THIRUVALLUVAR UNIVERSITY

SERKKADU, VELLORE–632115

M.COM.,
COMPUTER APPLICATIONS

SYLLABUS

FROM THE ACADEMIC YEAR

2023 – 2024

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COMPUTER APPLICATIONS

Programme Outcomes:

PO1: Problem Solving Skill:

Apply knowledge of Management Theories and Human Resource Practices to solve business problems through research in global context.

PO2: Decision Making Skill:

Foster analytical and critical thinking abilities to enable decision-making based on data.

PO3: Ethical Value:

Incorporate quality, ethical and value-based legal perspectives in all organisational activities.

PO4: Employability Skill:

Develop business acumen to enhance employability skills in the competitive environment.

PO5: Entrepreneurial Skill:

Equip with skills and competencies to become an entrepreneur.

PO6: Contribution to Society:

Succeed in career endeavours and contribute significantly to society.

PO7: Communication Skill:

Develop communication, managerial and interpersonal skills.

PO8: Individual and Team Leadership Skill:

Lead oneself and the team to achieve organizational goals.

PO 9: Multicultural competence:

Demonstrate knowledge of the values and beliefs of multiple cultures to address issues in the global scenario

PO 10: Moral and ethical awareness/reasoning:

Embrace moral and ethical values in one's life,

PO 11: Leadership readinessqualities:

Demonstrate to take up leadership mapping out the tasks and formulating an inspiring vision and mission

PO 12: Lifelong learning:

Acquire knowledge and skills, including "learning how to learn",

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Programme Specific Outcomes:

PSO 1 - 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.

PSO 3 – Contribution to the Society:

Contribute to the development of the society by collaborating with stakeholders for mutual benefit.

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.

Mapping of Course outcomes (COs) with Programme Outcomes (POs) and Programme Specific Outcomes (PSOs) can be carried out, assigning the appropriate level(1 – Low; 2 – Middle and 3 – High) in the grids:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PS0 1	PSO 2	PSO 3

CO 1									
CO 2									
CO 3									
CO 4									
CO 5									

Strong - 3   **Medium – 2**   **Low - 1**

Template for P.G., Programmes

Semester–I	Credit	Hours	Semester-II	Credit	Hours	Semester-III	Credit	Hours	Semester–IV	Credit	Hours
1.1. Core-I	5	7	2.1. Core-IV	5	6	3.1. Core-VII	5	6	4.1. Core-XI	5	6
1.2 Core-II	5	7	2.2 Core-V	5	6	3.2 Core-VIII	5	6	4.2 Core-XII	5	6
1.3 Core – III	4	6	2.3 Core – VI	4	6	3.3 Core – IX	5	6	4.3 Project with viva voce	7	10
1.4 Discipline Centric Elective -I	3	5	2.4 Discipline Centric Elective – III	3	4	3.4 Core – X	4	6	4.4 Elective - VI (Industry / Entrepreneurship) 20% Theory 80% Practical	3	4
1.5 Generic Elective-II:	3	5	2.5 Generic Elective -IV:	3	4	3.5 Discipline Centric Elective - V	3	3	4.5 Skill Enhancement course / Professional Competency Skill	2	4
			2.6 NME I	2	4	3.6 NME II	2	3	4.6 Extension Activity	1	
						3.7 Internship/ Industrial Activity	2	-			
	20	30		22	30		26	30		23	30
Total Credit Points -91											

Choice Based Credit System (CBCS), Learning Outcomes Based Curriculum Framework (LOCF) Guideline Based Credits and Hours Distribution System for all Post – Graduate Courses including Lab Hours

First Year – Semester – I

Part	List of Courses	Credits	No. of Hours
	Core – I	5	7
	Core – II	5	7
	Core – III	4	6
	Elective – I	3	5
	Elective – II	3	5
		20	**30**

Semester-II

Part	List of Courses	Credits	No. of Hours
	Core – IV	5	6
	Core – V	5	6
	Core – VI	4	6
	Elective – III	3	4
	Elective – IV	3	4
	Skill Enhancement Course [SEC] - I	2	4
		22	**30**

Second Year – Semester – III

Part	List of Courses	Credits	No. of Hours
	Core – VII	5	6
	Core – VIII	5	6
	Core – IX	5	6
	Core (Industry Module) – X	4	6
	Elective – V	3	3
	Skill Enhancement Course - II	2	3
	Internship / Industrial Activity [Credits]	2	-
		26	**30**

Semester-IV

Part	List of Courses	Credits	No. of Hours
	Core – XI	5	6
	Core – XII	5	6
	Project with VIVA VOCE	7	10
	Elective – VI (Industry Entrepreneurship)	3	4
	Skill Enhancement Course – III / Professional Competency Skill	2	4
	Extension Activity	1	-
		23	**30**

Total 91 Credits for PG Courses

METHODS OF EVALUATION		
Internal Evaluation	Continuous Internal Assessment Test	**25 Marks**
	Assignments / Snap Test / Quiz	
	Seminars	
	Attendance and Class Participation	
External Evaluation	End Semester Examination	**75 Marks**
Total		**100 Marks**
METHODS OF ASSESSMENT		
Remembering (K1)	• Thelowestlevelofquestionsrequirestudentstorecallinformationfromthecoursecontent • Knowledgequestionsusuallyrequirestudentstoidentifyinformationinthetextbook.	
Understanding (K2)	• Understandingoffactsandideasbycomprehendingorganizing,comparing,translating,interpolatingandinterpretingintheirownwords. • Thequestionsgobeyondsimplerecallandrequirestudentstocombinedatatogether	
Application (K3)	• Studentshavetosolveproblemsbyusing/applyingaconceptlearnedintheclassroom. • Studentsmust usetheir knowledgetodetermineaexactresponse.	
Analyze (K4)	• Analyzingthequestionisonethatasksthestudentstobreakdownsomethingintoitscomponentparts. • Analyzingrequiresstudentstoidentifyreasonscausesormotivesandreachconclusionsorgeneralizations.	
Evaluate (K5)	• Evaluationrequiresanindividualtomakejudgmentonsomething. • Questionstobeaskedtojudgethevalueofanidea,acharacter,aworkofart,orasolutiontoaproblem. • Studentsareengagedindecision-makingandproblem–solving. • Evaluationquestionsdonothavesinglerightanswers.	
Create (K6)	• Thequestionsofthiscategorychallengestudentstogetengagedincreativeandoriginalthinking. • Developingoriginalideasandproblemsolvingskills	

Credit Distribution for PG Programme in Commerce

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First Year

Semester I

	Course	Credit	Hours per Week
Part I	Core I - Business Finance	5	7
	Core II - Digital Marketing	5	7
	Core III - Banking and Insurance	4	6
	Elective I A - Introduction to Industry 4.0 (or) I B - Big Data Analytics	3	5
	Elective II A–Enterprise Resource Planning (or) II B - Database Management System	3	5
		22	30

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First Year Core –I   **Semester I**

BUSINESS FINANCE

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	CIA	External	Total
									Marks		
	BUSINESS FINANCE		7	-	-	-	5	7	25	75	100

	Learning Objectives
1	To outline the fundamental concepts in finance
2	To estimate and evaluate risk in investment proposals
3	To evaluate leasing as a source of finance and determine the sources of startup financing
4	To examine cash and inventory management techniques
5	To appraise capital budgeting techniques for MNCs

Course Units

UNIT I   (18 hrs)
Introduction to Business Financeand Time vale of money
Business Finance: Meaning, Objectives, Scope -Time Value of money: Meaning, Causes – Compounding – Discounting – Sinking Fund Deposit Factor – Capital Recovery Factor – Multiple Compounding– Effective rate of interest – Doubling period (Rule of 69 and Rule of 72) – Practical problems.
UNIT II   (18 hrs)
Risk Management
Risk and Uncertainty: Meaning – Sources of Risk – Measures of Risk – Measurement of Return – General pattern of Risk and Return – Criteria for evaluating proposals to minimise Risk (Single Asset and Portfolio) – Methods of Risk Management – Hedging currency risk.
UNIT III   (18 hrs)

Startup Financingand Leasing

Startup Financing: Meaning, Sources, Modes (Bootstrapping, Angel investors, Venture capital fund) - Leasing: Meaning – Types of Lease Agreements – Advantages and Disadvantages of Leasing – Financial evaluation from the perspective of Lessor and Lessee.

| **UNIT IV** | **(18 hrs)** |

Cash, Receivable and Inventory Management

Cash Management: Meaning, Objectives and Importance – Cash Cycle – Minimum Operating Cash – Safety level of cash – Optimum cash balance - Receivable Management: Meaning – Credit policy – Controlling receivables: Debt collection period, Ageing schedule, Factoring – Evaluating investment in accounts receivable - Inventory Management: Meaning and Objectives – EOQ with price breaks – ABC Analysis.

| **UNIT V** | **(18 hrs)** |

Multi National Capital Budgeting

Multi National Capital Budgeting: Meaning, Steps involved, Complexities, Factors to be considered – International sources of finance – Techniques to evaluate multi-national capital expenditure proposals: Discounted Pay Back Period, NPV, Profitability Index, Net Profitability Index and Internal Rate of Return – Capital rationing -Techniques of Risk analysis in Capital Budgeting.

CourseOutcomes

Studentswillbeableto

CO 1	Explain important finance concepts
CO 2	Estimate risk and determine its impact on return
CO 3	Explore leasing and other sources of finance for startups
CO 4	Summarise cash receivable and inventory management techniques
CO 5	Evaluate techniques of long term investment decision incorporating risk factor

Books for study:
1. Maheshwari S.N., (2019), "Financial Management Principles and Practices", 15th Edition, Sultan Chand &Sons, New Delhi.
2. Khan M.Y &Jain P.K, (2011), "Financial Management: Text, Problems and Cases", 8th Edition, McGraw Hill Education, New Delhi.
3. Prasanna Chandra, (2019), "Financial Management, Theory and Practice", 10th

Edition, McGraw Hill Education, New Delhi.

4. Apte P.G, (2020), "International Financial Management" 8th Edition, Tata McGraw Hill, New Delhi.

Books for reference:
1. Pandey I. M., (2021), "Financial Management", 12th Edition, Pearson India Education Services Pvt. Ltd, Noida.
2. KulkarniP. V. &Satyaprasad B. G., (2015), "Financial Management", 14thEdition, Himalaya Publishing House Pvt Ltd, Mumbai.
3. Rustagi R. P., (2022), "Financial Management, Theory, Concept, Problems", 6th Edition, Taxmann Publications Pvt. Ltd, New Delhi.
4. ArokiamaryGeetha Rufus, Ramani N. & Others, (2017), "Financial Management", 1st Edition, Himalaya Publishing House Pvt Ltd, Mumbai.

Web references:
1. https://resource.cdn.icai.org/66674bos53808-cp8.pdf
2. https://resource.cdn.icai.org/66677bos53808-cp10u2.pdf
3. https://resource.cdn.icai.org/66592bos53773-cp4u5.pdf
4. https://resource.cdn.icai.org/65599bos52876parta-cp16.pdf

Note: Latest edition of the books may be used

Mapping of Course Outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	3	3	1	3	3	3	2	2	2
CO2	3	3	2	3	3	3	3	3	3
CO3	2	2	1	2	2	2	3	2	2
CO4	2	2	1	2	2	2	2	2	2
CO5	3	3	2	3	3	3	3	3	3

Strong - 3   Medium – 2   Low - 1

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First Year	Core – II	Semester I

DIGITAL MARKETING

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	DIGITAL MARKETING		7	-	-	-	5	7	25	75	100

	Learning Objectives
1	To assess the evolution of digital marketing
2	To appraise the dimensions of online marketing mix
3	To infer the techniques of digital marketing
4	To analyse online consumer behaviour
5	To interpret data from social media and to evaluate game based marketing

Course Units

UNIT I	(18 hrs)

Introduction to Digital Marketing

Digital Marketing – Transition from traditional to digital marketing – Rise of internet – Growth of e-concepts – Growth of e-business to advanced e-commerce – Emergence of digital marketing as a tool – Digital marketing channels – Digital marketing applications, benefits and limitations – Factors for success of digital marketing – Emerging opportunities for digital marketing professionals.

UNIT II	(18 hrs)

Online marketing mix

Online marketing mix – E-product – E-promotion – E-price – E-place – Consumer segmentation – Targeting – Positioning – Consumers and online shopping issues – Website characteristics affecting online purchase decisions – Distribution and implication on online marketing mix decisions.

UNIT III	(18 hrs)

Digital media channels

Digital media channels – Search engine marketing – ePR – Affiliate marketing – Interactive display advertising – Opt-in-email marketing and mobile text messaging, Invasive marketing – Campaign management using – Facebook, Twitter, Corporate Blogs – Advantages and disadvantages of digital media channels – Metaverse marketing.

UNIT IV	(18 hrs)

Online consumer behavior

Online consumer behavior – Cultural implications of key website characteristics – Dynamics of online consumer visit – Models of website visits – Web and consumer decision making process – Data base marketing – Electronic consumer relationship management – Goals – Process – Benefits – Role – Next generation CRM.

UNIT V	(18 hrs)

Analytics and Gamification

Digital Analytics – Concept – Measurement framework – Demystifying web data - Owned social metrics – Measurement metrics for Facebook, Twitter, YouTube, Slide Share, Pinterest, Instagram, Snapchat and LinkedIn – Earned social media metrics - Digital brand analysis – Meaning – Benefits – Components – Brand share dimensions – Brand audience dimensions – Market influence analytics – Consumer generated media and opinion leaders – Peer review – Word of mouth – Influence analytics – Mining consumer generated media – Gamification and game based marketing – Benefits – Consumer motivation for playing online games.

Course Outcomes:

Studentswillbeableto:

CO 1	Explain the dynamics of digital marketing
CO 2	Examine online marketing mix
CO 3	Compare digital media channels
CO 4	Interpret online consumer behavior
CO 5	Analyse social media data

Books for study:
1. Puneet Singh Bhatia, (2019) "Fundamentals of Digital Marketing", 2nd Edition, Pearson Education Pvt Ltd, Noida.
2. Dave Chaffey, Fiona Ellis-Chadwick, (2019) "Digital Marketing", Pearson Education Pvt Ltd, Noida.
3. Chuck Hemann& Ken Burbary, (2019) "Digital Marketing Analytics", Pearson Education Pvt Ltd, Noida.
4. Seema Gupta, (2022) "Digital Marketing" 3rd Edition, McGraw Hill Publications Noida.
5. Kailash Chandra Upadhyay, (2021) "Digital Marketing: Complete Digital Marketing Tutorial", Notion Press, Chennai.
6. Michael Branding, (2021) "Digital Marketing", Empire Publications India Private Ltd, New Delhi.

Books for reference:
1. VandanaAhuja, (2016) "Digital Marketing", Oxford University Press. London.
2. Ryan Deiss& Russ Henneberry, (2017) "Digital Marketing", John Wiley and Sons Inc. Hoboken.
3. Alan Charlesworth,(2014), "Digital Marketing - A Practical Approach", Routledge, London.
4. Simon Kingsnorth, Digital Marketing Strategy,(2022) "An Integrated approach to Online Marketing", Kogan Page Ltd. United Kingdom.
5. MaityMoutusy, (2022) "Digital Marketing" 2nd Edition, Oxford University Press, London.

Web references:
1. https://www.digitalmarketer.com/digital-marketing/assets/pdf/ultimate-guide-to-digital-marketing.pdf
2. https://uwaterloo.ca/centre-for-teaching-excellence/teaching-resources/teaching-tips/educational-technologies/all/gamification-and-game-based-learning
3. https://journals.ala.org/index.php/ltr/article/download/6143/7938

Note: Latest edition of the books may be used

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	3	3	2	3	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3
CO3	3	3	2	2	3	2	3	3	2
CO4	3	3	2	2	3	3	3	3	3
CO5	3	3	1	3	3	2	3	3	2

Strong - 3   Medium – 2   Low - 1

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First Year   **Core – III**   **Semester I**

BANKING AND INSURANCE

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	BANKING AND INSURANCE		6	-	-	-	4	6	25	75	100

	Learning Objectives
1	To understand the evolution of new era banking
2	To explore the digital banking techniques
3	To analyse the role of insurance sector
4	To evaluate the mechanism of customer service in insurance and the relevant regulations
5	To analsye risk and its impact in banking and insurance industry

Course Units

UNIT I	(18 hrs)

Introduction to Banking

Banking:Brief History of Banking - Rapid Transformation in Banking: Customer Shift - Fintech Overview - Fintech Outlook - The Financial Disruptors - Digital Financial Revolution - New Era of Banking.Digital Banking – Electronic Payment Systems– Electronic Fund Transfer System – Electronic Credit and Debit Clearing – NEFT – RTGS –VSAT–SFMS–SWIFT.

UNIT II	(18 hrs)

Contemporary Developments in Banking

Distributed Ledger Technology – Blockchain: Meaning - Structure of BlockChain - Types of Block Chain - Differences between DLT and Blockchain - Benefits of Blockchain and DLT - Unlocking the potential of Blockchain – Crypto currencies, Central Bank Digital Currency (CBDC) - Role of DLT in financial services - AI in Banking: Future of AI in Banking - Applications of AI in Banking - Importance of AI in

banking - Banking reimagined with AI. Cloud banking - Meaning - Benefits in switching to Cloud Banking.

UNIT III	(18 hrs)

Indian Insurance Market

History of Insurance in India – Definition and Functions of Insurance – Insurance Contract – Indian Insurance Market – Reforms in Insurance Sector – Insurance Organisation – Insurance organisation structure. Insurance Intermediaries: Insurance Broker – Insurance Agent - Surveyors and Loss Assessors - Third Party Administrators (Health Services) – Procedures - Code of Conduct.

UNIT IV	(18 hrs)

Customer Services in Insurance

Customer Service in Insurance – Quality of Service - Role of Insurance Agents in Customer Service-Agent's Communication and Customer Service –Ethical Behaviour in Insurance – Grievance Redressal System in Insurance Sector –Integrated Grievance Management System- Insurance Ombudsman - Insurance Regulatory and Development Authority of India Act (IRDA) – Regulations and Guidelines.

UNIT V   (18 hrs)

Risk Management

Risk Management and Control in banking and insurance industries – Methods of Risk Management – Risk Management by Individuals and Corporations – Tools for Controlling Risk.

Course Outcomes

Studentswillbeableto

CO 1	Relate the transformation in banking from traditional to new age
CO 2	Apply modern techniques of digital banking
CO 3	Evaluate the role of insurance sector
CO 4	Examine the regulatory mechanism
CO 5	Assess risk mitigation strategies

Books for study:
1. Indian Institute of Banking and Finance (2021), "Principles & Practices of Banking", 5th Edition, Macmillan Education India Pvt. Ltd, Noida, Uttar Pradesh.
2. Mishra M N & Mishra S B, (2016), "Insurance Principles and Practice", 22nd Edition,

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S. Chand and Company Ltd, Noida, Uttar Pradesh.

3. Emmett, Vaughan, Therese Vaughan M., (2013), "Fundamentals of Risk and Insurance", 11th Edition, Wiley & Sons, New Jersey, USA.

4. Theo Lynn , John G. Mooney, PierangeloRosati, Mark Cummins (2018), Disrupting Finance: FinTech and Strategy in the 21st Century (Palgrave Studies in Digital Business & Enabling Technologies), Macmillan Publishers, NewYork (US)

Books for reference:

1. SundharamKPM &Varshney P. N., (2020), "Banking Theory, Law and Practice", 20th Edition, Sultan Chand & Sons, New Delhi.

2. Gordon &Natarajan, (2022), "Banking Theory, Law and Practice", 9th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.

3. Gupta P. K. (2021), "Insurance and Risk Management" 6th Edition, Himalaya Publishing House Pvt Ltd, Mumbai.

4. Susanne Chishti.,& Janos Barberis(2016), The Fintech book: The financial technology handbook for investors, entrepreneurs and visionaries. John Wiley & Sons.

Web references:

1. https://corporatefinanceinstitute.com/resources/knowledge/finance/fintech-financial-technology

2. https://mrcet.com/downloads/digital_notes/CSE/IV%20Year/CSE%20B.TECH%20IV%20YEAR%20II%20SEM%20BCT%20(R18A0534)%20NOTES%20Final%20PDF.pdf

3. https://www.irdai.gov.in/ADMINCMS/cms/frmGeneral_Layout.aspx?page=PageNo108&flag=1

Note: Latest edition of the books may be used

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	2	3	4	5	6	1	2	3
CO1	2	2	1	3	3	3	3	3	3
CO2	3	3	3	3	3	3	3	3	3
CO3	2	2	1	2	2	2	2	3	2
CO4	3	2	2	1	2	2	2	3	2
CO5	3	3	1	3	3	3	3	3	3

Strong - 3   Medium – 2   Low - 1

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First Year	Elective –I A	Semester I

INTRODUCTION TO INDUSTRY 4.0

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	INTRODUCTION TO INDUSTRY 4.0		5	-	-	-	3	5	25	75	100

	LEARNING 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 Units

UNIT I	(12 hrs)

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	(12 hrs)

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	(12 hrs)

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	(12 hrs)

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	(12 hrs)

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.

Course Outcomes

Studentswillbeableto

CO 1	Discuss on the change from industry 1.0 to 4.0
CO 2	Discover the challenges and future prospects of applying artificial intelligence
CO 3	Apply big data for industrial growth and development
CO 4	Apply IoT in various sectors like Manufacturing, Healthcare, Education, Aerospace and Défense
CO 5	Appraise why education has to be aligned 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

Note: Latest edition of the books may be used.

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	2	2	2	3	3	3	3	3	3
CO2	2	3	2	3	3	3	3	3	3
CO3	2	3	2	3	3	3	3	3	3
CO4	2	3	2	3	3	3	3	3	3
CO5	2	3	2	3	3	3	3	3	3

Strong - 3   Medium – 2   Low - 1

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First Year	Elective – I B	Semester I

BIG DATA ANALYTICS

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	BIG DATA ANALYTICS		5	-	-	-	3	5	25	75	100

	Learning 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 Units

UNIT I	(12 hrs)

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	(12 hrs)

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 (12 hrs)

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 (12 hrs)

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 (12 hrs)

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.

Course Outcomes

Students will be able to:

CO 1	Describe the Big Data landscape including examples of realworld big data problems
CO 2	Explain the advantages of Big Data.
CO 3	Explain the Vs of Big Data and its impacts of data collection, monitoring, storage, analysis and reporting
CO 4	Identify what are and what are not big data problems and be able to recast big data problems as data science questions
CO 5	ExplainHadoop technology

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

Note: Latest edition of the books may be used.

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	2	2	2	2	1	2	1	1	2
CO2	2	2	2	3	1	3	1	2	3
CO3	3	3	3	3	2	3	2	3	3
CO4	2	2	2	2	1	2	1	2	2
CO5	3	3	3	3	3	3	3	3	3

Strong - 3   Medium – 2   Low - 1

M.Com., Computer Applications

First Year   **Elective –II A**   **Semester I**

ENTERPRISE RESOURCE PLANNING

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	ENTERPRISE RESOURCE PLANNING		5	-	-	-	3	5	25	75	100

	LEARNING 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 Units

UNIT I   **(12 hrs)**

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   **(12 hrs)**

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   (12 hrs)

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   (12 hrs)

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   (12 hrs)

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.

Course outcomes

Students will be able to

CO 1	Recall the history and growth of ERP
CO 2	Appraise the risks involved while using ERP
CO 3	Select from among various ERP technologies
CO 4	Analyse the dynamics of ERP marketplace
CO 5	Distinguish and choose appropriate ERP solutions or packages

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

Note: Latest edition of the books may be used.

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	2	1	2	2	3	3	3	3	3
CO2	3	3	2	3	3	3	3	3	3
CO3	3	3	2	3	3	3	3	3	3
CO4	3	3	2	3	3	3	3	3	3
CO5	3	3	2	3	3	3	3	3	3

Strong - 3   Medium – 2   Low - 1

M.Com., Computer Applications

First Year	Elective – II B	Semester I

DATABASE MANAGEMENT SYSTEM

Course Code	Title of the Course	Category	L	T	P	O	Credits	Inst. Hours	Marks		
									CIA	External	Total
	DATABASE MANAGEMENT SYSTEM		5	-	-	-	3	5	25	75	100

	LEARNING 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 Units

UNIT I (12 hrs)

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 (12 hrs)

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 (12 hrs)

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 (12 hrs)

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 (12 hrs)

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.

COURSE OUTCOMES

Students will be able to:

CO 1	Identify models and schemas in DBMS and LINUX
CO 2	Demonstrate Queries in SQL
CO 3	Discuss handling files and databases
CO 4	Apply skills on functions and operators in RDBMS
CO 5	Apply constraints and locks in SQL

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.

Note: Latest edition of the books may be used

Mapping of course outcomes with POs and PSOs

	POs						PSOs		
	1	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**
CO1	2	3	3	3	2	2	2	3	2
CO2	3	3	2	3	3	3	2	2	3
CO3	1	2	2	2	1	2	1	2	2
CO4	3	3	3	3	3	3	3	3	3
CO5	3	3	3	3	1	2	1	3	2

Strong - 3   Medium – 2   Low - 1