormallossandAbnormalgain.	**K2**
CO3	To study the practical application of Marginal Costing inbusiness.	**K3**
CO4	To study the practical application of Marginal Costing inbusiness.	**K2**
CO5	To update the student with the Cost Audit concepts andRequirements.	**K2**

MAPPINGWITHPROGRAMMEOUTCOMES:

COS	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	M	M	M	M	M
CO2	S	S	M	M	S	S
CO3	M	S	M	M	S	M
CO4	S	M	M	S	M	M
CO5	M	S	S	M	M	M

S-Strong;M-Medium;L-Low

SECOND YEAR – SEMESTER – IV

SKILL ENHANCEMENT COURSE 6 – BASICS OF EVENT MANAGEMENT

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
SEC 6	2	0	0	IV	2	2	25	75	100

Learning Objectives			
CLO1	To know the basic of event management its concepts		
CLO2	To make an event design		
CLO3	To make feasibility analysis for event.		
CLO4	To understand the 5 Ps of Event Marketing		
CLO5	To know the financial aspects of event management and its promotion		
UNIT	**Details**	**No. of Hours**	**Learning Objectives**
I	Introduction: Event Management–Definition, Need, Importance, Activities.	6	CLO1
II	Concept and Design of Events: Event Co-ordination, Developing &,Evaluating event concept–Event Design	6	CLO2
III	Event Feasibility: Resources – Feasibility, SWOT Analysis	6	CLO3
IV	Event Planning &Promotion–Marketing &Promotion –5PsofEventMarketing–Product,Price,Place,Promotion, Public Relations	6	CLO4
V	Event Budget–Financial Analysis–Event Cost–Event Sponsorship	6	CLO5
	Total	**30**	

Course Outcomes		
Course Outcomes	On completion of this course, students will;	**Program Outcomes**
CO1	To understand basics of event management	PO1, PO6
CO2	To design events	PO5, PO6
CO3	To study feasibility of organizing an event	PO2, PO6

CO4	To gain Familiarity with marketing & promotion of Event	PO6
CO5	To develop event budget	PO6, PO8
TEXT BOOKS		
1.	EventManagement:ABoomingIndustryandanEventfulCareerbyDevesh Kishore,GangaSagarSingh - Har-Anand Publications Pvt. Ltd.	
2.	EventManagementbySwarupK. Goyal- AdhyayanPublisher-2009	
3.	Event Management&PublicRelationsbySavitaMohan- EnkayPublishingHouse	
4	Event Planning-Theultimateguide-PublicRelationsbyS.J.Sebellin Ross	
5	EventManagementByLynnVanDerWagen&BrendaRCarlos,Pearson Publishers	
ReferencesBooks		
1.	EventManagementByChaudhary, Krishna,Bio-GreenPublishers	
2.	Successful Event Management ByAntonShone&Bryn Parry	
3.	Eventmanagement,an integrated&practicalapproach ByRazaqRaj, Paul Walters&Tahir Rashid	
4.	Event Planning Ethics and Etiquette: A Principled Approach to the Businessof Special Event ManagementbyJudyAllen , WileyPublishers	
5.	Event Planning: Management & Marketing For Successful Events:Management&MarketingforSuccessful Events:BecomeanEventPlanningPro & Create a Successful Event Series by Alex GenadinikCreateSpaceIndependentPublishing Platform, 2015	
WebResources		
1.	https://ebooks.lpude.in/management/bba/term_5/DMGT304_EVENT_MANAGEMENT.pdf	
2	https://www.inderscience.com/jhome.php?jcode=ijhem InternationalJournal ofHospitality&Event Management	
3	https://www.emeraldgrouppublishing.com/journal/ijefm InternationalJournalofEventandFestivalManagement	
4	https://www.eventbrite.com/blog//?s=roundup	
5	https://www.eventindustrynews.com/	

SECOND YEAR – SEMESTER – IV

SKILL ENHANCEMENT COURSE 7 – ORGANIZATIONAL BEHAVIOUR

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
SEC 7	2	0	0	IV	2	2	25	75	100

COURSEOBJECTIVES

1. To understand the significance of Organizational Behavior.
2. To learn the dynamics of groups in the organization.
3. To understand the importance of leadership and motivation in organizations
4. Toknowhoworganizationalculture,organizationalclimateandconflictsinflue ncethefunctioningof an organization
5. To know the importance of management of change in organizations.

UNIT– I **6Hours**

Organizational behavior - meaning - Nature - importance - Role - historical development oforganizationalbehavior-organizationasasocialsystem-socio-technicalsystem

UNIT– II 6Hours

Meaning of group and group dynamics - reasons for the formation of groups - characteristics of groups - theories of group dynamics - types of groups in organization

UNIT– III 6Hours

Leadership concept - characteristics - leadership theories - leadership styles - managerial grid -leadershipcontinuum-leadershipeffectiveness.Motivation-conceptandimportance-motivators-financialandNon-financial-theoriesofmotivation.Morale-Meaning-Characteristics- Determinants of Morale.

UNIT– IV 6Hours

Organizational culture - Definition - Determinants of Organizational culture - Characteristics -Types-Functions.OrganisationalClimate-Definition-DeterminantsofOrganisationalClimate-DistinctionbetweenOrganisationalCultureandOrganisationalClimate.

UNIT– V 6Hours

Management of change: meaning - importance - resistance to change - causes - dealing with resistance to change - concepts of social change and organizational causes - factors contributing to organizational change- organizational development –meaning and process.

TEXT BOOKS

1. Dr.C.D. Balaji-Organisational Behaviour - MarghamPublications, Chennai.
2. J.Jayasankar- OrganizationalBehavior, MarghamPubications,Chennai.
3. Aswathappa.K.-OrganizationalBehavior-HPH,Bombay.
4. K.SundarandJ.Srinivasan-ElementsofOrganisationalBehaviour-VijayNicoleImprintsPrivateLimited, Chennai.

REFERENCEBOOKS

1. Sekaran,Uma-OrganizationalBehavior-text&cases-TataMcGrawHillPubLtd.,NewDelhi,1989.
2. Robbins,P.Stephen-OrganizationalBehavior-Concepts,Controversies&Applications-PrenticeHall ofIndiaLtd., New Delhi, 1988.
3. LuthansFred -OrganizationalBehavior- McGrawHillPublishersCo. Ltd., NewDelhi.
4. Rao,VSPandNarayana,P.S.-OrganizationTheory&Behavior-KonarkPublishersPvt.Ltd.,Delhi, 1987.

COURSEOUTCOME

1. After the study of Unit-1, student will be able to know the importance of organizational behavior.
2. After the study of Unit-2, student will be able to know the dynamics of groups in organizations.
3. After the study of Unit-3, student will be able to understand the leadership concept.

4. After the study of Unit-4,student will be able to understand the significance of organizational culture in functioning an organization.
5. After the study of Unit-5,student will be able to learn concept of change and Its significancein organizations

MAPPINGWITH PROGRAMMEOUTCOMES

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	S	S	S	M	S	S	M	S	S	S
CO2	S	S	S	M	M	M	M	M	S	S
CO3	S	S	S	S	S	S	S	S	S	S
CO4	S	S	S	S	S	S	S	S	S	S
CO5	S	S	S	S	S	S	S	S	S	S

PO – Programme Outcome, CO – Course outcome S– Strong, M–

Medium,L–Low

THIRD YEAR – SEMESTER – V

Core Course 9: PRINCIPLES OF MANAGEMENT

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	Extern	Total
CC9	**5**	0	0	V	**4**	**5**	**25**	**75**	**100**

Learning Objectives	
LO1	To impart knowledge about evolution of management
LO2	To provide understanding on planning process and importance of decision
LO3	To learn the application of principles in organization
LO4	To study the effectiveness of Directing in organization
LO5	To study the process of effective controlling in organization and to

UNIT	Details	No. of Hours	Learning Objectives
I	Management: Importance – Definition – Nature and Scope of Management-Process–Role and Functions of a Manager – Levels of Management – DevelopmentofScientificManagementandotherSchools ofthoughtandapproaches.	15	LO1
II	Planning: Nature – Importance – Forms – Types – StepsinPlanning–Objectives–Policies– ProceduresandMethods–Natures and Types of Policies– Decision –making–Process of Decision – making– Types of Decision.	15	LO2
III	Organizing: Types of Organizations – OrganizationStructure– SpanofControlandCommittees–Departmentalization– InformalOrganization-Authority–Delegation– Decentralization– DifferencebetweenAuthorityandPower– Responsibility.	15	LO3
IV	Direction: Nature and Purpose. Co-ordination– Need, Type and Techniques and requisites for excellent Co-ordination.	15	LO4
V	Controlling: Meaning and Importance–Control Process – Control Techniques – Budgetary and non-budgetary. Definition of Business ethics - Types of Ethical issues-Role and importance of Business Ethics.	15	LO5
	Total	**75**	

COURSE OUTCOMES		
Course Outcomes	On completion of this course, students will;	**Program Outcomes**
CO1	Describe nature, scope, role, levels, functions and Approaches of management	PO5
CO2	Apply planning and decision making in management	PO2, PO5, PO6,PO8
CO3	Identify organization structure and various Organizing techniques	P01, PO4
CO4	Understand Directing and Co-ordination	PO2,PO6
CO5	Control mechanisms and infer ethical practices of organization.	PO3, PO8
Reading list		
1.	JAFStoner,FreemanR.EandDanielRGilbert"Management",6thEdition, PearsonEducation,2004.	
2.	Griffin,T.O.,Management,HoughtonMifflinCompany,Boston,USA,2014.	
3	.StephenA.Robbins&DavidA.Decenzo&MaryCoulter,"Fundamentalsof Management"7th Edition,Pearson Education,2011	
4	Stoner,Freeman,GilbertJr.(2014).Management(6thedition),NewDelhi: PrenticeHallIndia	
5	Robbins,S.,Coulter, M.,Sidani,D.,andJamali,D., Management:ArabWorld Edition,Pearson,2014.	
ReferenceBooks		
1.	P.C.Tripathi&P.NReddy;PrinciplesofManagement,SultanChand& Sons,6thEdition, 2017	
2.	L.M.Prasad;Principles &Practice ofManagement, SultanChand &Sons, 8 thEdition.	
3.	StephenP.Robbins &MaryCoulter;Management,Pearson Education, 13th Edition,2017	
4.	Dr.C.B.Gupta;PrinciplesofManagement,Sultan Chand&Sons,3 rd Edition.	
5.	Harold Koontz,HienzWeihrich,ARamachandraAryasri;Principlesof Management,McGraw Hill, 2nd edition, 2015	
Web Resources		
1	https://www.toolshero.com/management/14-principles-of-management/	
2	https://open.umn.edu/opentextbooks/textbooks/693	
3	https://open.umn.edu/opentextbooks/textbooks/34	
4	https://openstax.org/subjects/business	
5	https://blog.hubspot.com/marketing/management-principles	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25Marks
	Assignments	
	Seminar	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	75 Marks

	Total	100Marks
Methods of Assessment		
Recall(K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ,True/False,Shortessays,Conceptexplanations,Shortsummaryoroverview	
Application (K3)	Suggest idea/ concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate Between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create(K6)	Checkknowledgeinspecificoroffbeatsituations,Discussion,Debatingor Presentations	

MappingwithProgramOutcomes

	PO1	**PO2**	**PO 3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO 8**
CO 1	M	L	S	S	S	S	M	S
CO 2	M	S	S	S	M	M	L	S
CO 3	M	S	S	M	S	S	M	S
CO 4	S	M	S	S	S	S	L	S
CO 5	M	S	S	S	S	S	M	S

CO/PO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**
CO1	3	3	3	3	3
CO2	3	3	3	3	3
CO3	3	3	3	3	3
CO4	3	3	3	3	3
CO5	3	3	3	3	3
Weightage	15	15	15	15	15
Weighted percentage ofCourseContributiontoPos	3.0	3.0	3.0	3.0	3.0

S–Strong M-Medium L-Low

CORE 10 : PYTHON PROGRAMMING

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC10	5	0	0	V	4	5	25	75	100

Learning Objectives	
LO1	Understand the concepts of Python programming.
LO2	To apply the OOPs concept in PYTHON programming.
LO3	To impart knowledge on demand and supply concepts
LO4	Learn to solve basic programming problems.
LO5	Learn how to work with files and external libraries in Python.

Unit	Contents	No. of Hours
I	**Basics of Python Programming:** History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Indentation- Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.	15
II	**Control Statements:** Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop, else suite in loop and nested loops. **Jump Statements:** break, continue and pass statements**.**	15
III	**Functions:** Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments**: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments- Recursion. **Python Strings:** String operations- Immutable Strings - Built-in String Methods and Functions - String Comparison. **Modules**: import statement-The Python module – dir() function – Modules and Namespace – Defining our own modules.	15
IV	**Lists:** Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.	15
V	**Python File Handling:** Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – Splitting words – File methods - File Positions-Renaming and deleting files.	15

TOTAL		**75**

CO	**Course Outcomes**
CO1	Outline the basic concepts in python language.
CO2	Interpret different looping and conditional statements in python language
CO3	Apply the various data types and identify the usage of control statements, loops, functions and Modules in python for processing the data
CO4	Analyze and solve problems using basic constructs and techniques of python.
CO5	Assess the approaches used in the development of interactive application.

Textbooks

- ReemaThareja, "Python Programming using problem solving approach", First Edition, 2017, Oxford University Press.
- Dr. R. Nageswara Rao, "Core Python Programming", First Edition, 2017, Dream tech Publishers

Reference Books

1. VamsiKurama, "Python Programming: A Modern Approach", Pearson Education.
2. Mark Lutz, "Learning Python", Orielly.

NOTE: Latest Edition of Textbooks May be Used

Web Resources

1. https://www.programiz.com/python-programming
2. https://www.guru99.com/python-tutorials.html

MAPPING TABLE						
CO/PSO	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
CO1	**3**	**2**	**2**	**3**	**2**	**2**
CO2	**2**	**3**	**2**	**3**	**2**	**2**
CO3	**2**	**3**	**2**	**2**	**3**	**1**
CO4	**1**	**2**	**2**	**1**	**3**	**2**
CO5	**2**	**2**	**2**	**1**	**3**	**3**
Weightageof coursecontributedto each PSO	**10**	**12**	**10**	**10**	**13**	**10**

CORE 11: PYTHON PROGRAMMING-LAB

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC11	0	0	5	V	4	5	25	75	100

Learning Objectives

LO1	Understand the fundamentals of programming using Python, such as variables, data types, control structures, and functions.
LO2	Learn how to use Python libraries and modules to solve problems.
LO3	Practice writing Python code to solve real-world problems and build basic applications.
LO4	Gain experience with common programming paradigms, such as object-oriented programming and functional programming.
LO5	Understand best practices for debugging and testing code.

List of Exercises

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Jump Statements.
6. Program using Functions.
7. Program using Recursion.
8. Program using Arrays.
9. Program using Strings.
10. Program using Modules.
11. Program using Lists.
12. Program using Tuples.
13. Program using Dictionaries.
14. Program for File Handling.

TOTAL	**75**

CO	Course Outcomes
CO1	Understand the significance of control statements, loops and functions in creatingSimple programs.
CO2	Interpret the core data structures available in python to store, process and sort the data.
CO3	Develop the real time applications using python programming language.
CO4	Analyze the real time problem using suitable python concepts.

CO5	Assess the complex problems using appropriate concepts in python.

MAPPING TABLE						
CO/PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**3**	**2**	**3**	**3**
CO2	**3**	**3**	**2**	**2**	**3**	**3**
CO3	**3**	**2**	**2**	**3**	**3**	**2**
CO4	**3**	**2**	**3**	**3**	**2**	**2**
CO5	**3**	**3**	**3**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**15**	**12**	**13**	**13**	**14**	**12**

ELECTIVE COURSE 5 A: OPERATING SYSTEM

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC5	4	0	0	V	3	4	25	75	100

Learning Objectives	
LO1	The objective of this course is to provide an introduction to the internal operation of modern operating systems
LO2	To focus on the core concepts such as processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, and file systems.

Unit	Contents	No. of Hours
I	Introduction: Definition of Operating System - OS Structures: OS Services - System Calls - Virtual Machines - Process Management: Process Concept - Process Scheduling - Operation on Processes - Co-operating Processes - Inter-process Communication	10
II	CPU Scheduling: Basic Concepts - Scheduling Criteria - Scheduling Algorithms - Process Synchronization: The Critical Section Problem - Semaphores - Classical Problems of Synchronization - Critical Regions	12
III	Deadlocks: System Model - Deadlock characterization – Methods for Handling Deadlocks Deadlock Prevention - Deadlock avoidance- Deadlock Detection - Recovery from Deadlock.	12
IV	Storage management: Memory management - Swapping – Contiguous Memory allocation. Paging – Segmentation – Segmentation with Paging –Virtual memory: Demand paging - Page replacement – Thrashing. Mass-Storage Structure: Disk Structure- Disk scheduling.	13
V	File-System Interface: File Concept-File Attributes-File Operations – Access Methods: Sequential Access – Direct Access –Directory Structure: Single-Level Directory- Two –Level Directory-Tree-Structured Directories	13
	TOTAL	60

CO	Course Outcomes
CO1	Outline the fundamental concepts of an OS and their respective functionality
CO2	Illustrate the importance of open source operating system commands

CO3	Identify and stimulate management activities of operating system
CO4	Analyze the various services provided by the operating system.
CO5	Interpret different problems related to Process, Scheduling, Deadlock, memory and Files.
Textbooks	
➢	Abraham Silberschatz, Peter Baer Galvin, Greg Gagne (2012), ―Operating System Concepts, 9th edition, Wiley Student Edition.
Reference Books	
1.	William Stallings, "Operating Systems – Internals & Design Principles", 5th Edition, Prentice – Hall of India private Ltd, New Delhi, 2004.
2.	Sridhar Vaidyanathan, "Operating System", 1st Edition, Vijay Nicole Publications, 2014
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
1.	http://www.tutorialspoint.com/operating_system/
2.	http://www.freetechbooks.com/introduction-to-operating-systems-t340.html

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	**1**	**2**	**2**	**2**	**2**	**2**
CO2	**3**	**3**	**2**	**3**	**2**	**2**
CO3	**3**	**3**	**3**	**3**	**3**	**2**
CO4	**2**	**3**	**2**	**2**	**3**	**2**
CO5	**3**	**3**	**2**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**12**	**14**	**11**	**13**	**13**	**10**

ELECTIVE COURSE 5 B: SOFTWARE ENGINEERING

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC5	0	4	0	V	3	4	25	75	100

Learning Objectives	
LO1	To introduce the software development life cycles
LO2	To introduce concepts related to structured and objected oriented analysis & design
LO3	To provide an insight into cost estimation
LO4	Learn to write test cases using different testing techniques.
LO5	The students should be able to specify software requirements and design the software using tools

Unit	Contents	No. of Hours
I	Introduction to Software Engineering: Definition - The changing nature of software - Software Myths - Terminologies - Role of Management in Software Development - Software Life Cycle Models: The Waterfall Model - Increment Process Model - Evolutionary Process Model - The Unified Process.	10
II	Software Requirements Analysis and Specifications: Requirements Engineering - Type of Requirements - Feasibility Studies - Requirements Elicitation - Requirements Analysis - Requirements Documentation - Requirements Validation	13
III	Software Project Planning: Size Estimation - Cost Estimation - The Constructive Cost Model (COCOMO) - COCOMO II - The Putnam Resource Allocation Model - Software Risk Management - Software Design: Definition - Modularity - Strategy of Design - Function Oriented Design.	12
IV	Software Testing: A Strategic Approach to Software Testing - Terminologies - Functional Testing - Structural Testing - Levels of Testing - Validation Testing - Testing Tools.	13
V	Software Reliability: Basic Concepts - Software Quality - McCall Software Quality Model - Boehm Software Quality Model - Capability Maturity Model - Software Maintenance: Definition - Process - Models - Configuration Management -Documentation.	12
	TOTAL	60

CO	Course Outcomes
CO1	Define the basic terminologies involved in the entire software developmental life cycle
CO2	Identify suitable models, techniques and tools for the development of a software product

CO3	Apply software engineering perspective through requirements analysis, software design and construction, verification, and validation to develop solutions to modern problems
CO4	Compare and contrast different process, cost, quality models and testing techniques
CO5	Estimate the project cost using suitable cost estimation models, rate the software risks and evaluate management strategies for effective software development
Textbooks	
➢	K.K Agarwal, Yogesh Singh (2009), "Software Engineering", 3 rd Edition, New Age International Publishers.
Reference Books	
1.	Roger S. Pressman, "Software Engineering – A Practioners Approach", 5 th Edition, Tata Mc Graw Hill Publication.
2.	Thomas T. Baker, "Writing Software Documentation – A task oriented approach", Second Edition, Pearson Education, 2004.
3.	Pankaj Jalote (2005), "An Integrated Approach to Software Engineering", 3 rd Edition, Narosa Publication
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
1.	http://www/tutorialspoint.com/software_engineering

MAPPING TABLE						
CO/PSO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**1**	**1**	**1**	**2**
CO2	**3**	**1**	**3**	**1**	**1**	**2**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**3**	**2**	**3**	**3**	**2**
CO5	**3**	**2**	**2**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**15**	**11**	**10**	**11**	**11**	**10**

ELECTIVE COURSE 6 A: BUSINESS ETHICS

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC6	0	4	0	V	3	4	25	75	100

Learning Objectives	
LO1	To introduce the software development life cycles To provide basic knowledge of business ethics, values and its relevance in modern context.
LO2	To attain knowledge in various types of Ethics.
LO3	To learn the ethical practices to be followed in Human Resource and marketing activities.
LO4	To be socially responsible towards the stakeholders of business.
LO5	To develop the social skills required for the successful practice of management within the frame work of societal values.

Unit	Contents	No. of Hours
I	Role and importance of Business Ethics and Values in Business - Definition of Business Ethics Impact on Business Policy and Business Strategy - Role of CEO - Impact on the Business Culture.	10
II	Types of Ethical issues - Bribes - Coercion - Deception - Theft - Unfair Discrimination.	13
III	Ethics internal - Hiring - Employees - Promotions - Discipline - Wages - Job Description - Exploitation of employees	12
IV	Ethics External - Consumers - Fair Prices - False Claim Advertisements. Environment Protection - Natural - Physical - Society - Relationship of Values and Ethics - Indian Ethos - Impact on the performance.	13
V	Social Responsibilities of Business towards Shareholders, Employees, Customers, Dealers, Vendors, Government - Social Audit.	12
TOTAL		60

CO	Course Outcomes
CO1	After the study ofUnit1, the student understands the importance of Ethics and Values in Business.
CO2	After the study of Unit2,the student acquires the knowledge of various types of Ethics.
CO3	After the study of Unit3, the student learns the ethical practices to be followed in Human Resource and marketing activities.
CO4	After the study of Unit4, the students learn to be socially responsible towards the stakeholders of Business

CO5	After the study of Unit5, the students develop the social skills required for the successful practice of management within the framework of societal values.
Textbooks	
➢	1. 1.Dr.S. Shankaran , Business Ethics& Values, Margham Publications, Chennai. 2. 2.Memoria&Subba Rao, Business Panning and Policy, Himalaya Publishing House, Mumbai. 3. Bodi R and Bodi N. V , Business Ethics
Reference Books	
4.	Ronald D. Francis, Mukthi Mishra, Business Ethics- An Indian Perspective, Payal Books.
5.	P.S. Balaji, Business ethics, An Indian Perspective, Dreamtech Press.
6.	Anand Das Gupta, Business Ethics, Text and cases, Springer, Oxford University Press.
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
	• josephsononbusinessethics.com • www.globethics.net • www.ethicssage.com

MAPPING TABLE						
CO/PSO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**1**	**1**	**1**	**2**
CO2	**3**	**1**	**3**	**1**	**1**	**2**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**3**	**3**	**2**	**3**	**3**	**2**
CO5	**2**	**2**	**2**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**14**	**11**	**10**	**11**	**11**	**10**

ELECTIVE COURSE 6 B: BUSINESS LAW

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
EC6	0	4	0	V	3	4	25	75	100

Learning Objectives	
LO1	To demonstrate understanding and recognition of the requirements of the contract agreement, contract consideration and capacity and genuineness of assent in contract formation.
LO2	To identify the fundamental legal principles behind performance of contract.
LO3	To demonstrate an understanding of the legal knowledge to business transaction
LO4	To expose the students to legislations relating to sales
LO5	To understand commercial contracts transactions and payment methods.

Unit	Contents	No. of Hours
I	Formation and essential elements of contract - Types of contract and agreements - rules as to offer, acceptance and consideration - capacity to contract - lawful object and face consent.	10
II	Performance of contract - Discharge of contract - Breach of contract and remedies - Quasi contract.	13
III	Guarantee - features and distinctions - Bailment and pledge - features difference - Rights and duties of bailer and Bailee.	12
IV	Contract of agency - definition and meaning - Rights of Principal and agent - relation of Principal with third parties - personal liability of agent - termination of agency.	13
V	Sale of goods Act 1930 - definition - sale vs. agreement to sell - express and implied conditions and Caveat and exceptions - Rights of an unpaid seller.	12
TOTAL		60

CO	Course Outcomes
CO1	After the study of unit-1, the student will be able to understand the fundamental legal principles in developing various contracts.
CO2	After the study of unit-2, the student will be able to understand the commercial laws in the business world.
CO3	After the study of unit-3, the student will be able to identify the common forms of business associations and elements of Corporate Governance.
CO4	After the study of unit-4, the student will be able to understand the legality and statute of frauds in contracts.

CO5	After the study of unit-5, the student will be able to develop insights regarding the laws and transactions related to sales of goods.
Textbooks	
	1. Dr. J. Jayasankar - Business Law- Margham Publications 2. N.D. Kapoor- Business law- Sultan & Sons ➢ 3. Balachandran V and Thothadri S -Business Law - Vijay Nicole Imprints (P) Ltd 4. Dr.M.R.Sreenivasan-Business Law- MarghamPublications,Chennai 5. Sheth-Business Law- Pearson Education- New Delhi
Reference Books	
	1. KavithaKrishnamurthi-Business Law-Global Academic Publishers- New Delhi. 2. B.S.Moshal, Business and Industrial Law, Ane Books India New Delhi. 3. Daniel V. Davidson, Business Law- Principles and Cases in Legal Environment. 4. G.K. Varshney, Business Law, SahityaBhawan Publications. 5. M.C. Kuchhal, VivekKuchhal, Business Law, Vikas Publications
NOTE: Latest Edition of Textbooks May be Used	
Web Resources	
	• https://www.dphu.org/uploads/attachements/books/books_3498_0.pdf • http://www.himpub.com/documents/Chapter1479.pdf • https://www.mobt3ath.com/uplode/book/book-66683.pdf • https://www.freebookcentre.net/Law/Commercial-Law-Books.html • https://www.ebooks.com/en-us/subjects/business-business-law-ebooks/172/

MAPPING TABLE						
CO/PSO	**PSO1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**2**	**1**	**1**	**1**	**2**
CO2	**3**	**1**	**3**	**1**	**1**	**2**
CO3	**3**	**3**	**2**	**3**	**3**	**2**
CO4	**2**	**3**	**2**	**3**	**3**	**2**
CO5	**3**	**2**	**2**	**3**	**3**	**2**
Weightage of course contributed to each PSO	**14**	**11**	**10**	**11**	**11**	**10**

CC12: Project with Viva voce

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC12	**Project with Viva voce**	**CC**	4	-	-	V	4	25	75	100

Learning Objectives	
LO1	Advance from an intellectually curious student to a creator/maker and an industry professional
LO2	Apply verbal and written communication skills to explain technical problem solving techniques and solutions to an increasingly diverse and global audience
LO3	Collaborate within and across disciplinary boundaries to solve problems
LO4	Apply mathematical and/or statistical methods to facilitate problem solving.
LO5	Exercise computational thinking over the entire software life cycle

Project Work

SL	Area of Work	Maximum Marks
1.	**PROJECTWORK:** (i)Project Proposal and Plan	10
	(ii) Execution of the Project Proposal and Plan / Collection of data, Documentation and Presentation of the report.	40
2.	Viva Voce Examination	25
	TOTAL	**75**

*CIA Marks =25 marks (Project Review 1, Project Review2 and Project Review 3)

Course Outcomes		Programme Outcomes
CO	On successful completion of this course, students will be able to	
1	Show leadership skills and learn time management	PO1,PO2,PO3,PO4, PO5, PO6
2	Identify various tools to be applied to a specific problem	PO1,PO2,PO3,PO4, PO5, PO6
3	Evaluate the reports	PO1,PO2,PO3,PO4, PO5, PO6
4	Take part in a team as well as manage it to deliver stunning outcomes	PO1,PO2,PO3,PO4, PO5, PO6
5	Assess and develop the individual skills to present and Organize projects	PO1,PO2,PO3,PO4, PO5, PO6

Mapping with Programme Outcomes:

CO/ PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO1	3	3	3	3	3	2
CO2	3	3	3	2	2	3
CO3	2	2	1	3	3	3
CO4	3	3	3	3	3	2
CO5	3	3	3	3	3	1
Weightage of course contributed to each PSO	14	14	13	14	14	11

Internship / Industrial Training

	SubjectName	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
	Internship / Industrial Training	-	-	-	-	V	2	25	75	100

Learning Objectives	
LO1	Advance from an intellectually curious student to a creator/maker and an industry professional
LO2	Apply verbal and written communication skills to explain technical problem solving techniques and solutions to an increasingly diverse and global audience
LO3	Collaborate within and across disciplinary boundaries to solve problems
LO4	Apply mathematical and/or statistical methods to facilitate problem solving.
LO5	Exercise computational thinking over the entire software life cycle

Internship / Industrial Training:

The students to undergo 2 weeks of Internship / Industrial Training in the Industry

Sl.No	Area of Work	Maximum Marks
	a) Work Related performance – Work Attitude/ Academic preparation/ problem solving ability/ Adaptability / Overall Attendance / Progress towards learning goals	10
	b) Organizational skills – Time management skills / Planning skills/ communication skills	20
	c) Relationship with others – Willingness to cooperate with co-works/ Ability to work with supervisor / Acceptance of constructive comments / Ability to take direction	20
	Internship Report / Viva Voce Examination	25
	Total	75

*CIA Marks =25 marks (Internship Review 1, Review2 and Review 3)

Course Outcomes		Programme Outcomes
CO	On successful completion of this course , students will be able to	
1	Find their specific areas of interest , refine their skills and abilities	PO1,PO2,PO3,PO4,PO5, PO6
2	Show a greater sense of self-awareness and appreciation for others	PO1,PO2,PO3,PO4,PO5, PO6

3	Apply problem solving and critical thinking skills to solve real time problem	PO1,PO2,PO3,PO4,PO5, PO6
4	Design various solution approaches for addressing IT business needs.	PO1,PO2,PO3,PO4,PO5, PO6
5	Apply best practices of IT industries by working in the Product or service domain.	PO1,PO2,PO3,PO4,PO5, PO6

Mapping with Programme Outcomes:

MAPPING TABLE						
CO/ PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO1	**3**	**1**	**2**	**2**	**2**	**2**
CO2	**2**	**3**	**2**	**3**	**3**	**1**
CO3	**3**	**2**	**2**	**3**	**3**	**2**
CO4	**3**	**3**	**1**	**3**	**3**	**2**
CO5	**3**	**3**	**2**	**3**	**3**	**3**
Weightage of course contributed to each PSO	**14**	**12**	**9**	**14**	**14**	**10**

Strong-3 M-Medium-2 L-Low-1

Guidelinesforinternship

- Internship should be of 2to3 weeks duration.
- A student is expected to find internship by himself or herself. However, the institution should assist their students in getting internship in good organizations.
- **The home institution cannot be taken as the place of internship.**
- Internship can be on any topic covered in the syllabus mentioned in the syllabus, not restricted to the specialization.
- Internship can be done, in one of the following, but not restricted to, types of

organizations:

- Software development firms
- Hardware/ manufacturing firms
- Any small scale industries, service providers like banks
- Clinics /NGOs/professional institutions like that of CA, Advocate etc
- Civic Depts like Ward office/post office/police station/punchayat.

Guidelines for making Internship Report

A student is expected to make a report based on the internship he or she has done in an organization. It should contain the following:

- **Certificate:** A certificate in the prescribed Performa (given in appendix1) from the organization where the internship done.
- **Evaluation form:** The form filled by the supervisor or to whom the intern was reporting, in the prescribed Performa (given in appendix 2).
- **Title:** A suitable title giving the idea about what work the student has performed during the internship.
- **Description of the organization:** A small description of 1 to 2 pages on the organization where the student has interned
- **Description about the activities done by the section where the intern has worked**: A description of 2to4pages about the section or cell of the organization where the intern actually worked. This should give an idea about the type of activity a new employee is expected to do in that section of the organization.
- **Description of work allotted and actually done by the intern:** A detailed description of the work allotted and actual work per formed by the intern during the internship period. Intern may give a weekly report of the work by him or her if needed. It shall be of around7 to 10 pages.
- **Self assessment:** A self assessment by the intern on what he or she has learntduringtheinternshipperiod.Itshallcontainbothtechnicalaswellasinterpersonals kills learned in the process. It shall be of around2 to 3 pages.

The internship report may be around 20 to 30 pages and this needs to be submitted to the external examiner at the time of University examination.

Appendix 1

(Proforma for the certificate for internship in official letter head)

This is to certify that Mr/Ms_____of _____College/ Institution worked as an intern as part of her B.Sc. course in ISM of Thiruvalluvar University. The particulars of internship are given below:

Internship starting date: _____

Internship ending date:_____

Actual number of days worked:_____

Tentative number of hours worked:_____Hours

Broad area of work:_____

A small description of work done by the intern during the period:

_____

_____

_____

_____

_____

Signature:

Name:

Designation:

Contact number:

Email:

(Seal of the organization)

Appendix 2

(Proforma for the Evaluation of the intern by the supervisor / to whom the intern was reporting in the organization)

Professional Evaluation of intern

Name of intern: ------ College/institution:_____

[Note: Give as core in the1-5scale by putting √ in the respective cells]

S. No	Particular	Excellent	Very Good	Good	Moderate	Satisfactory
1	Attendance					
2	Punctuality					
3	Adaptability					
4	Ability to shoulder responsibility					
5	Ability to work in A team					
6	Written and oral Communication skills					
7	Problem solving skills					
8	Ability to grasp New concepts					
9	Ability to Complete task					
10	Quality of work done					

Comments:

Signature:

Name:

Designation:

Contact number:

Email:

(Sealof theorganization)

THIRD YEAR – SEMESTER – VI

Core Course 13 : MOBILE APPLICATION DEVELOPMENT

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC13	MOBILE APPLICATION DEVELOPMENT	CC	6	-	-	VI	4	25	75	100

Learning Objectives	
LO1	Develop in-depth Knowledge about the architecture and features of Android
LO2	Implementing the various options available in views.
LO3	Understand the file handling concepts and thereby enabling to manage data efficiently.
LO4	Able to describe clearly the features of SMS messaging.
LO5	Illustrate the concepts of Location Based Services

UNIT	Contents	No. Of. Hours
I	**Android Fundamentals:** Android overview and Versions –Features of Android – Architecture of Android - Setting up Android Environment (Eclipse/Android Studio, SDK, AVD)- Anatomy of an Android Application - Simple Android Application Development.	**18**
II	**Android User Interface:** Layouts: Linear, Relative, Frame and Scrollview- Managing changes to Screen Orientation. Views: TextView, Button, ImageButton, EditText, CheckBox, RadioButton, RadioGroup, ProgressBar, AutoCompleteTextView, ListViews and WebView	**18**
III	**Data Persistence:** Saving and Loading User Preferences. File Handling: File System-Internal and External Storage-Permissions-File Manipulation-Managing Data using Sqlite: Creation of database-Insertion, Retrieval and Updation of records.	**18**
IV	**SMS Messaging:** Sending and Receiving messages - Sending E-mail– Networking: Downloading Binary Data – Downloading Text Files.	**18**
V	**Location Based Services:** Displaying maps- Displaying zoom control-Changing view – Adding Markers- Getting the location – Geo-coding Publishing Android Applications: Preparing for publishing-Deploying APK Files.	**18**

	TOTAL HOURS	**90**
Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
CO1	Appreciate the importance of visualization in the data analytics solution	PO1, PO2, PO3, PO4, PO5, PO6
CO2	Apply structured thinking to unstructured problems	PO1, PO2, PO3, PO4, PO5, PO6
CO3	Understand a very broad collection of machine learning algorithms and problems	PO1, PO2, PO3, PO4, PO5, PO6
CO4	Learn algorithmic topics of machine learning and mathematically deep enough to introduce the required theor	PO1, PO2, PO3, PO4, PO5, PO6
CO5	Develop an appreciation for what is involved in learning from data.	PO1, PO2, PO3, PO4, PO5, PO6
Textbooks		
1	**WeiMeng Lee (2012),** "*Beginning Android Application Development*", Wrox Publications (John Wiley, New York)	
Reference Books		
1.	**Ed Burnette**, "*Hello Android: Introducing Google's Mobile Development Platform*", 3rd edition, 2010, The Pragmatic Publishers.	
2	**Reto Meier**, "*Professional Android 4 Application Development*", 2012, Wrox Publications (John Wiley, New York).	
Web Resources		
1.	https://www.tutorialspoint.com/mobile_development_tutorials.htm	
2	https://www.tutorialspoint.com › Android › Android - Home	

Mapping with Programme Outcomes:

CO/PSO	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6
CO 1	3	3	3	3	3	3
CO 2	3	3	3	2	2	3
CO 3	3	2	3	2	3	3
CO 4	3	3	2	3	3	3
CO 5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	14	14	13	14	15

S-Strong-3 M-Medium-2 L-Low-1

Core Course 14 : MOBILE APPLICATION DEVELOPMENT LAB

Subject Code	Subject Name	Category	L	T	P	S	Credits	Marks		
								CIA	External	Total
CC14	MOBILE APPLICATION DEVELOPMENT LAB	CC	-	-	6	VI	4	25	75	100

Course Objectives:

- To explain user defined functions and the concepts of class.
- To demonstrate the creation cookies and sessions
- To facilitate the creation of Database and validate the user inputs

Lab Exercises	Required Hours
1. Develop an application for Simple Counter. 2. Develop an application to display your personal details using GUI Components. 3. Develop a Simple Calculator that uses radio buttons and text view. 4. Develop an application that uses Intent and Activity. 5. Develop an application that uses Dialog Boxes. 6. Develop an application to display a Splash Screen. 7. Develop an application that uses Layout Managers. 8. Develop an application that uses different types of Menus. 9. Develop an application that uses to send messages from one mobile to another mobile. 10. Develop an application that uses to send E-mail. Develop an application that plays Audio and Video. 11. Develop an application that uses Local File Storage. 12. Develop an application for Simple Animation. 13. Develop an application for Login Page using Sqlite. 14. Develop an application for Student Mark sheet processing using Sqlite.	**90**

Course Outcomes	
CO	On completion of this course, students will
CO1	To understand the concepts of counters and dialogs.
	Concepts of Layout Managers. Perform sending email on audio and video

CO2	To enable the applications of audio and video.
CO3	To apply Local File Storage and Development of files.
CO4	To determine the concepts of Simple Animation To apply searching pages.
CO5	Usage of Student mark sheet- preparation in MAD. Concepts of processing Sqlite are implemented.

Mapping with Programme Outcomes:

CO/PSO	**PSO 1**	**PSO 2**	**PSO 3**	**PSO 4**	**PSO 5**	**PSO 6**
CO 1	3	3	3	3	3	2
CO 2	3	3	3	2	3	3
CO 3	3	3	3	2	3	3
CO 4	3	3	3	3	3	3
CO 5	3	3	3	3	3	3
Weightage of course contributed to each PSO	15	15	15	13	15	14

S-Strong-3 M-Medium-2 L-Low-1

Core Course 15 : TALLY LAB

Subject Code	L	T	P	S	Credits	Inst. Hours	Marks		
							CIA	External	Total
CC15			6	VI	4	6	25	75	100

Learning Objectives

LO1	Examination of general accounting applications as they apply to computerized financial records for each step of the accounting cycle to the completion of financial statements, as well as management accounting applications.

	List of Exercises	HOURS
	1. Preparation of Trial Balance - preparation of profit and loss accounts, Balance sheet 2. Interest simple, compound interest calculation. Setting ledger master, Interest report. 3. Receivable and payable management, meaning activating bill wise details, all types of entries 4. Cost Centres and Category summary, cost centre breakup ledgers and group breakup outstanding receivable and payable, interest receivable and payable, statistics, cash and fund flow daybook list of account reversing journals, optional vouchers. 5. Budget Budgetary control creation of budget, group budget Budgetary ledger creation alteration of budget deletion of budget. 6. Introduction to GST, Getting started with GST, Transferring Input tax to GST, Interest supply of goods, GST reports 7. Recording advance entries, Exports, Imports, Exempted Goods, Adjustment and Return filing, GST tax payments 8. Electronic Commerce Introduction, Tax Collected at Source (TCS), Procedures for E-commerce Operator, Input Tax Credit: - Introduction, Important Points, Input Service Distributors 9. Matching of Input Tax Credit, Returns, GSTR-2, Other Taxable Persons, Annual Return, Overview of the IGST Act, Overview, Other Provisions. 10. GST Portal, Introduction, GST Eco-system, GST Suvidha Provider (GSP), Uploading Invoices	**90**

TOTAL		90
Course Outcomes		
CO1	input journal entries, adjust entries and prepare financial statements for cash and accrual-based businesses	
CO2	record vendor, customer, and inventory transactions essential for maintaining accounts payable, accounts receivable, and inventory subsidiary ledgers	

Elective Course 7A : Big Data Analytics

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
EC7	**Big Data Analytics**	EC	5	-	-	VI	3	5	25	75	100

Course Objective	
C1	Understand the Big Data Platform and its Use cases, Map Reduce Jobs
C2	To identify and understand the basics of cluster and decision tree
C3	To study about the Association Rules, Recommendation System
C4	To learn about the concept of stream
C5	Understand the concepts of NoSQL Databases

UNIT	Details	No. of Hours	Course Objective
I	Evolution of Big data — Best Practices for Big data Analytics — Big data characteristics — Validating — The Promotion of the Value of Big Data — Big Data Use Cases- Characteristics of Big Data Applications — Perception and Quantification of Value - Understanding Big Data Storage — A General Overview of High-Performance Architecture — HDFS — MapReduce and YARN — Map Reduce Programming Model	15	C1
II	Advanced Analytical Theory and Methods: Overview of Clustering — K-means — Use Cases — Overview of the Method — Determining the Number of Clusters — Diagnostics — Reasons to Choose and Cautions .- Classification: Decision Trees — Overview of a Decision Tree — The General Algorithm — Decision Tree Algorithms — Evaluating a Decision Tree —	15	C2

	Decision Trees in R — Naïve Bayes — Bayes? Theorem — Naïve Bayes Classifier.		
III	Advanced Analytical Theory and Methods: Association Rules — Overview — Apriori Algorithm — Evaluation of Candidate Rules — Applications of Association Rules — Finding Association& finding similarity — Recommendation System: Collaborative Recommendation- Content Based Recommendation — Knowledge Based Recommendation- Hybrid Recommendation Approaches.	15	C3
IV	Introduction to Streams Concepts — Stream Data Model and Architecture — Stream Computing, Sampling Data in a Stream — Filtering Streams — Counting Distinct Elements in a Stream — Estimating moments — Counting oneness in a Window — Decaying Window — Real time Analytics Platform(RTAP) applications — Case Studies — Real Time Sentiment Analysis, Stock Market Predictions. Using Graph Analytics for Big Data: Graph Analytics	15	C4
V	NoSQL Databases : Schema-less Models?: Increasing Flexibility for Data Manipulation-Key Value Stores- Document Stores — Tabular Stores — Object Data Stores — Graph Databases Hive — Sharding —Hbase — Analyzing big data with twitter — Big data for E-Commerce Big data for blogs — Review of Basic Data Analytic Methods using R.	15	C5
	Total	**75**	

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
1	Work with big data tools and its analysis techniques.	PO1

2	Analyze data by utilizing clustering and classification algorithms.	PO1, PO2
3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	PO4, PO6
4	Perform analytics on data streams.	PO4, PO5, PO6
5	Learn NoSQL databases and management.	PO3, PO8
Text Book		
1	AnandRajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.	
Reference Books		
1.	David Loshin, "Big Data Analytics: From Strategic Planning to Enterprise Integration with Tools, Techniques, NoSQL, and Graph", Morgan Kaufmann/El sevier Publishers, 2013	
2.	EMC Education Services, "Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data", Wiley publishers, 2015.	
Web Resources		
1.	https://www.simplilearn.com	
2.	https://www.sas.com/en_us/insights/analytics/big-data-analytics.html	

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong M-Medium L-Low

Elective Course 7B : Internet of Things and its Applications

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
EC7	**Internet of Things and its Applications**	EC	5	-	-	VI	3	5	25	75	100

Course Objective	
C1	Use of Devices, Gateways and Data Management in IoT.
C2	Design IoT applications in different domain and be able to analyze their performance
C3	Implement basic IoT applications on embedded platform
C4	To gain knowledge on Industry Internet of Things
C5	To Learn about the privacy and Security issues in IoT

UNIT	Details	No. of Hours	Course Objective
I	IoT & Web Technology, The Internet of Things Today, Time for Convergence, Towards the IoT Universe, Internet of Things Vision, IoT Strategic Research and Innovation Directions, IoT Applications, Future Internet Technologies, Infrastructure, Networks and Communication, Processes, Data Management, Security, Privacy & Trust, Device Level Energy Issues, IoT Related Standardization, Recommendations on Research Topics.	15	C1
II	M2M to IoT – A Basic Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies. M2M to IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline,	15	C2

	standards considerations.		
III	**:** IoT Architecture -State of the Art – Introduction, State of the art, Architecture. Reference Model-Introduction, Reference Model and architecture, IoT reference Model, IoT Reference Architecture-Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views	15	C3
IV	IoT Applications for Value Creations Introduction, IoT applications for industry: Future Factory Concepts, Brownfield IoT, Smart Objects, Smart Applications, Four Aspects in your Business to Master IoT, Value Creation from Big Data and Serialization, IoT for Retailing Industry, IoT For Oil and GasIndustry, Opinions on IoT Application and Value for Industry, Home Management	15	C4
V	Internet of Things Privacy, Security and Governance Introduction, Overview of Governance, Privacy and Security Issues, Contribution from FP7 Projects, Security, Privacy and Trust in IoT-Data-Platforms for Smart Cities, First Steps Towards a Secure Platform, Smartie Approach. Data Aggregation for the IoT in Smart Cities, Security	15	C5
	Total	**75**	

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
1	Work with big data tools and its analysis techniques.	PO1
2	Analyze data by utilizing clustering and classification algorithms.	PO1, PO2
3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	PO4, PO6
4	Perform analytics on data streams.	PO4, PO5, PO6
5	Learn NoSQL databases and management.	PO3, PO8

Text Book

1	Vijay Madisetti and Arshdeep Bahga, “Internet of Things: (A Hands-on Approach)”, Universities Press (INDIA) Private Limited 2014, 1st Edition.
Reference Books	
1.	Michael Miller, “The Internet of Things: How Smart TVs, Smart Cars, Smart Homes, and Smart Cities Are Changing the World”, kindle version.
2.	Francis daCosta, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, Apress Publications 2013, 1st Edition,.
3	WaltenegusDargie, ChristianPoellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice” 4..CunoPfister, “Getting Started with the Internet of Things”, O‟Reilly Media 2011
Web Resources	
1.	https://www.simplilearn.com
2.	https://www.javatpoint.com
3.	https://www.w3schools.com

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong M-Medium L-Low

Elective Course 8A : Enterprise Resource Planning

Subject Code	Subject Name	Category	L	T	P	S	Credits	Hours	Marks		
									CIA	Term	Total
EC8	Enterprise Resource Planning	EC	5	-	-	VI	3	5	25	75	100

Course Objectives	
CO1	To understand the basic concepts, Evolution and Benefits of ERP.
CO2	To know the need and Role of ERP in logical and Physical Integration.
CO3	Identify the important business functions provided by typical business software such as enterprise resource planning and customer relationship management
CO4	To train the students to develop the basic understanding of how ERP enriches the business organizations in achieving a multidimensional growth
CO5	To aim at preparing the students technological competitive and make them ready to self-upgrade with the higher technical skills

UNIT	Details	No. of Hours	Course Objectives
I	ERP Introduction, Benefits, Origin, Evolution and Structure: Conceptual Model of ERP, the Evolution of ERP, the Structure of ERP, Components and needs of ERP, ERP Vendors; Benefits & Limitations of ERP Packages.	15	CO1
II	Need to focus on Enterprise Integration/ERP; Information mapping; Role of common shared Enterprise database; System Integration, Logical vs. Physical System Integration, Benefits & limitations of System Integration, ERP's Role in Logical and Physical Integration. Business Process Reengineering, Data ware Housing, Data Mining, Online Analytic Processing (OLAP), Product Life Cycle Management (PLM), LAP, Supply chain Management.	15	CO2
III	ERP Marketplace and Marketplace Dynamics: Market Overview, Marketplace Dynamics, the Changing ERP Market. ERP- Functional Modules: Introduction, Functional Modules of ERP Software, Integration of ERP, Supply chain and Customer Relationship Applications. Cloud and Open Source, Quality Management, Material Management, Financial Module, CRM and Case Study.	15	CO3
IV	ERP Implementation Basics, , ERP implementation Strategy, ERP Implementation Life Cycle ,Pre- Implementation task,Role of SDLC/SSAD, Object Oriented Architecture, Consultants, Vendors and Employees.	15	CO4
V	ERP & E-Commerce, Future Directives- in ERP, ERP and Internet, Critical success and failure factors, Integrating ERP into or-ganizational culture. Using ERP tool: either SAP or ORACLE format to case study.	15	CO5
	Total	**75**	

Course Outcomes	
Course Outcomes	On completion of this course, students will;

CO1	Understand the basic concepts of ERP.	PO1, PO2, PO6
CO2	Identify different technologies used in ERP	PO2, PO3, PO8
CO3	Understand and apply the concepts of ERP Manufacturing Perspective and ERP Modules	PO1, PO3, PO7
CO4	Discuss the benefits of ERP	PO2, PO6
CO5	Apply different tools used in ERP	PO1, PO3, PO8
Reference Text :		
1.	Enterprise Resource Planning – Alexis Leon, Tata McGraw Hill.	
References :		
1.	Enterprise Resource Planning – Diversified by Alexis Leon, TMH.	
2.	Enterprise Resource Planning – Ravi Shankar & S. Jaiswal , Galgotia	
Web Resources		
1.	1. https://www.tutorialspoint.com/management_concepts/enterprise_resource_planning.htm	
2.	1. https://www.saponlinetutorials.com/what-is-erp-systems-enterprise-resource-planning/	
3.	1. https://www.guru99.com/erp-full-form.html	
4.	2. https://www.oracle.com/in/erp/what-is-erp/	

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	M		L			M		
CO 2	M	S			L	M		
CO 3		L	M					M
CO 4				M		L	M	
CO 5	M		L		M			S

S-Strong M-Medium L-Low

Elective Course 8B : HUMAN RESOURCE MANAGEMENT

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
EC8	**HUMAN RESOURCE MANAGEMENT**	EC	5	-	-	VI	3	5	25	75	100

Learning Objectives	
CLO1	Explain the concepts, functions and process of HRM
CLO2	Examine the selection and placement process
CLO3	Evaluate the training and performance
CLO4	Understand the importance of employee engagement and compensation
CLO5	Understand the recent trends in HR

UNIT	**Details**	**No. of Hours**	**Learning Objectives**
I	Nature and scope of Human Resources Management –Roles & responsibilities of HR manager-HR Policies & procedures-Differences between personnel management and HRM –Environment of HRM - Concept &scope of Strategic Human resource management (SHRM) -HRM as a competitive advantage in the VUCA world	15	CLO1
II	Human Resource Planning- Job Evaluation-methods-Job analysis-Job description, Job specification .Recruitment – Selection – Process, Methods – Interview, Tests, Induction and Placement.	15	CLO2
III	Training and Development, Training Process, Methods, Training Need Assessment , Career Development . Transfer and Promotion. Performance Management – Meaning- Process- Performance	15	CLO3

	appraisal methods-Performance Monitoring and review.		
IV	Employee Engagement- Meaning- Importance- evaluation- measuring employee engagement- Employee Compensation- components- incentives- benefits- welfare and social security measures	15	CLO4
V	Human Resource Audit – Nature – Benefits – Scope – Approaches. HRIS. Recent trends in HRM: Green HRM & Virtual HRM Practices, Understanding People Analytics, Multigenerational workforce. Global HRM	15	CLO5
		75	

Course Outcomes	On Completion of the course the students will	**Program Outcomes**
CO1	Explain the concepts, functions and process of HRM	PO1,PO2,PO4,PO6
CO2	Examine the selection and placement process	PO1,PO2,PO4,PO6,PO7,PO 8
CO3	Evaluate the training and performance appraisal	PO2,PO 3, PO5,PO6,PO8
CO4	Understand the employee engagement and compensation	PO1 PO2,PO3,PO4,PO5,PO6
CO5	Understand the recent trends in HR	PO2,PO3,PO6,PO7, PO8

Reading List

1.	Shashi K. Gupta & Rosy Joshi , Human Resource Management , Kalayani Publisher 1st Edition, 2018
2.	**Steve** Brown**,** HR on Purpose: Developing Deliberate People Passion, Society for Human Resource Management, 1st Edition, 2017
3	Bernard Marr, Data-Driven HR: How to Use Analytics and Metrics to DrivePerformance, Kogan Page, 1st Edition, 2018
4	Kirs Wayne Cascio and John Boudreau, Investing in People: Financial Impact of Human Resource Initiatives, Prentice Hall , 2nd Edition, 2015
5	Srinivas R Kandula, , Compentency Based Human Resource Managemet, PHI

	Learning , 1st Edition, 2013	
References Books		
1.	V S P Rao, Human Resource Management : Text & Cases, Excel Books, 3rd Edition ,2010	
2.	K.Ashwathappa, Human Resource Management- Text and cases, McGraw Hill Education India, 6th Edition	
3.	Garry Deseler, Human Resource Management, Pearson, 15th Edition, 2017	
4.	L M Prasad , Human Resource Management , Sultan Chand and Sons 3rd Edition , 2014	
5.	Tripathi. P C, Human Resource Management, Sultan Chand and Sons 1st Edition, 2010	
Web Resources		
1	https://mrcet.com/downloads/MBA/digitalnotes/Human%20Resource%20Management.pdf	
2	http://kamarajcollege.ac.in/Department/BBA/III%20Year/e003%20Core%2019%20-%20Human%20Resource%20Management%20-%20VI%20Sem.pdf	
3	https://backup.pondiuni.edu.in/sites/default/files/HR%20Management-230113.pdf	
4	https://www.studocu.com/row/document/jagannath-university/business-communication/hrm-notes-bba/4305835	
5	http://14.139.185.6/website/SDE/SLM-III%20Sem%20BBA%20Human%20Resource%20Management.pdf	
Methods of Evaluation		
Internal Evaluation	Continuous Internal Assessment Test	25 Marks
	Assignments	
	Seminars	
	Attendance and Class Participation	
External	End Semester Examination	75 Marks

Evaluation		
	Total	100 Marks
Methods of Assessment		
Recall (K1)	Simple definitions, MCQ, Recall steps, Concept definitions	
Understand/ Comprehend (K2)	MCQ, True/False, Short essays, Concept explanations, Short summary or overview	
Application (K3)	Suggest idea/concept with examples, Suggest formulae, Solve problems, Observe, Explain	
Analyze (K4)	Problem-solving questions, Finish a procedure in many steps, Differentiate between various ideas, Map knowledge	
Evaluate (K5)	Longer essay/ Evaluation essay, Critique or justify with pros and cons	
Create (K6)	Check knowledge in specific or offbeat situations, Discussion, Debating or Presentations	

Professional Competency Skill Enhancement Course

Mapping with program outcomes

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S	S	M	M	M	S	M	M
CO 2	S	S	M	M	M	S	M	M
CO 3	S	S	M	M	M	S	M	S
CO 4	S	S	M	M	S	S	M	M
CO 5	S	S	M	M	M	S	M	M

S-Strong M-Medium L-Low

Professional Competency Skill Enhancement Course: Advanced Excel

Subject Code	Subject Name	Category	L	T	P	S	Credits	Inst. Hours	Marks		
									CIA	External	Total
PCSEC	Advanced Excel	PCSEC	2	-	-	VI	2	2	25	75	100

Course Objective	
C1	Handle large amounts of data
C2	Aggregate numeric data and summarize into categories and subcategories
C3	Filtering, sorting, and grouping data or subsets of data
C4	Create pivot tables to consolidate data from multiple files
C5	Presenting data in the form of charts and graphs

UNIT	Details	No. of Hours	Course Objective
I	Basics of Excel- Customizing common options- Absolute and relative cells- Protecting and un-protecting worksheets and cells- Working with Functions - Writing conditional expressions - logical functions - lookup and reference functions- VlookUP with Exact Match, Approximate Match- Nested VlookUP with Exact Match- VlookUP with Tables, Dynamic Ranges- Nested VlookUP with Exact Match- Using VLookUP to consolidate Data from Multiple Sheets	6	C1
II	Data Validations - Specifying a valid range of values - Specifying a list of valid values- Specifying custom validations based on formula - Working with Templates Designing the structure of a template- templates for standardization of worksheets - Sorting and Filtering Data - Sorting tables- multiple-level sorting- custom sorting- Filtering data for selected view - advanced filter options- Working with Reports Creating subtotals- Multiple-level subtotal.	6	C2
III	Creating Pivot tables Formatting and customizing Pivot	6	C3

	tables- advanced options of Pivot tables- Pivot charts- Consolidating data from multiple sheets and files using Pivot tables- external data sources- data consolidation feature to consolidate data- Show Value As % of Row, % of Column, Running Total, Compare with Specific Field- Viewing Subtotal under Pivot- Creating Slicers.		
IV	More Functions Date and time functions- Text functions- Database functions- Power Functions - Formatting Using auto formatting option for worksheets- Using conditional formatting option for rows, columns and cells- What If Analysis - Goal Seek- Data Tables- Scenario Manager.	6	C4
V	Charts - Formatting Charts- 3D Graphs- Bar and Line Chart together- Secondary Axis in Graphs- Sharing Charts with PowerPoint / MS Word, Dynamically- New Features Of Excel Spark lines, Inline Charts, data Charts- Overview of all the new features.	6	C5
	Total	**30**	

Course Outcomes		**Programme Outcomes**
CO	On completion of this course, students will	
1	Work with big data tools and its analysis techniques.	PO1
2	Analyze data by utilizing clustering and classification algorithms.	PO1, PO2
3	Learn and apply different mining algorithms and recommendation systems for large volumes of data.	PO4, PO6
4	Perform analytics on data streams.	PO4, PO5, PO6
5	Learn NoSQL databases and management.	PO3, PO8

Text Book	
1	Excel 2019 All
2	Microsoft Excel 2019 Pivot Table Data Crunching
Reference Books	
Web Resources	
1.	https://www.simplilearn.com
2	https://www.javatpoint.com

3	https://www.w3schools.com

Mapping with Programme Outcomes:

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**
CO 1	S							
CO 2	M	S						
CO 3				S		S		
CO 4				S	S	M		
CO 5			S					S

S-Strong M-Medium L-Low

****