E.M.G. YADAVA WOMEN'S COLLEGE, MADURAI – 625 014.

(*An Autonomous Institution – Affiliated to Madurai Kamaraj University*)

Re-accredited **(3rd Cycle)** with Grade **A+** & **CGPA 3.51** by NAAC

DEPARTMENT OF COMMERCE

TANSCHE-CBCS with OBE

MASTER OF COMMERCE
(Computer Applications)

PROGRAMME CODE - PC

COURSE STRUCTURE

(w.e.f. 2023 – 2024 Batch onwards)

CRITERION - I

1.2.2 Details of Programmes offered through Choice Based Credit System (CBCS) / Elective Course System

Syllabus copies with highlights of contents focusing on Elective Course System

To be Noted:

HIGHLIGHTED	COURSE
	Elective

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DEPARTMENT OF COMMERCE
M.Com with Computer Applications
(w.e.f. 2023- 2024 onwards)

VISION

1. To empower the students with the knowledge and problem solving skills and make them to realize their potential and assure them to cope with the competitiveness globally.
2. To envision the Department of Commerce as an ICMA Centre with excellence and create more Chartered Accountants.

MISSION

1. To empower the students to become innovative entrepreneurs, to contribute to the success of business and betterment to the society.
2. To prepare students for higher education in Commerce, Management and Business studies.
3. To inculcate the use of information and communication technology in the Teaching Learning Process.
4. To establish internship with industry, business, professionals and government so as to enhance the experience and gain knowledge of the students.
5. To develop the students to become socially responsible and globally employable through our Course Structure.

Programme Educational Objectives (PEOs)
M.Com (CA)

S.No	On completion of the Programme, the student will be able to
PEO1	To became experts in Accounting Methodology and enhance Professionalism through innovative practices to be tactful to face unforeseen demand and change situational roles in industry and academics.
PEO2	Stimulate the student's capabilities towards innovation and creativity in problem solving skills in business modeling with societal impact.
PEO3	To adopt innovative opportunities, latest technologies and develop new businesses. Educate and to deal with the complex issues of the business community in particular and society at large.
PEO4	Communicate effectively by reading with insight, writing effective reports, speaking independently, listening to give effective response, and comprehending & designing in documentation.
PEO5	Uphold and improve the students technical and managerial competencies through career and professional learning Viz., Chartered Accountants(CA), Cost & Management Accountants (CMA), Company Secretary (CS) and advanced degree programmes in the field of Commerce.

Programme Outcomes (POs) with Graduate Attributes

Sl.No	Graduate Attributes	On completion of the Programme, the student will be able to
PO1	**Problem Solving Skill & Decision Making Skill**	Apply knowledge of Management Theories and Human Resource Practices to solve business problems through research in global context. Foster analytical and critical thinking abilities to enable decision-making based on data
PO2	**Employability Skill & Entrepreneurial Skill**	Develop business acumen to enhance employability skills in the competitive environment. Equip with skills and competencies to become an entrepreneur
PO3	**Contribution to Society**	Succeed in career endeavours and contribute significantly to society.
PO4	**Communication Skill**	Develop communication, managerial and interpersonal skills.
PO5	**Individual and Team Leadership Skill**	Lead oneself and the team to achieve organizational goals.
PO6	**Lifelong learning**	Acquire knowledge and skills, including "learning how to learn"

Programme Specific Outcomes (PSOs) with Graduate Attributes

Sl.No	Graduate Attributes	On completion of the Programme, the student will be able to
PSO1	**Entrepreneurship**	Exhibit entrepreneurial ability by enhancing critical thinking, problem solving, decision making and leadership skills that will facilitate startups and high potential organisations.
PSO2	**Research and Development**	Design and implement accounting, marketing, finance and HR systems and practices grounded in research that comply with mercantile laws, leading the organisation towards growth and development.
PSO3	**Contribution to the Society**	Contribution to the Society
PSO4	**Placement**	Demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply in diverse frames of decisions and actions.
PSO5	**Contribution to Business World**	Facilitate production ofemployable, ethical and innovative professionals to sustain in the dynamic business world.

Eligibility for Admission: Pass in B.Com.,

Duration of the Course:

The students shall undergo prescribed courses of study for the period of two academic years under CBCS semester pattern with Outcome Based Education.

Medium of Instruction: English

System: TANSCHE - Choice Based Credit System with Outcome Based Education.

Nature of the Course

Courses are classified according to the following nature

1. Knowledge & Skill

2. Employability Oriented

3. Entrepreneurship Oriented

Outcome Based Education (OBE) & Assessment

Students understanding must be built on and assessed for wide range of learning activities, which includes different approaches and are classified along several bases, such as

1. Based on purpose:

- Formative (Internal tests, Assignment, Seminar, Quiz, Documentation, Case lets, ICT based Assignment, Mini Projects administered during the learning process)
- Summative (Evaluation of students learning at the end of instructional unit)

2. Based on Domain knowledge: (Post Graduate Up to K5 Levels)

- Assessment through K1, K2,K3, K4 & K5

Evaluation

Continuous Internal Assessment Test (CIA) : 25 Marks

Summative Examination : 75 Marks

Total : 100 Marks

CIA-Continuous Internal Assessment: 25 Marks

Components	Marks
Test (Average of two tests) (Conduct for 120 marks and converted into 12 marks)	12
Creative Assignment	3
Assignment	5
Seminar	5
Total	**25**

- Centralized system of Internal Assessment Tests
- There will be a two Internal Assessment Tests
- Duration of Internal Assessment Test I and II will be 2 1/2 hours.
- Students shall write retest on the genuine grounds if they are absent in either Test I & Test II with the approval of Head of the Department.

Question Paper Pattern for Continuous Internal Assessment Test I and Test II

Section	Marks
A – Multiple Choice Questions (8x1Mark)	8
B – Short Answer (6 x 2 Marks)	12
C – Either Or type (4/8 x 5 Marks)	20
D – Open Choice type (2/4 x 10 Marks)	20
Total	**60**

Conducted for 120 marks and converted into 15 marks

Question Paper Pattern for Summative Examination

Section	Marks
A – Multiple Choice Questions without choice (10x 1Mark)	10
B – Short Answer Questions without choice (5 x 2 Marks)	10
C – Either Or type (5/10 X 5Marks)	25
D – Open Choice type(3out of 5 X 10Marks)	30
Total	**75**

- In respect of external examinations passing minimum is **45%** for Post Graduate Courses and in total, aggregate of **50%.**
- Latest amendments and revisions as per UGC and TANSCHE Norms are taken into consideration in curriculum preparation.

Distribution of Marks in % with K levels CIAI, II & External Assessment

Blooms Taxonomy	Internal Assessment		External Assessment
	I	II	
Knowledge (K1	8 %	8 %	5 %
Understanding (K2)	8 %	8 %	14 %
Apply (K3)	24 %	24 %	27%
Analyze (K4)	30 %	30 %	27%
Evaluate (K5)	30%	30%	27%

BLUE PRINT FOR INTERNAL ASSESSMENT–I

Articulation Mapping –K Levels with Course Learning Outcomes(CLOs)

Sl.No	CLOs	K-Level	Section A		Section B		Section C	Section D	Total
			MCQs (NoChoice)		Short Answers (NoChoice)		(Either orType)	(Open Choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO1	Upto K5	1 2	K1 K2	1 1	K 1 K 3	1(K3) 1(K5)	1(K4)	
2	CLO2	Upto K5	2 1	K1 K2	1 1	K 1 K 2	1(K3) (Each setofquestionsmust be inthesame level)	1(K4) 1(K5)	
3.	CLO3	Upto K5	1 1	K1 K2	1 1	K 2 K 3	1(K4)	1(K5)	
No. of Questions tobeasked			8		6		8	4	26
No.ofQuestionsto Beanswered			8		6		4	2	20
Marks for eachquestion			1		2		5	10	
Total Marks for eachsection			8		12		40	40	100

BLUE PRINT FOR INTERNAL ASSESSMENT– II
Articulation Mapping –K Levels with Course Learning Outcomes (CLOs)

Sl.No	CLOs	K-Level	SectionA		SectionB		SectionC	SectionD	Total
			MCQs (NoChoice)		Short Answers (NoChoice)		(Either or Type)	(Open Choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO3	Upto K5	1 2	K1 K2	1 1	K1 K3	1(K3) 1(K5)	1(K4)	
2	CLO4	Upto K5	2 1	K1 K2	1 1	K1 K2	1(K3) (Each setofquestionsmust be in Thesamelevel)	1(K4) 1(K5)	
3.	CLO5	Upto K5	1 1	K1 K2	1 1	K2 K3	1(K4)	1(K5)	
No. of Questions tobeasked			8		6		8	4	26
No.ofQuestionsto Beanswered			8		6		4	2	20
Marks for eachquestion			1		2		5	10	
Total Marks for eachsection			8		12		40	40	100

Annexure-4

Distribution of Marks with choice K Levels CIA I – CIA and II-CIA

CIA	K Levels	Section-AMCQ (No choice)	Section –B (Short Answer (No choice)	Section- C (Either or Type)	Section-D (Open Choice)	Total Marks	% of Marks
I	K1	4	4			8	**8**
	K2	4	4			8	**12**
	K3		4	20		24	**40**
	K4			10	20	30	**40**
	K5			10	20	30	**20**
	Marks	**8**	**12**	**40**	**40**	**100**	**100**
II	K1	4	4			8	**8**
	K2	4	4			8	**12**
	K3		4	20		24	**40**
	K4			10	20	30	**40**
	K5			10	20	30	**20**
	Marks	**8**	**12**	**40**	**40**	**100**	**100**

Articulation Mapping –K Levels with Course Learning Outcomes (CLOs) for Internal Assessment (SEC)

Sl.No	CLOs	K-Level	Section A		Section B		Section C	Section D	Total
			MCQs (Nochoice)		Short Answers (Nochoice)		(Either/or Type)	(open choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO1	Upto K4	2	K1			2(K3&K3)	1(K3)	
2	CLO2	Upto K4	2	K1			2(K3&K3	1(K4)	
3	CLO3	Upto K4			2	K2	2(K4&K4)	1(K4)	
4	CLO4	Upto K5			2	K2	2(K5&K5)	1(K5)	
5	CLO5	Upto K5			2	K2		1(K5)	
No. of Questions to beasked			4		3		8	5	20
No. of Questions to beanswered			4		3		4	2	13
Marksforeachquestion			1		2		5	10	
Total Marks for eachsection			4		6		20	20	50 (Marks)

Annexure-4

Distribution of Section-wise Marks with K Levels for Internal Assessment (SEC)

K Levels	SectionA (MCQ'S) (No choice)	Section B (Short Answer) (No choice)	Section C (Either or Type)	Section D (Open choice)	Total Marks	% of Marks
K1	4				**4**	**4**
K2		6			**6**	**6**
K3			20	10	**30**	**30**
K4			10	20	**30**	**30**
K5			10	20	**30**	**30**
Total Marks	**4**	**6**	**40**	**50**	**100**	

K1 – Remembering and recalling facts with specific answers.
K2- Basic understanding of facts and stating main ideas with general answers.
K3- Application oriented Solving Problems, Justifying the statement and deriving inferences
K4- Examining, analyzing, presentation and make inferences with evidences.
K5- Evaluating, making Judgments based on criteria

Articulation Mapping –K Levels with Course Learning Outcomes(CLOs) for External Assessment

Sl.No	CLOs	K-Level	Section A		Section B		Section C	Section D	Total
			MCQs (No choice)		Short Answers (No choice)		(Either/or Type)	(open choice)	
			No. of Questions	K-Level	No. of Questions	K-Level			
1	CLO1	Upto K4	2	K1&K2	1	K1	2(K2&K2)	1(K3)	
2	CLO2	Upto K4	2	K1&K2	1	K2	2(K3&K3)	1(K4)	
3	CLO3	Upto K4	2	K1&K2	1	K3	2(K3&K3)	1(K4)	
4	CLO4	Upto K5	2	K1&K2	1	K4	2(K4 &K4)	1(K5)	
5	CLO5	Upto K5	2	K1&K2	1	K5	2(K5 &K5)	1(K5)	
No. of Questions to beasked			10		5		10	5	30
No. of Questions to beanswered			10		5		5	3	23
Marksforeachquestion			1		2		5	10	
Total Marks for eachsection			10		10		25	30	75 (Marks)

Annexure-4

Distribution of Section-wise Marks with K Levels for External Assessment

K Levels	SectionA (MCQ'S) (No choice)	Section B (Short Answer) (No choice)	Section C (Either or Type)	Section D (Open Choice)	Total Marks	% of Marks
K1	5	2	-	-	**7**	**5**
K2	5	2	10	-	**17**	**14**
K3	-	2	20	10	**32**	**27**
K4	-	2	10	20	**32**	**27**
K5	-	2	10	20	**32**	**27**
Total Marks	**10**	**10**	**50**	**50**	**120**	**100**

K1- Remembering and recalling facts with specific answers.
K2- Basic understanding of facts and stating main ideas with general answers.
K3- Application oriented Solving Problems Justifying the statement and deriving inferences
K4- Examining, analyzing, presentation and make inferences with evidences.
K5- Evaluating, making Judgments based on criteria

Annexure-4

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DEPARTMENT OF COMMERCE – M.Com (CA)
TANSCHE-CBCS with OBE
COURSE STRUCTURE –SEMESTER WISE
(w.e.f. 2023 – 2024 Batch onwards)

Semester	PART	COURSE CODE	COURSE TITLE	HOURS	EXAM DURATION (HRS)	MAX. MARKS			CREDITS
						CIA	EXT	Total	
I	Part I	23OPCCA11	**Core I**– Business Finance	7	3	25	75	100	5
		23OPCCA12	**Core II** –Digital Marketing	7	3	25	75	100	5
		23OPCCA13	**Core III** –Banking and Insurance	6	3	25	75	100	4
		23OPCCADSE1B	**DSEC- I**	5	3	25	75	100	3
		23OPCCADSE1D	**DSEC - II**	5	3	25	75	100	3
			Total	30					20
II	Part I	23OPCCA21	**Core IV** -Strategic Cost Management	6	3	25	75	100	5
		23OPCCA22	**Core V** -Corporate Accounting	6	3	25	75	100	5
		23OPCCA23	**Core VI-** Setting up of Business Entities	6	3	25	75	100	4
		23OPCCADSE2A	**DSEC III**	5	3	25	75	100	3
		23OPCCADSE2D	**DSEC IV**	5	3	25	75	100	3
	Part II	23OPCCASEC21	**SEC –I** Internet & its Applications	2	3	25	75	100	2
			Total	30					22

DSEC – Discipline Specific Elective Course
SEC – Skill Enhancement Course

Annexure-4

DSEC – Discipline Specific Elective Course

Semester I :

DSEC – I (Choose any one)

1. Introduction to Industry 4.0 - 23OPCCADSE1A
2. Big Data Analytics - 23OPCCADSE1B

DSEC – II (Choose any one)

1. Enterprise Resource Planning - 23OPCCADSE1C
2. Database Management System - 23OPCCADSE1D

Semester II :

DSEC – III (Choose any one)

1. Data Mining and Data Interpretation - 23OPCCADSE2A
2. Technology in Banking - 23OPCCADSE2B

DSEC – IV (Choose any one)

1. Financial Analytics (Practical) - 23OPCCADSE2C
2. Management Information System - 23OPCCADSE2D

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
I	**Elective-I**	**230PCCADSE1A**	**Introduction to Industry 4.0**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To enable the students to comprehend the change from industry 1.0 to 4.0
2. To gain knowledge on the challenges and future prospects of applying artificial intelligence
3. To learn the applications of big data for industrial growth and development
4. To understand the applications of IoT in various sectors
5. To understand why education has to be aligned with industry 4.0

Course Content:

UNIT : I - Introduction

Industry: Meaning, Types - Industrial Revolution: Industrial Revolution 1.0 to 4.0: Meaning, Goals and Design Principles - Technologies of Industry 4.0 - Big Data – Artificial Intelligence (AI) – Industrial Internet of Things - Cyber Security – Cloud – Augmented Reality.

UNIT : II - Artificial Intelligence

Artificial Intelligence (AI): Need, History and Foundations -The AI - environment - Societal Influences of AI – Application Domains and Tools - Associated Technologies of AI - Future prospects of AI – Challenges of AI.

UNIT : III - Big Data

Evolution - Data Evolution - Data : Terminologies - Essential of Big Data in Industry 4.0 - Big Data Merits and Limitations - Big Data Components : Big Data Characteristics - Big Data Processing Frameworks - Big Data Tools - Big Data Applications - Big Data Domain Stack : Big Data in Data Science – Big Data in IoT - Big Data in Machine Learning - Big Data in Databases - Big Data Usecases: Big Data in Social Causes - Big Data for Industry - Big Data Roles - Learning Platforms; Internet of Things (IoT) : Introduction to IoT – Architecture of IoT Technologies for IoT - Developing IoT Applications - Applications of IoT - Security in IoT.

UNIT : IV - Applications of IoT

IoT in Manufacturing – Healthcare – Education – Aerospace and Defence – Agriculture – Transportation and Logistics – Impact of Industry 4.0 on Society: Impact on Business, Government, People - Tools for Artificial Intelligence - Big Data and Data Analytics - Virtual Reality - Augmented Reality –IoT - Robotics.

UNIT : V - Industry 4.0

Education 4.0 – Curriculum 4.0 – Faculty 4.0 – Skills required for Future - Tools for Education – Artificial Intelligence Jobs in 2030 – Jobs 2030 - Framework for aligning Education with Industry 4.0.

Books for study:

1. SeemaAcharya J, SubhashiniChellappan, (2019) "Big Data and Analytics", 2nd Edition, Wiley Publication, New Delhi.
2. Russel S, Norvig P (2010), "Artificial Intelligence: A Modern approach", 3rdEdition, Prentice Hall, New York.
3. Pethuru Raj and Anupama C. Raman, (2017),"The Internet of Things: Enabling Technologies, Platforms, and Use Cases",Auerbach Publications

Books for reference:

1. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman, "Big Data for Dummies", John Wiley & Sons, Inc.
2. Nilsson (2000), Artificial Intelligence: A new synthesis, Nils J Harcourt Asia PTE Ltd.

Web references:

1. https://sist.sathyabama.ac.in/sist_coursematerial/uploads/SEEA1403.pdf
2. https://library.oapen.org/bitstream/handle/20.500.12657/43836/external_content.pdf? sequence=1
3. https://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf

Pedagogy :

Chalk and Talk , PowerPoint Presentation , Group Discussion , Student Seminar,Spot Test, Assignments , Quiz.

Rationale for Nature of Course: Quickly analyzing large amounts of data from different sources, in many different formats and types

Activities to be Given : Practice to Create Data Collection, Group Discussion, Seminar.

Annexure-4

Course Learning Outcomes(CLO)

On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Discuss on the change from industry 1.0 to 4.0	Upto K4
CLO2	Discover the challenges and future prospects of applying artificial intelligence	Upto K4
CLO3	Apply big data for industrial growth and development	Upto K4
CLO4	Apply IoT in various sectors like Manufacturing, Healthcare, Education, Aerospace and Défense	Upto K5
CLO5	Appraise why education has to be aligned with industry 4.0	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	3	3	3
CLO2	2	3	2	3	3	3
CLO3	2	3	2	3	3	3
CLO4	2	3	2	3	3	3
CLO5	2	3	2	3	3	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

Annexure-4

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	Industry: Meaning, Types - Industrial Revolution: Industrial Revolution 1.0 to 4.0: Meaning, Goals and Design Principles - Technologies of Industry 4.0 - Big Data – Artificial Intelligence (AI) – Industrial Internet of Things - Cyber Security – Cloud – Augmented Reality.	15	Chalk & Talk , Spot Test, Demo Coding
II	Artificial Intelligence (AI): Need, History and Foundations -The AI - environment - Societal Influences of AI – Application Domains and Tools - Associated Technologies of AI - Future prospects of AI – Challenges of AI.	15	Chalk & Talk , Spot Test, Demo Coding
III	Evolution - Data Evolution - Data : Terminologies - Essential of Big Data in Industry 4.0 - Big Data Merits and Limitations - Big Data Components : Big Data Characteristics - Big Data Processing Frameworks - Big Data Tools - Big Data Applications - Big Data Domain Stack : Big Data in Data Science – Big Data in IoT - Big Data in Machine Learning - Big Data in Databases - Big Data Usecases: Big Data in Social Causes - Big Data for Industry -Big Data Roles - Learning Platforms; Internet of Things (IoT) : Introduction to IoT – Architecture of IoT Technologies for IoT - Developing IoT Applications - Applications of IoT - Security in IoT.	15	Chalk & Talk , Spot Test, Demo Coding
IV	IoT in Manufacturing – Healthcare – Education – Aerospace and Defence – Agriculture – Transportation and Logistics – Impact of Industry 4.0 on Society: Impact on Business, Government, People - Tools for Artificial Intelligence - Big Data and Data Analytics - Virtual Reality - Augmented Reality –IoT - Robotics.	15	Chalk & Talk , Spot Test, Demo Coding
V	Education 4.0 – Curriculum 4.0 – Faculty 4.0 – Skills required for Future - Tools for Education – Artificial Intelligence Jobs in 2030 – Jobs 2030 - Framework for aligning Education with Industry 4.0.	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Mrs.M.Sharmiladevi

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
I	**Elective-I**	**230PCCADSE1B**	**Big Data Analytics**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To understand the various aspects of data science and applying them in health care
2. To learn the applications of big data for industrial growth and development
3. To understand the characteristics of 5 V's
4. To know the big data problems
5. To understand the Hadoop

Course Content:

UNIT : I - Introduction to Data Science

Introduction to data science – Case Studies – Data Science in Biomedicine and Healthcare – Sequence Processing – Medical Image Analysis – Natural Language Processing – Network Modelling and Probabilistic Modelling.

UNIT : II - Big Data

Big data: Meaning – Importance of Big Data – Example of Big Data – Source of Big Data - Machine -Generated Data - Advantages – Big Data generated by people – Organization of Generated Data - Integrating the data.

UNIT : III - Characteristics of Big Data

Characteristics of big data volume – Variety –Velocity – Characteristics of Big Data – Veracity – Valence and Value – Getting value out of Big Data using 5-step process to structure your analysis.

UNIT : IV - Data Science: Getting value out of Big Data

Building a Big Data Strategy – Happening of Big Data science – Five Components of Data Science. Steps in Data Science: Acquiring Data, Preprocessing and Exploring Data – Analysing Data – Communicating results – Turning insights into action.

UNIT : V - Big Data Systems and Hadoop

Meaning of Distributed File System – Scalable Computing over the Internet – Programming Models for Big Data – Introduction to Hadoop systems – The Hadoop Distributed File System: A Storage System for Big Data – YARN: A Resource Manager for Hadoop – Map Reduce: Simple Programming for Big Results – When to Reconsider Hadoop? – Cloud Computing: An important Big Data enabler.

Books for study:

1. Peter Guerra and Kirk Borne (2016), "Ten Signs of Data Science Maturity", O'Reily Media Pvt Ltd, USA
2. Tom White (2012), "Hadoop: The Definitive Guide" Third Edition, O'Reily Media, USA.
3. SeemaAcharya (2015), SubhasiniChellappan, "Big Data Analytics", Wiley, USA

Books for reference:

1. Howard Wen, Big Ethics for Big Data, O'Reilly Media, USA.
2. Michael Mineli, Michele Chambers, AmbigaDhiraj (2013), Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses, Wiley Publications, USA .
3. Judith S.Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman (2015), "Big Data for Dummies", John Wiley & Sons, Inc., USA.

Web references:

1. https://www.coursera.org/learn/big-data-introduction/home/welcome
2. https://www.coursera.org/learn/bioconductor?action=enroll&authMode=login

Pedagogy :

Chalk and Talk , PowerPoint Presentation , Group Discussion , Student Seminar,Spot Test, Assignments , Quiz.

Rationale for Nature of Course: Quickly analyzing large amounts of data from different sources, in many different formats and types

Activities to be Given : Practice to Create Data Collection, Group Discussion, Seminar.

Course Learning Outcomes(CLO)

On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Describe the Big Data landscape including examples of real world big data problems	Upto K4
CLO2	Explain the advantages of Big Data.	Upto K4
CLO3	Explain the Vs of Big Data and its impacts of data collection, monitoring, storage, analysis and reporting	Upto K4
CLO4	Identify what are and what are not big data problems and be able to recast big data problems as data science questions	Upto K5
CLO5	Explain Hadoop technology	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Annexure-4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	2	2	2	1	2
CLO2	2	2	2	3	1	3
CLO3	3	3	3	3	2	3
CLO4	2	2	2	2	1	2
CLO5	3	3	3	3	3	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	Introduction to data science – Case Studies – Data Science in Biomedicine and Healthcare - Sequence Processing – Medical Image Analysis -Natural Language Processing – Network Modelling and Probabilistic Modelling.	15	Chalk & Talk , Spot Test, Demo Coding
II	Big data: Meaning – Importance of Big Data – Example of Big Data - Source of Big Data - Machine -Generated Data – Advantages - Big Data generated by people – Organization of Generated Data - Integrating the data.	15	Chalk & Talk , Spot Test, Demo Coding
III	Characteristics of big data volume – Variety – Velocity - Characteristics of Big Data – Veracity – Valence and Value - Getting value out of Big Data using 5-step process to structure your analysis.	15	Chalk & Talk , Spot Test, Demo Coding
IV	Building a Big Data Strategy – Happening of Big Data science - Five Components of Data Science. Steps in Data Science: Acquiring Data - Preprocessing and Exploring Data – Analysing Data – Communicating results – Turning insights into action.	15	Chalk & Talk , Spot Test, Demo Coding
V	Meaning of Distributed File System – Scalable Computing over the Internet – Programming Models for Big Data - Introduction to Hadoop systems – The Hadoop Distributed File System: A Storage System for Big Data - YARN: A Resource Manager for Hadoop – Map Reduce: Simple Programming for Big Results – When to Reconsider Hadoop? – Cloud Computing: An important Big Data enabler.	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Ms.A.Josephine

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
I	**Elective – II**	**230PCCADSE 1C**	**Enterprise Resource Planning**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To learn the history and growth of ERP
2. To understand the risks involved while using ERP
3. To gain knowledge on the various ERP technologies
4. To learn the dynamics of ERP marketplace
5. To choose appropriate ERP solutions or packages

Course Content:

UNIT : I - Enterprise an Overview

Business Functions and Business Processes - Integrated Management Information - Business Modelling - Integrated Data Model. Business Processes: Major Business Processes. Introduction to ERP: Common ERP Myths - A Brief History of ERP - Reasons for the Growth of ERP Market - Advantages of ERP.

UNIT : II - Risk of ERP

People Issues - Process Risks - Technological Risks - Implementation Issues-Operation and Maintenance Issues - Unique Risks of ERP Projects - Managing Risks on ERP Projects. Benefits of ERP: Information Integration - Reduction of Lead Time - On-Time Shipment - Reduction in Cycle Time - Improved Resource Utilization - Better Customer Satisfaction - Improved Supplier Performance - Increased Flexibility - Reduced Quality Costs - Better Analysis and Planning Capabilities - Improved Information Accuracy and Decision Making Capability - Use of Latest Technology.

UNIT : III - ERP and Related Technologies

Business Process Reengineering (BPR) - Business Intelligence (BI) - Business Analytics (BA) - Data Warehousing- Data Mining - On - Line Analytical Processing (OLAP) - Product Life Cycle Management (PLM) - Supply Chain Management (SCM) - Customer Relationship Management (CRM) - Geographic Information Systems (GIS) - Intranets and Extranets. Advanced Technology and ERP Security: Technological Advancements - Computer Crimes - ERP and Security - Computer Security - Crime and Security.

UNIT : IV - ERP Market Place and Market Place Dynamics

Market Overview - ERP Market Tiers. Market Place Dynamics - Industry - Wise ERP Market Share - ERP: The Indian Scenario. Business Modules of an ERP Package: Functional Modules of ERP Software: Integration of ERP, Supply Chain, and Customer Relationship Applications.

UNIT : V - ERP Implementation

Benefits of Implementing ERP - Implementation Challenges. ERP Implementation Life Cycle: Objectives of ERP Implementation - Different Phases of ERP Implementation- Reasons for ERP Implementation Failure. ERP Package Selection: ERP Package Evaluation and Selection - The Selection Process - ERP Packages: Make or Buy.

Books for study:

1. Alexis Leon (2008), "Enterprise Resource Planning", 2nd edition, Tata McGraw-Hill, Noida.
2. Jagan Nathan Vaman (2008), "ERP in Practice", Tata McGraw-Hill, Noida.
3. MahadeoJaiswal and Ganesh Vanapalli (2009), "ERP", Macmillan India, Noida.

Books for reference:

1. Sinha P. Magal and Jeffery Word (2012), "Essentials of Business Process and Information System", Wiley India, USA.
2. Summer (2008), "ERP", Pearson Education, Noida.
3. Vinod Kumar Grag and N.K. Venkitakrishnan (2006), "ERP- Concepts and Practice", Prentice Hall of India, New Delhi.

Web references:

1. https://mrcet.com/downloads/digital_notes/CSE/III%20Year/ERP%20Digital%20notes.pdf
2. https://mrcet.com/downloads/digital_notes/ME/III%20year/ERP%20Complete%20Digital%20notes.pdf
3. https://www.vssut.ac.in/lecture_notes/lecture1428643004.pdf

Pedagogy :

Chalk and Talk , PowerPoint Presentation, Group Discussion, Student Seminar ,Spot Test Practical Labs , Assignments , Quiz.

Rationale for Nature of Course: To learn about data storage techniques and query processing Students will gain knowledge of PL/SQL systems by doing programs.

Activities to be Given : Practice to Create own programs, Group Discussion, Seminar.

Annexure-4

Course Learning Outcomes(CLO)

On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Recall the history and growth of ERP	Upto K4
CLO2	Appraise the risks involved while using ERP	Upto K4
CLO3	Select from among various ERP technologies	Upto K4
CLO4	Analyse the dynamics of ERP marketplace	Upto K5
CLO5	Distinguish and choose appropriate ERP solutions or packages	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	1	2	2	3	3
CLO2	3	3	2	3	3	3
CLO3	3	3	2	3	3	3
CLO4	3	3	2	3	3	3
CLO5	3	3	2	3	3	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

Annexure-4

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	Business Functions and Business Processes - Integrated Management Information - Business Modelling - Integrated Data Model. Business Processes: Major Business Processes. Introduction to ERP: Common ERP Myths - A Brief History of ERP - Reasons for the Growth of ERP Market - Advantages of ERP.	15	Chalk & Talk , Spot Test, Demo Coding
II	People Issues - Process Risks - Technological Risks - Implementation Issues-Operation and Maintenance Issues - Unique Risks of ERP Projects - Managing Risks on ERP Projects. Benefits of ERP: Information Integration - Reduction of Lead Time - On-Time Shipment - Reduction in Cycle Time - Improved Resource Utilization - Better Customer Satisfaction - Improved Supplier Performance - Increased Flexibility - Reduced Quality Costs - Better Analysis and Planning Capabilities - Improved Information Accuracy and Decision Making Capability - Use of Latest Technology.	15	Chalk & Talk , Spot Test, Demo Coding
III	Business Process Reengineering (BPR) - Business Intelligence (BI) - Business Analytics (BA) - Data Warehousing- Data Mining - On - Line Analytical Processing (OLAP) - Product Life Cycle Management (PLM) - Supply Chain Management (SCM) - Customer Relationship Management (CRM) - Geographic Information Systems (GIS) - Intranets and Extranets. Advanced Technology and ERP Security: Technological Advancements - Computer Crimes - ERP and Security - Computer Security - Crime and Security.	15	Chalk & Talk , Spot Test, Demo Coding
IV	Market Overview - ERP Market Tiers. Market Place Dynamics - Industry - Wise ERP Market Share - ERP: The Indian Scenario. Business Modules of an ERP Package: Functional Modules of ERP Software: Integration of ERP, Supply Chain, and Customer Relationship Applications.	15	Chalk & Talk , Spot Test, Demo Coding

V	Benefits of Implementing ERP - Implementation Challenges. ERP Implementation Life Cycle: Objectives of ERP Implementation - Different Phases of ERP Implementation- Reasons for ERP Implementation Failure. ERP Package Selection: ERP Package Evaluation and Selection - The Selection Process - ERP Packages: Make or Buy.	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Mrs.S.Nivithitha

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
I	**Elective – II**	**230PCCADSE1D**	**Database Management System**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To introduce the basic concepts of Relational Database Management System and the working knowledge of Linux environment
2. To understand designing databases and queries in SQL
3. To learn RDBMS
4. To upskill the functions and operators
5. To understand the constraints, locks and MySQL

Course Content:

UNIT : I - Introduction to Database Systems and Linux

Introduction to File and Database systems Database System Structure - Data Models Introduction to Network Models: ER Model, Relational Model - Introduction to Linux Operating System - Properties of Linux - Desktop Environment - Linux basics commands - Working with Files - Text Editors - I/O Redirections - Pipes, Filters, and Wildcards - Changing Access Rights.

UNIT : II - SQL Definition and Normalization

SQL – Data Definition - Queries in SQL - Updates - Views - Integrity and Security. Relational Database design – Functional dependences and Normalization for relational databases (up to BCNF) - Query Forms

UNIT : III - Files and RDBMs

Record Storage and Primary File Organization - Secondary Storage Devices - Operations on Files - Heap File - Sorted Files - Hashing Techniques - Index Structure for Files - Different Types of Indexes - B-Tree - B+Tree - Query Processing - Multimedia Databases - Basic Concepts and Applications - Indexing and Hashing - Text Databases - Overview of RDBMs - Advantages of RDBMs over DBMs – Introduction to Data Mining.

UNIT : IV - Data Definition and Manipulation Language

Data Definition Language - Data Manipulation Language - Transaction Control - Data Control Language Grant - Revoke Privilege Command - Set Operators - Joins- Kinds of Joins - Table Aliases - Sub queries - Multiple and Correlated Sub Queries - Functions - Single Row - Date, Character, Numeric, Conversion and Group Functions

UNIT : V - Constraints and MYSQL

Constraints - Domain, Equity, Referential Integrity Constraints - Locks - Types of Locks, Table Partitions - Synonym - Introduction to PL/SQL - Introduction - MySQL as an RDBMS Tool - Data types and Commands.

Books for study:

1. Ramakrishnan Raghu and Gehrke Johannes, "Database Management Systems", McGraw–Hill, USA.
2. Rajendra Prasad Mahapatra and GovindVerma, "Database Management System", Khanna Publications, New Delhi.

Books for reference:

1. Ramon A Mata-Toledo and Pauline K Cushman, "Database Management System", Schaun's Outlines, New York.
2. Abraham Silberschatz, Henry F Korth and S. Sudarshan, "Database System Concepts" McGraw–Hill, USA.

Web references:

1. http://education-portal.com/academy/lesson/what-is-a-database-management-systempurpose-and-function.html.
2. http://www.comptechdoc.org/os/linux/usersguide/linux_ugbasics.html.
3. http://www.dummies.com/how-to/content/common-linux-commands.html.

Pedagogy :

Chalk and Talk , PowerPoint Presentation, Group Discussion, Student Seminar ,Spot Test Practical Labs , Assignments , Quiz.

Rationale for Nature of Course: To learn about data storage techniques and query processing Students will gain knowledge of PL/SQL systems by doing programs.

Activities to be Given : Practice to Create own programs, Group Discussion, Seminar.

Course Learning Outcomes(CLO)

On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Identify models and schemas in DBMS and LINUX	Upto K4
CLO2	Demonstrate Queries in SQL	Upto K4
CLO3	Discuss handling files and databases	Upto K4
CLO4	Apply skills on functions and operators in RDBMS	Upto K5
CLO5	Apply constraints and locks in SQL	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Annexure-4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	2	3	3	3	2	2
CLO2	3	3	2	3	3	3
CLO3	1	2	2	2	1	2
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	1	2

1 - Basic Level 2- Intermediate Level 3-Advance Level

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	Introduction to File and Database systems Database System Structure - Data Models Introduction to Network Models: ER Model - Relational Model - Introduction to Linux Operating System - Properties of Linux - Desktop Environment - Linux basics commands - Working with Files - Text Editors - I/O Redirections - Pipes, Filters, and Wildcards - Changing Access Rights.	15	Chalk & Talk , Spot Test, Demo Coding
II	SQL – Data Definition - Queries in SQL - Updates - Views - Integrity and Security - Relational Database design - Functional dependences and Normalization for relational databases (up to BCNF) - Query Forms.	15	Chalk & Talk , Spot Test, Demo Coding
III	Record Storage and Primary File Organization - Secondary Storage Devices - Operations on Files - Heap File - Sorted Files - Hashing Techniques - Index Structure for Files - Different Types of Indexes - B-Tree - B+Tree - Query Processing - Multimedia Databases - Basic Concepts and Applications - Indexing and Hashing - Text Databases - Overview of RDBMs - Advantages of RDBMs over DBMs – Introduction to Data Mining.	15	Chalk & Talk , Spot Test, Demo Coding
IV	Data Definition Language - Data Manipulation Language - Transaction Control - Data Control Language Grant - Revoke Privilege Command - Set Operators - Joins- Kinds of Joins - Table Aliases - Sub queries - Multiple and Correlated Sub Queries - Functions - Single Row - Date, Character, Numeric, Conversion and Group Functions	15	Chalk & Talk , Spot Test, Demo Coding
V	Constraints - Domain, Equity, Referential Integrity Constraints - Locks - Types of Locks - Table Partitions - Synonym - Introduction to PL/SQL – Introduction - MySQL as an RDBMS Tool - Data types and Commands.	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Mrs.S.Chitradevi

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
II	**Elective – III**	**230PCCADSE2A**	**Data Mining and Data Interpretation**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To understand the basic concepts, principles and need of data warehousing
2. To gain knowledge on the data warehouse architecture, modelling and its implementation.
3. To understand steps in implementing data mart and its various dimensions
4. To learn the features, types and challenges of data mining
5. To aid the students to understand the various data mining tools and techniques

Course Content:

UNIT : I - Data Warehouse

Definition - history of data warehouse - features of data warehouses - characteristics of data warehouse - goals of data warehousing- principles of data warehousing - need for data warehouse - benefits of data warehouse - need for separate data warehouse - difference between database and data warehouse - applications of data warehouses - components of data warehouse- data staging component.

UNIT : II - Data Warehouse Architecture

Data warehouse architecture - properties of data warehouse architectures - types of data warehouse architectures- three-tier data warehouse architecture - ETL (extract, transform, and load) process - selecting an ELT tool- Difference between ETL and ELT types of data warehouses - data warehouse modelling - data modelling life cycle - types of datawarehouse models- data warehouse design - data warehouse implementation- implementation guidelines - meta data - necessary of metadata in data warehouses - types of metadata- metadata repository - benefits of metadata repository.

UNIT : III - Data Mart

Data Mart- Reasons for creating a data mart- Types of Data Marts- Steps in Implementing a Data Mart- Difference between Data Warehouse and Data Mart. - Dimensional Modeling-Objectives of Dimensional Modeling- Advantages of Dimensional Modeling - Elements of Dimensional Modeling - Dimension Table- Multidimensional Data Model- Data Cube.

UNIT : IV - Data Mining

Definition - History of Data Mining- Features of Data Mining - Types of Data Mining - Data Mining Vs Data Warehousing- Advantages and Disadvantages of Data Mining - Data

Mining Applications - Challenges of Implementation in Data mining - Steps involved in Data Mining - Classification of Data Mining Systems.

UNIT : V - Data Mining Tools & Techniques

Data Mining Implementation Process - Data Mining Architecture - Clustering in Data Mining - Different types of Clustering - Text Data Mining - Bitcoin Data Mining - Data Mining Vs Big Data - Data Mining Models - Trends in Data Mining.

Books for study:

1. Jiawei Han, MichelineKamber (2011), Data Mining, Concepts and Techniques, Morgan Kauffman Publishers, California.
2. Pang Ning Tan, Michael Steinbach, Vipin Kumar (2005), Introduction to Data Mining, Addison Wesley, USA.
3. K.P. Soman, ShyamDiwakar, V. Ajay (2006), Insight into Data Mining: Theory & Practice, Prentice Hall of India, New Delhi.

Books for reference:

1. BPB Editorial Board (2004), "Data Mining", BPB publications, Noida.
2. Ian H. Witten &Eibe Frank (2011), "Data Mining, Practical Machine Learning Tools and Techniques", Morgan Kaufmann series.
3. Ramesh Sharda, DursunDelen, Efraim Turban (2018), "Business Intelligence", Pearson Education Services Pvt Ltd, Noida.

Web references:

1. https://mrcet.com/downloads/digital_notes/ME/III%20 year/ERP%20 Complete%20Digital%20notes.pdf
2. https://mrcet.com/pdf/Lab%20Manuals/IT/DATA%20WAREHOUSING%20AND % 020DATA%20MINING%20(R18A0524).pdf00

Pedagogy :

Chalk and Talk, PowerPoint Presentation, Group Discussion, Student Seminar, Spot Test, Practical Labs, Assignments, Quiz.

Rationale for Nature of Course: To learn about data warehouse and data mining techniques. Students will gain knowledge on database searching, inferring data relationships.

Activities to be Given : Practice the students to do mini projects related to product and price comparison, image caption related to data mining.

Annexure-4

Course Learning Outcomes(CLO)
On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Explain the basic concepts, principles and need of data warehousing	Upto K4
CLO2	Appraise data warehouse architecture, modelling and its implementation.	Upto K4
CLO3	Choose various steps in implementing data mart and its dimensions	Upto K4
CLO4	Recall the features and types of data mining	Upto K5
CLO5	Apply various data mining tools and techniques	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	1	1	1	2	3
CLO2	2	3	2	2	2	3
CLO3	3	3	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	3	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

LESSON PLAN : 75 hrs

UNITS	**DESCRIPTION**	**No. of Hours**	**Mode of Teaching**
I	Definition - history of data warehouse - features of data warehouses - characteristics of data warehouse - goals of data warehousing - principles of data warehousing - need for data warehouse - benefits of data warehouse - need for separate data warehouse - difference between database and data warehouse - applications of data warehouses - components of data warehouse- data staging component	15	Chalk & Talk, Spot Test, Demo Coding

II	Data warehouse architecture - properties of data warehouse architectures - types of data warehouse architectures- three-tier data warehouse architecture - ETL (extract, transform, and load) process - selecting an ELT tool- Difference between ETL and ELT types of data warehouses - data warehouse modelling - data modelling life cycle - types of data warehouse models- data warehouse design - data warehouse implementation - implementation guidelines - meta data - necessary of metadata in data warehouses - types of metadata- metadata repository - benefits of metadata repository.	15	Chalk & Talk, Spot Test, Demo Coding
III	Data Mart- Reasons for creating a data mart- Types of Data Marts- Steps in Implementing a Data Mart- Difference between Data Warehouse and Data Mart - Dimensional Modeling-Objectives of Dimensional Modeling- Advantages of Dimensional Modeling - Elements of Dimensional Modeling - Dimension Table- Multidimensional Data Model-Data Cube.	15	Chalk & Talk, Spot Test, Demo Coding
IV	Definition - History of Data Mining- Features of Data Mining - Types of Data Mining - Data Mining Vs Data Warehousing- Advantages and Disadvantages of Data Mining - Data Mining Applications - Challenges of Implementation in Data mining - Steps involved in Data Mining - Classification of Data Mining Systems.	15	Chalk & Talk, Spot Test, Demo Coding
V	Data Mining Implementation Process - Data Mining Architecture - Clustering in Data Mining - Different types of Clustering - Text Data Mining - Bitcoin Data Mining - Data Mining Vs Big Data - Data Mining Models - Trends in Data Mining.	15	Chalk & Talk, Spot Test, Demo Coding

Course Designer : Mrs.M.Sharmiladevi

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
II	**Elective – III**	**230PCCADSE2B**	**Technology In Banking**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To understand the network essentials for an operational core banking system
2. To provide an overview of customer centric electronic banking.
3. To understand the evolution of electronic fund transfer systems in the banking sector
4. To analyse the digital technologies offered in banking services.
5. To understand the information security system

Course Content:

UNIT : I - Introduction to Core Banking Computerization

EssentialsofBankComputerization–StandAloneandMulti-UserSystem–LocalAreaNetwork and Wide Area Network: Features, Advantages and Limitations – Core Banking:EssentialRequirementsandBenefits.

UNIT : II - Electronic Payment System and Banking Facilities

ElectronicPaymentSystems–ATM:Features–Advantages–Disadvantages–BrownLabe land White Label ATM, PIN, Electro Magnetic Cards, Credit Cards, Debit Cards and SmartCards:Features,BenefitsandLimitations– MultiplePininSmartCard – ElectronicPurse – ElectronicCheque –ElectronicCash – ElectronicBanking – HomeBanking(CorporateandPersonal) – Update Facilities – Internet Banking – Mobile Banking: Features, Advantages andLimitations – Signature Storage and Retrieval System – Cheque Truncation – MICR and OCR:Characteristics– AdvantagesandLimitations.

UNIT : III - Electronic Fund Transfer and Its Transitions

Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT, RTGS,VSAT, SFMS,SWIFT:Features,AdvantagesandLimitations–DigitalSignature -UnifiedPayments Interface(UPI):Concept,MechanismandServicesCovered – DigitalWallets (E-Wallets):Features,BenefitsandTypes.

UNIT : IV - Trends in Banking Technology

Recent Developments in Banking Technology: Digital Account Opening – Application Programming Interface – Video Collaboration – Person-to-Person Payments – Cloud Computing – NUUP (National Unified USSD Platform), AePS (Aadhaar enabled Payment System) –APBS (Aadhaar Payments Bridge System) - Role of IDBRT (Institute of Development and Research in Banking) in banking technology development - Status of E-banking in India - Process of E-Banking - Benefits of E-banking - Emerging challenges in banking industry - Scope of IT to tackle the key challenges.

UNIT : V - Information Security System

Information security - Software based security systems - Hardware based security systems (smart card, M chip) – Hackers: Techniques used by the hackers, Phishing, Pharming, Key loggers, Screen loggers, Phishing - Trojans transaction poisoning - Card related fraud - Site cloning – False merchant site - Authentication methodologies and security measures (Password protection - Smart cards - Biometric characteristics) - Encryption and security - Customer confidentiality - Regulatory environment of internet banking - Legal Framework for Electronic Transactions – Cyber security as per Information Technology Act, 2000 – RBI Guideline son Internet Banking.

Books for study:

1. SangeethaR,(2013) "Technology in Banking", 1st Edition, Charulatha Publications, Chennai.
2. Sohani, A K, (2012) "Technology in Banking Sector", SBS Publishers and Distributors Pvt Ltd, New Delhi.
3. Uppal R K and Dhiraj Sharma, (2017) "Banking with Technology: A New Vision - 2020", Bharti Publication, New Delhi
4. Indian Institute of Banking and Finance, (2017) "Information Technology, Data Communications and Electronic Banking", 3rd Edition, Macmillan Publishers India Private Limited, Noida.

Books for reference:

1. Vadlamani Ravi, (2007) "Advances in Banking Technology and Management: Impacts of ICT and CRM", 1st Edition, Information Science Reference, Hershey, (USA).
2. Lucian Morrisand Tim Walker, (2021) " The Handbook of Banking Technology" , John Wiley & Sons, New York.
3. Indian Institute of Banking and Finance, (2017), "Security in Electronic Banking", 3rd Edition, Macmillan Publishers India Private Limited, Noida.
4. Uppal R.K., AgrimUppal(2008) "Banking Services and Information Technology: The Indian Experience", New Century Publications, New Delhi.

Web references:

1. https://rbidocs.rbi.org.in/rdocs/Bulletin/PDFs/64767.pdf
2. https://www.researchgate.net/profile/Ravi-Vadlamani/publication/237383828_Chapter_I_Introduction_to_Banking_Technology_and_Management/links/572a89bc08aef7c7e2c4fbc3/Chapter-I-Introduction-to-Banking-Technology-and-Management.pdf
3. https://eprocure.gov.in/cppp/rulesandprocs/kbadqkdlcswfjdelrquehwuxcfmijmuixngudufgbuub gubfugbububjxcgfvsbdihbgfGhdfgFHytyhRtMjk4NzY=#:~:text=%5B9th%20June%2C%202000%5D%20An,communication%20and%20storage%20of%20information%2C

Pedagogy :

Chalk and Talk, PowerPoint Presentation, Group Discussion, Student Seminar, Spot Test, Practical Labs, Assignments, Quiz.

Annexure-4

Rationale for Nature of Course: To learn about data warehouse and data mining techniques. Students will gain knowledge on database searching, inferring data relationships.

Activities to be Given : Practice the students to do mini projects related to product and price comparison, image caption related to data mining.

Course Learning Outcomes(CLO)

On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Explain the basic concepts, principles and need of data warehousing	Upto K4
CLO2	Appraise data warehouse architecture, modelling and its implementation.	Upto K4
CLO3	Choose various steps in implementing data mart and its dimensions	Upto K4
CLO4	Recall the features and types of data mining	Upto K5
CLO5	Apply various data mining tools and techniques	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	1	1	1	2	3
CLO2	2	3	2	2	2	3
CLO3	3	3	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	3	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

Annexure-4

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	EssentialsofBankComputerization–StandAloneandMulti-UserSystem–LocalAreaNetwork and Wide Area Network: Features, Advantages and Limitations – Core Banking:EssentialRequirementsandBenefits.	15	Chalk & Talk, Spot Test, Demo Coding
II	ElectronicPaymentSystems–ATM:Features–Advantages–Disadvantages–BrownLabe land White Label ATM, PIN, Electro Magnetic Cards, Credit Cards, Debit Cards and SmartCards:Features,BenefitsandLimitations–MultiplePininSmartCard – ElectronicPurse – ElectronicCheque –ElectronicCash – ElectronicBanking – HomeBanking(CorporateandPersonal) – Update Facilities – Internet Banking – Mobile Banking: Features, Advantages andLimitations – Signature Storage and Retrieval System – Cheque Truncation – MICR and OCR:Characteristics–AdvantagesandLimitations.	15	Chalk & Talk, Spot Test, Demo Coding
III	Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT, RTGS,VSAT, SFMS, SWIFT: Features, Advantages and Limitations–Digital Signature – Unified Payments Interface(UPI): Concept, Mechanism and Services Covered – Digital Wallets (E-Wallets):Features, Benefits and Types.	15	Chalk & Talk, Spot Test, Demo Coding
IV	Recent Developments in Banking Technology: Digital Account Opening – Application Programming Interface – Video Collaboration – Person-to-Person Payments – Cloud Computing – NUUP (National Unified USSD Platform), AePS (Aadhaar enabled Payment System) –APBS (Aadhaar Payments Bridge System) - Role of IDBRT (Institute of Development and Research in Banking) in banking technology development - Status of E-banking in India - Process of E-Banking - Benefits of E-banking - Emerging challenges in banking industry - Scope of IT to tackle the key challenges.	15	Chalk & Talk, Spot Test, Demo Coding

V	Information security - Software based security systems - Hardware based security systems (smart card, M chip) – Hackers: Techniques used by the hackers, Phishing, Pharming, Key loggers, Screen loggers, Phishing - Trojans transaction poisoning - Card related fraud - Site cloning – False merchant site - Authentication methodologies and security measures (Password protection - Smart cards - Biometric characteristics) - Encryption and security - Customer confidentiality - Regulatory environment of internet banking - Legal Framework for Electronic Transactions – Cyber security as per Information Technology Act, 2000 – RBI Guideline son Internet Banking.	15	Chalk & Talk, Spot Test, Demo Coding

Course Designer : Mrs.M.Sharmiladevi

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
II	**Elective – IV**	**230PCCADSE2C**	**Financial Analytics (Practicals)**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To understand the statistical concepts relating to Probability, decision making under uncertainty and analysis of exploratory data
2. To learn the use of regression, time series analysis and building of models using accounting data
3. To gain knowledge on R and python programming
4. To prepare, analyse and forecast financial statements using cash flow statements
5. To gain knowledge on concept, application, and issues in capital budgeting

Course Content:

UNIT : I – Statistical Concepts

Probability, Normal, Lognormal distribution properties, Decision making under uncertainty - Cleaning and pre-processing financial data, Exploratory Data Analysis in Finance.

UNIT : II - Simple Linear Models

Use of Regression in Finance, Building Models using Accounting Data, Understanding stock price behaviour, time series analysis in finance.

UNIT : III - Using R for Analysis of Data

Quick introduction to R and Python, understanding data in finance, sources of data, Using R for analysis of data.

UNIT : IV - Cash Flow Concepts

Cash flow statement – Prepare and Analyse, Modelling and forecasting of financial statements.

UNIT : V - Capital Budgeting

NPV, IRR – Concept, application, and issues, Use of real options for better financial outcomes.

Books for study:

1. Azam, M (2012), "Management Information System", McGrawHill Education, Noida.
2. Laudon, K., Laudon, J. and Dass, R. (2010), "Management Information Systems –

Managing the Digital Firm", 11th Edition, Pearson, Noida.
3. Murdick, R.G., Ross, J.E. and Claggett, J.R. (2011), "Information Systems for Modern Management", 3rd Edition, PHI, New Delhi.

Books for study:

1. Gary Koop, "Analysis of Economic Data", 4th Edition, Wiley, USA.
2. David Ruppert, David S. Matteson, "Statistics and Data Analysis for Financial Engineering: with R examples", Springers, USA.

Web references:

1. https://personal.ntu.edu.sg/nprivault/MH8331/financial_risk_analytics.pdf
2. https://dynamics.microsoft.com/en-us/finance/what-is-financial-analytics/

Pedagogy :

Chalk and Talk, PowerPoint Presentation, Group Discussion, Student Seminar, Spot Test, Practical Labs , Assignments, Quiz.

Rationale for Nature of Course: To make the students to know about the IT systems and procedures are in line with the organization's objectives, information system managers must be familiar with the business operations and strategy of the organization.

Activities to be Given : It helps the students to make decisions and analyse and interpret the data

Course Learning Outcomes(CLO)
On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Analyse decisions under uncertainty and also analyse exploratory	Upto K4
CLO2	Build models using accounting data and analyse using regression and time series tools	Upto K4
CLO3	Apply R and python programming	Upto K4
CLO4	Estimate and analyse financial statements using cash flow statements	Upto K5
CLO5	Select appropriate capital budgeting techniques for decision making	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Annexure-4

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	3	3	1	3	3	2
CLO2	3	3	1	3	3	2
CLO3	3	3	1	3	3	2
CLO4	3	3	1	3	3	2
CLO5	3	3	1	3	3	2

1 - Basic Level 2- Intermediate Level 3-Advance Level

LESSON PLAN : 75 hrs

UNITS	**DESCRIPTION**	**No. of Hours**	**Mode of Teaching**
I	Probability, Normal, Lognormal distribution properties, Decision making under uncertainty - Cleaning and pre-processing financial data, Exploratory Data Analysis in Finance.	15	Chalk & Talk , Spot Test, Demo Coding
II	Use of Regression in Finance, Building Models using Accounting Data, Understanding stock price behaviour, time series analysis in finance.	15	Chalk & Talk , Spot Test, Demo Coding
III	Quick introduction to R and Python, understanding data in finance, sources of data, Using R for analysis of data.	15	Chalk & Talk , Spot Test, Demo Coding
IV	Cash flow statement – Prepare and Analyse, Modelling and forecasting of financial statements.	15	Chalk & Talk , Spot Test, Demo Coding
V	NPV, IRR – Concept, application, and issues, Use of real options for better financial outcomes.	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Mrs.B.Kalyani

Annexure-4

I M.Com (CA)								
Sem	Course Type	Course Code	Course Title	Credits	Contact Hours /week	CIA	SE	Total
II	**Elective – IV**	**230PCCADSE2D**	**Management Information System**	**3**	**5**	**25**	**75**	**100**

Nature of the Course		
Knowledge and Skill Oriented	**Employability Oriented**	**Entrepreneurship oriented**
✓	✓	

Course Objectives:

1. To understand the basic concept of Information system
2. To identify the importance of MIS
3. To understand the Functional Management Information System
4. To learn the role of system analyst
5. To apply the concept of Enterprise Resource Planning

Course Content:

UNIT : I –Information System

Introduction to information system - Management - Structure and Activities - Information needs and sources - Types of management decisions and information need - System classification - Elements of system, input, output, process and feedback.

UNIT : II - Types of Management Information Systems

Transaction Processing Information System - Information system for managers - Intelligence information system – Decision support system - Executive information systems.

UNIT : III - Functional Management Information Systems

Functional Management Information System: Production Information system - Marketing Information Systems - Accounting Information System - Financial Information System - Human Resource Information System.

UNIT : IV - System design and Database

System Analysis and Design: The work of a system analyst - SDLC- System design – Requirement analysis - Data flow diagram - Relationship diagram - Design - Implementation - Evaluation and maintenance of MIS - Database System: Overview of Database - Components - Advantages and disadvantages of database.

UNIT : V - Enterprise Resource Planning

Enterprise Resource Planning (ERP) System - Benefits of the ERP - How ERP is different from conventional packages - Need for ERP - ERP components - Selection of ERP Package - ERP implementation - Customer Relationship management - Organisation&

Types - Decision Making - Data & information - Characteristics & Classification of information - Cost & value of information - Various channels of information and MIS

Books for study:

4. Azam, M (2012), "Management Information System", McGrawHill Education, Noida.
5. Laudon, K., Laudon, J. and Dass, R. (2010), "Management Information Systems – Managing the Digital Firm", 11th Edition, Pearson, Noida.
6. Murdick, R.G., Ross, J.E. and Claggett, J.R. (2011), "Information Systems for Modern Management", 3rd Edition, PHI, New Delhi.

Books for reference:

1. O'Brien, J.A., Morakas, G.M. and Behl, R. (2009), "Management Information Systems", 9th Edition, Tata McGraw-Hill Education, Noida.
2. Saunders, C.S. and Pearson, K.E. (2009), "Managing and Using Information Systems", 3rd Edition, Wiley India Pvt. Ltd., New Delhi.
3. Stair, R. and Reynolds, G. (2012), "Information Systems", 10th Edition, Cengage Learning, Noida.

Web references:

1. https://cleartax.in/g/terms/mis-meaning-mis-full-form-marketing-information-system/amp
2. https://www.techtarget.com/searchitoperations/definition/MIS-management-information-systems

Pedagogy :

Chalk and Talk, PowerPoint Presentation, Group Discussion, Student Seminar, Spot Test, Practical Labs , Assignments, Quiz.

Rationale for Nature of Course: To make the students to know about the IT systems and procedures are in line with the organization's objectives, information system managers must be familiar with the business operations and strategy of the organization.

Activities to be Given : It helps the students to make decisions and analyse and interpret the data

Course Learning Outcomes(CLO)
On completion of the course, behind the students will be able to:

CLOs	Course Outcomes	Knowledge Level
CLO1	Identify the basic concept of Information system	Upto K4
CLO2	Discuss the importance of MIS	Upto K4
CLO3	Explain the functional MIS	Upto K4
CLO4	Describe the role of system analyst	Upto K5

CLO5	Apply the concept of Enterprise resource planning	Upto K5

K1- Remembering and recalling facts with specific answers
K2- Basic understanding of facts and stating main ideas with general answers
K3– Application oriented – Solving Problems
K4 –Examining, analyzing, presentation and make inferences with evidences

Mapping of Course Learning Outcomes (CLOs) with Programme Outcomes (POs)

CLOs	PO1	PO2	PO3	PO4	PO5	PO6
CLO1	1	1	2	2	1	2
CLO2	2	2	2	2	1	2
CLO3	3	3	3	3	1	2
CLO4	3	3	3	3	2	3
CLO5	3	3	3	3	2	3

1 - Basic Level 2- Intermediate Level 3-Advance Level

LESSON PLAN : 75 hrs

UNITS	DESCRIPTION	No. of Hours	Mode of Teaching
I	Introduction to information system - Management - Structure and Activities - Information needs and sources - Types of management decisions and information need - System classification - Elements of system, input, output, process and feedback.	15	Chalk & Talk , Spot Test, Demo Coding
II	Transaction Processing Information System - Information system for managers - Intelligence information system – Decision support system - Executive information systems.	15	Chalk & Talk , Spot Test, Demo Coding
III	Functional Management Information System: Production Information system - Marketing Information Systems - Accounting Information System - Financial Information System - Human Resource Information System.	15	Chalk & Talk , Spot Test, Demo Coding
IV	System Analysis and Design: The work of a system analyst - SDLC- System design – Requirement analysis - Data flow diagram - Relationship diagram - Design -Implementation - Evaluation and maintenance of MIS - Database System: Overview of Database - Components - Advantages and disadvantages of database.	15	Chalk & Talk , Spot Test, Demo Coding

V	Enterprise Resource Planning (ERP) System - Benefits of the ERP - How ERP is different from conventional packages - Need for ERP - ERP components - Selection of ERP Package - ERP implementation - Customer Relationship management – Organisation & Types - Decision Making - Data & information - Characteristics & Classification of information - Cost & value of information - Various channels of information and MIS	15	Chalk & Talk , Spot Test, Demo Coding

Course Designer : Mrs.S.Niveethitha