



## SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JNTUK, Kakinada), (Recognized by AICTE, New Delhi)

UG Programmes CE,CSE,ECE,EEE,IT & ME are Accredited by NBA, Accredited by NAAC with A<sup>+</sup>

CHINNA AMIRAM (P.O):: BHIMAVARAM :: W.G.Dt., A.P., INDIA :: PIN: 534 204

Estd:1980

Regulation: R20		IV / IV - B.Tech. I - Semester							
COMPUTER SCIENCE & BUSINESS SYSTEMS									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20HS4101	Universal Human Values-2: Understanding Harmony	HS	3	3	0	0	30	70	100
#PE-III	Professional Elective -III	PE	3	3	0	0	30	70	100
#PE-IV	Professional Elective -IV	PE	3	3	0	0	30	70	100
#PE-V	Professional Elective -V	PE	3	3	0	0	30	70	100
#OE-III	Open Elective-III	OE	3	3	0	0	30	70	100
#OE-IV	Open Elective-IV	OE	3	3	0	0	30	70	100
#SOC-V	Skill Oriented Course - V	SOC	2	1	0	2	--	50	50
B20CB4119	Industrial/Research Internship 2 Months	PR	3	--	--	--	--	50	50
<b>TOTAL</b>			<b>23</b>	<b>19</b>	<b>0</b>	<b>2</b>	<b>180</b>	<b>520</b>	<b>700</b>

	Course Code	Course
#PE-III	B20CB4101	Business Strategy
	B20CB4102	Business Environment
	B20CB4103	Internet of Things
	B20CB4104	Big Data Analytics
	B20CB4105	Social & Web Analytics
#PE-IV	B20CB4106	Financial Management
	B20CB4107	Cloud Computing
	B20CB4108	Mean Stack Technologies
	B20CB4109	Business Intelligence
	B20CB4110	IT Project Management
#PE-V	B20CB4111	Deep Learning
	B20CB4112	Services Science & Service Operational Management
	B20CB4113	Block Chain Technologies
	B20CB4114	Human Resource Management
	B20CB4115	Consumer Buying Behavior
#SOC-V	B20CB4116	Multimedia Application Development
	B20CB4117	APSSDC offered Courses
	B20CB4118	Distributed Technologies- Mongo DB
#OE-III & #OE-IV	Student has to study one Open Elective each from OE-III & IV offered by CE or ECE or EEE or ME or S&H from the list enclosed.	

Code	Category	L	T	P	C	I.M	E.M	Exam
B20HS4101	HS	3	--	--	3	30	70	3 Hrs.

## UNIVERSAL HUMAN VALUES-2: UNDERSTANDING HARMONY

(Common to AIDS, CSBS, CSE, IT & ME)

### Course Objectives:

1.	To enable students appreciate the essential complementarity between 'Values' and 'Skills' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
2.	To understand the harmony in the human being, family, society and nature/existence
3.	To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of existence. Such a holistic perspective forms the basis of Value based living in a natural way.

### Course Outcomes: At the end of the course, students will be able to

S.No	Outcome	Knowledge Level
1.	Identify the importance of human values and skills for sustained happiness	K2
2.	Understand how to balance profession and personal happiness/ goals.	K2
3.	Express their commitment towards what they have understood (human values, human relationship and human society)	K2
4.	Explain the significance of trust, mutually satisfying human behavior and enriching interaction with nature.	K2
5.	Develop/ propose appropriate technologies and management patterns to create harmony in professional and personal life.	K3

## SYLLABUS

<b>UNIT-I (10 Hrs)</b>	<b>Course Introduction</b> - Need, Basic Guidelines, Content and Process for Value Education Purpose and motivation for the course, recapitulation from Universal Human Values-I Self-Exploration-what is it? - Its content and process; 'Natural Acceptance' and Experiential Validation- as the process for self-exploration Continuous Happiness and Prosperity- A look at basic Human Aspirations Right understanding, Relationship and Physical Facility- the basic requirements for fulfillment of aspirations of every human being with their correct priority Understanding Happiness and Prosperity correctly- A critical appraisal of the current scenario Method to fulfil the above human aspirations: understanding and living in harmony at various levels.
<b>UNIT-II (08 Hrs)</b>	<b>Understanding Harmony in the Human Being</b> - Harmony in Myself! Understanding human being as a co-existence of the sentient 'I' and the material 'Body' Understanding the needs of Self ('I') and 'Body' - happiness and physical facility Page 29 of 43 Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer) Understanding the characteristics and activities of 'I' and harmony in 'I' Understanding the

	harmony of I with the Body: Sanyam and Health; correct appraisal of Physical needs, meaning of Prosperity in detail; Programs to ensure Sanyam and Health.
<b>UNIT-III (08 Hrs)</b>	<b>Understanding Harmony in the Family and Society- Harmony in Human- Human Relationship</b> Understanding values in human-human relationship; meaning of Justice (nine universal values in relationships) and program for its fulfilment to ensure mutual happiness; Trust and Respect as the foundational values of relationship Understanding the meaning of Trust; Difference between intention and competence Understanding the meaning of Respect, Difference between respect and differentiation; the other salient values in relationship Understanding the harmony in the society (society being an extension of family): Resolution, Prosperity, fearlessness (trust) and co-existence as comprehensive Human Goals Visualizing a universal harmonious order in society- Undivided Society, Universal Order- from family to world family.
<b>UNIT-IV (08 Hrs)</b>	<b>Understanding Harmony in the Nature and Existence -</b> Whole existence as Coexistence Understanding the harmony in the Nature Interconnectedness and mutual fulfillment among the four orders of nature recyclability and self regulation in nature Understanding Existence as Co-existence of mutually interacting units in all pervasive space Holistic perception of harmony at all levels of existence.
<b>UNIT-V (08 Hrs)</b>	<b>Implications of the above Holistic Understanding of Harmony on Professional Ethics</b> Natural acceptance of human values Definitiveness of Ethical Human Conduct Basis for Humanistic Education, Humanistic Constitution and Humanistic Universal Order Competence in professional ethics: a. Ability to utilize the professional competence for augmenting universal human order b. Ability to identify the scope and characteristics of people friendly and eco-friendly production systems, c. Ability to identify and develop appropriate technologies and management patterns for above production systems. Case studies of typical holistic technologies, management models and production systems Strategy for transition from the present state to Universal Human Order: a. At the level of individual: as socially and ecologically responsible engineers, technologists and managers b. At the level of society: as mutually enriching institutions and organizations
<b>Textbooks:</b>	
1.	Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010
<b>Reference Books:</b>	
1.	Jeevan Vidya: Ek Parichaya, A Nagaraj, Jeevan Vidya Prakashan, Amarkantak, 1999.
2.	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
3.	The Story of Stuff (Book).
4.	The Story of My Experiments with Truth
5.	Small is Beautiful E. F Schumacher by Mohandas Karamchand Gandhi
6.	Slow is Beautiful Cecile Andrews
7.	Economy of Permanence J C Kumarappa

8.	Bharat Mein Angreji Raj Pandit Sunderlal
9.	Rediscovering India by Dharampal Hind Swaraj or Indian Home
10.	Rule by Mohandas K. Gandhi
11.	India Wins Freedom Vivekananda Maulana Abdul Kalam Azad 12Romain Rolland (English)



Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4101	PE	3	--	--	3	30	70	3 Hrs.
<b>BUSINESS STRATEGY</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected								
1.	To know the important aspects of strategic management in an organization.							
2.	To provide basic insight into Internal Environment of a firm.							
3.	To have a comprehensive view about the External Environment of a firm.							
4.	To understand about the corporate strategy and growth strategies of business.							
5.	To learn how to implement the strategy and to understand about Corporate governance.							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
S. No	Outcome							Knowledge Level
1.	Describe the fundamental concepts of strategic management to analyze business situations and apply these concepts to solve business problems.							K2
2.	Understand the fundamental principles and interrelationships among business functions such as: R&D, production, marketing, finance, HR and information technology							K2
3.	Understand the inter-relationships of business to individuals, other organizations, government and society.							K2
4.	Predict the mode of strategy that a business can choose for its development in the future.							K2
5.	Relate the present business with competitors globally and implementing the appropriate strategy.							K2
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	Strategic Management Introduction: Importance of Strategic Management, Vision, Mission and Objectives, Schools of thought in Strategic Management, Strategy Content, Process, and Practice, Fit Concept and Configuration Perspective in Strategic Management.							
<b>UNIT-II (10 Hrs)</b>	Internal Environment of Firm- Recognizing a Firm's Intellectual Assets: Core Competence as the Root of Competitive Advantage, Sources of Sustained Competitive Advantage, Business Processes and Capabilities-based Approach to Strategy.							
<b>UNIT-III (12 Hrs)</b>	External Environments of Firm- Competitive Strategy: Five Forces of Industry Attractiveness that Shape Strategy, The concept of Strategic Groups, and Industry Life Cycle, Generic Strategies, Generic Strategies and the Value Chain.							

<b>UNIT-IV (12 Hrs)</b>	Corporate Strategy, Growth Strategies, Strategy Implementation: The Motive for Diversification, Related and Unrelated Diversification, Business Portfolio Analysis, Expansion, Integration and Diversification, Strategic Alliances, Joint Ventures, and Mergers & Acquisitions.
<b>UNIT-V (10Hrs)</b>	Structure and Systems: The 7S Framework, Strategies for competing in the globalized markets and internet economy, Organisational values and their impact on strategies, Strategic Control and Corporate Governance
<b>Text Books:</b>	
1.	Robert M. Grant (2012). Contemporary Strategic Management, Blackwell, 7th Edition.
2.	Azhar Kazmi(2008) Strategic Management and Business Policy, McGraw Hill Publications, 3rd Edition.
3	Michael E. Porter, Competitive Strategy, 1980.
<b>Reference Books:</b>	
1.	M.E. Porter, Competitive Advantage, 1985
2.	Richard Rumelt (2011) Good Strategy Bad Strategy: The Difference and Why It Matters.



<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4102</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>

## BUSINESS ENVIRONMENT

(For CSBS)

**Course Objectives:** Students are expected to

1	Apply the concepts of micro economic theory in taking right business decisions
2	Understand the opportunities and challenges of prevailing and desirable Global macro business environment in which business has to operate.
3	Appraise the legal and political environment and employ the right role of business
4	Examine the influence of socio and cultural environment on business
3.	Investigate about the technological environment and appraise its importance in the business

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Choose the right tools of microeconomics for decision making	K3
2	Categorize the opportunities and challenges of prevailing and desirable Global macro business environment in which business has to operate.	K4
3	Inspect the legal and political environment influence on the business	K4
4	Outline the Socio and cultural environment effect on business	K4
5	Analysis of technological changes under dynamic business environment	K4

## SYLLABUS

<b>UNIT-I (10 Hrs)</b>	<b>Micro Economic Environment:</b> Relevance of demand analysis in Business Decision-making; Law of Demand; Elasticity of Demand; Determinants of Demand; Individual, firm and Market demand; Demand Curve and its nature; Demand Forecasting Techniques; Different Market Structures and Pricing under each structure; Cost concepts: Types of cost; Relationship between Average and Marginal Cost in Short run and long run; Production functions in short and long run; Wages and wage differentials.
<b>UNIT-II (10 Hrs)</b>	<b>Macro Economic Environment:</b> Inflation, poverty, unemployment and GDP3. Role of government in business-Fiscal and Monetary Policies; Liberalization, Privatization and Globalization of Economy and its consequences; MNCs; World Trade Organization; FDI, FPI, Special Economic Zone - Environmental Issues Outsourcing and Collaboration - Inclusive and Sustainable Development
<b>UNIT-III (12 Hrs)</b>	<b>Political and Legal Environment:</b> Bureaucracy, Corruption Level, Societal Outlook and Orientation; Introduction to Companies Act,1956: Definition, Characteristics and types of Companies; Formation and winding-up of Company; Appointment, powers and

	duties of Directors; Introduction to Consumer Protection Act, 1986:Rights of Consumers; Redressal Machinery under the Act. Introduction to Competition Act 2002: Anti-Competitive Agreements, Regulation of Combinations, Competition Commission of India. Introduction to Goods and Service Tax (GST): Registration under GST; Supply under GST and Valuation of Supply; Input Tax Credit under GST & Returns.
<b>UNIT-IV (12 Hrs)</b>	<b>Socio-Cultural Environment:</b> Population & its Growth Rate, Education Levels, Age Distribution and Life Expectancy Rates Family Size and Structures, Gender Distribution, Religion, Nationality and Beliefs and Minorities Social classes and Lifestyle, Average Disposable Income - Attitude towards Product Quality and Customer Service, Buying Habits, Environmental Consciousness, Work and Leisure, Health Consciousness, Risk Taking Ability.
<b>UNIT-V (10Hrs)</b>	<b>Technological Environment:</b> Basic Infrastructure Level - Energy, Transport, Communication, Science and Technology. Research and Development, Product and Process Innovation, Rate of Technological Change and Penetration Levels, Protection of Intellectual Property Rights - Technological Leadership and Followers, Technology and Competitive Advantage, Time Lags in Technology Introduction, Adaptation, Transfer of Technology - Internet Infrastructure
<b>Text Books:</b>	
1.	Francis Cherunilam: Business Environment – Text and Cases, Himalaya Publishing House, New Delhi.
2.	A.C. Fernando, Business Environment, Pearson.
<b>Reference Books:</b>	
1.	Ian Worthington and Chris Britton: The Business Environment, Prentice Hall
2.	Shaikh Saleem, Business Environment, Pearson
3.	Rudder Dutt and Sundharam, K.P.M.: Indian Economy, S. Chand & Company Limited, New Delhi.
4.	Managerial Economics and Business Strategy by Michael R Baye and Jeff Prince (2017); Mc Graw Hill Education, Eighth Edition
5.	Managerial Economics: Principles and Worldwide Applications by Dominick Salvatore and Siddhartha k rastogi (2016); Oxford Higher Education.
6.	Managerial Economics by D N Dwivedi (2015); Vikas Publishing House.
7.	Principles of Macroeconomics (7th Edition) by Karl E. Case, Ray C. Fair, Publisher: Prentice Hall
8.	Macroeconomics: Principles and Tools (3rd Edition) by Arthur O’Sullivan, Steven M. Sheffrin, Publisher: Prentice Hall
9.	Peterson, HC and W.C.Lewis, MANAGERIAL ECONOMICS, Prentice-Hall of India, New Delhi.



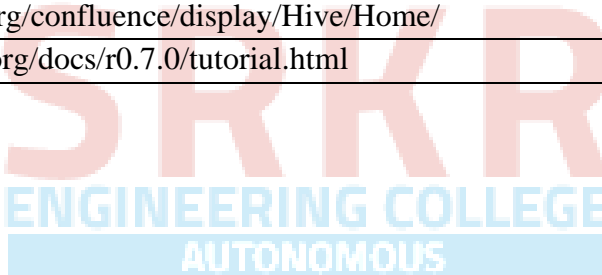
Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4103	PE	3	--	--	3	30	70	3 Hrs.
<b>INTERNET OF THINGS</b>								
<b>(For CSBS)</b>								
<b>Course Objectives:</b> Students are expected to								
1.	The interconnection and integration of the physical world and the cyber space							
2.	Learn about design principles of IoT devices.							
3.	Design & develop IOT Devices.							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
S.No	Outcome							Knowledge Level
1	Understand the concepts and design principles IoT devices.							K2
2	Understand OSI stack for the IOT to M2M Systems.							K2
3	Analyze web and message communication protocols of IoT devices.							K3
4	Understand data network layers and wireless communication protocols.							K2
5	Analyze various data acquiring, storage and business models.							K3
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	The Internet of Things: An Overview of Internet of Things, Internet of Things Technology, behind IoTs Sources of the IoTs, M2M Communication, Examples of IoTs, Design Principles For Connected Devices.							
<b>UNIT-II (10 Hrs)</b>	Modified OSI Stack for the IoT/M2M Systems, ETSI M2M domains and High-level capabilities, Communication Technologies, Data Enrichment and Consolidation and Device Management Gateway Ease of designing and affordability.							
<b>UNIT-III (12 Hrs)</b>	Design Principles for the Web Connectivity for connected-Devices, Web Communication protocols for Connected Devices, Message Communication protocols for Connected Devices, Web Connectivity for connected-Devices.							
<b>UNIT-IV (12 Hrs)</b>	Data link layer of IoT, Wireless Communication Technologies, Wired Communication Technologies, Manet Networks: Network Layer of IoT, 6lowPAN adaptation layer for devices with limited resources, Dynamic routing protocols for wireless adhoc networks Communication protocols for IoT, Service oriented protocol(COAP), Communication protocols based on the exchange of messages(MQTT), Service discovery protocols.							
<b>UNIT-V (10Hrs)</b>	Data Acquiring, Organizing and Analytics in IoT/M2M, Applications/ Services/ Business Processes, IOT/M2M Data Acquiring and Storage, Business Models for							

	Business Processes in the Internet Of Things, Organizing Data, Transactions, Business Processes, Integration and Enterprise Systems.
<b>Text Books:</b>	
1.	Internet of Things: Architecture, Design Principles And Applications, Rajkamal, McGraw Hill Higher Education.
2.	Internet of Things, A.Bahgya and V.Madisetti, Univesity Press, 2015.
<b>Reference Books:</b>	
1.	An Introduction to Internet of Things, Connecting devices, Edge Gateway and Cloud with Applications, Rahul Dubey, Cengage, 2019.
2.	IoT Fundamentals, Networking Technologies, Protocols and Use Cases for the Internet of Things, David Hanes, Gonzalo Salgueiro, Patrick Grossetette, rob Barton, Jerome Henry, CISCO, Pearson, 2018.
3.	Designing the Internet of Things, Adrian McEwen and Hakim Cassimally, Wiley.



Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20CB4104	PE	3	--	--	3	30	70	3 Hrs.
<b>BIG DATA ANALYTICS</b>								
<b>(CSBS)</b>								
Course Objectives: On completing this course student will be able to								
1	Provide an overview of an exciting growing field of BigData analytics.							
2	Introduce the tools required to manage and analyze bigdata like Hadoop MapReduce, Pig &Hive etc.,							
Course Outcomes: By the end of the course, the student should have the ability to:								
S.NO	Outcome							Knowledge Level
1	Understand the existing technologies and the need of distributed files Systems to <b>analyze</b> the Big Data							K3
2	<b>Explore</b> the features of HDFS and MapReduce to handle the Big Data; and identify the need of interfaces to perform I/O operations in Hadoop							K3
3	<b>Implement</b> and <b>analyze</b> Map-Reduce programming model for better optimization on BigData.							K4
4	<b>Apply</b> the stream processing techniques to analyze real-time data streams							K3
5	<b>Identify</b> the need of Modern tools, viz., Pig and Hive and its applications on BigData Analytics							K3
<b>SYLLABUS</b>								
<b>UNIT-I</b> <b>(10 Hrs)</b>	<b>Introduction to Big Data:</b> Big Data (BD) Definition, Characteristics of Big Data (Volume, Velocity, Verity, Veracity, Validity etc.), Applications of BD, Types of Data: Structured, Un-Structured and Semi-Structured. Hadoop, Data in Hadoop vs Traditional software (RDBMS, Data in Warehouse). <b>Working with Big Data:</b> Google File System (GFS), Hadoop Distributed File System (HDFS), Building blocks of Hadoop-v1 and Hadoop-v2.							
<b>UNIT-II</b> <b>(10 Hrs)</b>	HDFS Read & Write, Anatomy of MapReduce job run (MRv1& MRv2), Job scheduling, shuffle & Sort, counters. <b>Java Interfaces for MapReduce:</b> The Writable Interface, Writable Comparable and comparators, Writable wrappers for Java primitives, Record Readers, Record Writers.							
<b>UNIT-III</b> <b>(10 Hrs)</b>	<b>Map Reduce programming:</b> Implementation of Mapper, Reducer and Driver, MapReduce word count example. Matrix multiplication using MapReduce, Friends of Friends algorithm, Combiner, Partitioner. Joins: Map side join & Reduce side join.							

<b>UNIT-IV (8 Hrs)</b>	<b>Stream Processing:</b> Mining data streams: Introduction to Streams Concepts, Stream Data Model and Architecture, Stream Computing, Sampling Data in a Stream, Filtering Streams: Blooms Filter, Counting Distinct Elements in a Stream: FM Algorithm, Estimating Moments, Counting 1's in a Window: DGIM Algorithm, Decaying Window.
<b>UNIT-V (12 Hrs)</b>	<b>Frameworks and Applications:</b> Hadoop Echo System, Applications on Big Data Using Pig, Pig Architecture, PigLatin, Data processing operators in Piglatin, Applications on Big Data Using Hive, Hive Architecture, HiveQL, Querying Data in Hive, fundamentals of HBase, HBase architecture and ZooKeeper.
<b>Text Books:</b>	
1.	Hadoop: The Definitive Guide by Tom White, 3 <sup>rd</sup> Edition, O' Reilly
<b>Reference Books:</b>	
1.	Hadoop in Action by ChuckLam, MANNING Publications
2.	Hadoop for Dummies by DirkdeRoos, PaulC. Zikopoulos, RomanB. Melnyk, Bruce Brown and Rafael Coss
<b>E-References:</b>	
1.	Hadoop: <a href="https://hadoop.apache.org/">https://hadoop.apache.org/</a>
2.	Hive: <a href="https://cwiki.apache.org/confluence/display/Hive/Home/">https://cwiki.apache.org/confluence/display/Hive/Home/</a>
3.	Piglatin: <a href="https://pig.apache.org/docs/r0.7.0/tutorial.html">https://pig.apache.org/docs/r0.7.0/tutorial.html</a>



<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4105</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>

## SOCIAL and WEB ANALYTICS

(For CSBS)

### Course Objectives: Students are expected to

1.	Learn the fundamentals of Social Media Analytics (SMA)
2.	Familiarize the learners with the tools of social media analytics.
3.	Enable the learners to develop skills required for analyzing the effectiveness of social
4.	Learn processing and Visualizing of data for prediction and classification

### Course Outcomes: After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Understand the fundamentals Social Media Analytics	K2
2	Understand the tools which are used in Web Analytics	K2
3	Develop skills required for analyzing the effectiveness of social media for business purposes	K2
4	Analyze Social Media Data Visualization by using python programming	K3
5	Analyze the social media campaigns	K3

## SYLLABUS

<b>UNIT-I</b> <b>(10 Hrs)</b>	<p><b>Introduction to Social Media Analytics (SMA):</b> Social media landscape, Need for SMA; SMA in Small organizations; SMA in large organizations; Application of SMA in different areas Network fundamentals and models:</p> <p>The social networks perspective - nodes, ties and influencers, Social network and web data and methods. Graphs and Matrices- Basic measures for individuals and networks. Information visualization</p>
<b>UNIT-II</b> <b>(10 Hrs)</b>	<p><b>Making connections:</b> Link analysis. Random graphs and network evolution.</p> <p><b>Social contexts:</b> Affiliation and identity.</p> <p><b>Web analytics tools:</b> Clickstream analysis, A/B testing, online surveys, Web crawling and Indexing. Natural Language Processing Techniques for Micro-text Analysis.</p>
<b>UNIT-III</b> <b>(12 Hrs)</b>	<p><b>Facebook Analytics:</b> Introduction, parameters, demographics. Analyzing page audience. Reach and Engagement analysis. Post- performance on FB. Social campaigns. Measuring and Analyzing social campaigns, defining goals and evaluating outcomes, Network Analysis. (LinkedIn, Instagram, YouTube Twitter etc. Google analytics. Introduction. (Websites)</p>

<b>UNIT-IV (12 Hrs)</b>	Processing and Visualizing Data, Influence Maximization, Link Prediction, Collective Classification, Applications in Advertising and Game Analytics. Introduction to Python Programming, Collecting and analyzing social media data; visualization and exploration
<b>UNIT-V (10Hrs)</b>	Students should analyze the social media of any ongoing campaigns and present the findings.
<b>Text Books:</b>	
1.	Matthew Ganis, Avinash Kohirkar Social Media Analytics: Techniques and Insights for Extracting Business Value Out of Social Media
2.	Jim Sterne, Social Media Metrics: How to Measure and Optimize Your Marketing Investment
3	Oliver Blanchard, Social Media ROI: Managing and Measuring Social Que Publishing Latest edition Media Efforts in Your Organization (Que Biz-Tech)
<b>Reference Books:</b>	
1.	M.E. Porter, Competitive Advantage, 1985
2.	Richard Rumelt (2011) Good Strategy Bad Strategy: The Difference and Why It Matters.



<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4106</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>
<b>FINANCIAL MANAGEMENT</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected to								
1	Identify the basic nature and sources of finance.							
2	Analyze the concept of time value of money and its impact on cost and budget preparation							
3	Gain awareness on capital structure and its factors, relevant for wealth maximization.							
4	Analyze the dividend decisions for the survival of the business and influence of mergers, acquisitions and amalgamations on the business prospects							
5	Examine various factors that determines the working capital and operating cycles.							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
<b>S.No</b>	<b>Outcome</b>							<b>Knowledge Level</b>
1	Analyze the financial sources of a business for implementing better financial decisions.							K4
2	Compute cost of capital and consider better project implementation through budgeting methods.							K3
3	Analyze the capital structure and its factors, relevant for right decisions. Apply theories of capital structure and understand its impact on performance of the organization							K4
4	Understand theory relating to divided decision and the impact of the dividend decisions on the organization.							K4
5	Demonstrate the factors that determine the working capital and operating cycles.							K3
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	<b>INTRODUCTION TO FINANCIAL MANAGEMENT:</b> Nature and scope- Finance functions- Roles and responsibilities of the Finance Manager; <b>OBJECTIVE:</b> Profit or Wealth Maximization and EPS Maximization – Sources of Finance – Equity capital – Debenture – Preference capital and term loans.							
<b>UNIT-II (10 Hrs)</b>	<b>COST OF CAPITAL:</b> Concept - Components of Cost of Capital – Cost of Debt Cost of Equity – Cost of preference capital – Cost of retained earnings - WACC and MCC Valuation of stocks and bonds - Concept of Risk and Return- Time value of money. <b>CAPITAL BUDGETING:</b> Meaning – Importance; <b>TECHNIQUES:</b> Traditional Methods (Payback period and Accounting Rate of Return) - Discounted Cash Flow Methods (NPV, IRR, and PI).							

<b>UNIT-III (12 Hrs)</b>	<b>CAPITAL STRUCTURE DECISIONS:</b> Capital Structure vs. Financial Structure – Capitalization- Leverage – Concept of Leverage – Operating Leverage – Financial Leverage– Combined Leverage - EBIT – EPS analysis- Indifference Point / Break Even Analysis of Financial Leverage; <b>CAPITAL STRUCTURE THEORIES:</b> Net Income approach – Net operating income approach – Traditional view – MM Hypothesis.
<b>UNIT-IV (12 Hrs)</b>	<b>DIVIDEND DECISIONS:</b> Major Forms of Dividends – Factors determining Dividend Policy - Value of the firm – Dividend Theories - Relevance of dividends (Walter Page 37 of 133 Model and Gordon Model) – Irrelevance of Dividends (Modigliani and Miller approach) - Declaration and payment of dividends - Bonus shares - Rights issue. <b>CORPORATE RESTRUCTURES:</b> Corporate Mergers - Types of mergers, Acquisitions and Take Over –Amalgamations.
<b>UNIT-V (10Hrs)</b>	<b>WORKING CAPITAL MANAGEMENT-:</b> Concepts and Components of Working Capital- Factors determining the working capital- Operating cycle approaches; <b>MANAGEMENT OF CASH:</b> Nature-Motives-Objectives of cash management- Cash budget Cash Management techniques/processes; <b>MANAGEMENT OF RECEIVABLES:</b> Objectives Credit policies-Credit terms- Collection policies; <b>MANAGEMENT OF INVENTORY:</b> Meaning Objectives- Components- Techniques of Inventory Management.
<b>Text Books:</b> Estd. 1980 AUTONOMOUS	
1.	I.M. Pandey. Financial Management. Vikas Publishers.
2.	Prasanna Chandra - Financial Management - Theory & Practice, Tata McGraw Hill.
<b>Reference Books:</b>	
1.	Gitman L.J.(2006). Managerial Finance (11th Edition). Pearson Education.
2.	Richard A Brealeyetal.(2007). Principles of Corporate Finance. Tata McGraw Hill.
3.	Chandra Bose D(2006). Fundamentals of Financial Management. PHI.



Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4107	PE	3	--	--	3	30	70	3 Hrs.
<b>CLOUD COMPUTING</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected to learn								
1	The implementation of Virtualization Concepts							
2	The implementation of Task Scheduling algorithms							
3	Map-Reduce concept to applications							
4	How to build Private Cloud							
5	The impact of engineering on legal and societal issues involved							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
S. No	Outcome							Knowledge Level
1	Interpret the key dimensions of the challenge of Cloud Computing							K4
2	Examine the economics, financial, and technological implications for selecting cloud computing for own organization							K3
3	Assess the virtualization concepts and resource management for initiating and installing cloud-based applications							K4
4	Evaluate own organizations needs for capacity building and security risks in cloud computing related IT areas							K3
5	Apply real time cloud application development through AWS, Google and Microsoft.							K3
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	<p><b>Introduction:</b> Network centric computing, Network centric content, peer-to –peer systems, cloud computing delivery models and services, Ethical issues, Vulnerabilities, Major challenges for cloud computing.</p> <p><b>Parallel and Distributed Systems:</b> introduction, architecture, distributed systems, communication protocols, logical clocks, message delivery rules, concurrency.</p>							
<b>UNIT-II (10 Hrs)</b>	<p><b>Cloud Infrastructure:</b> At Amazon, The Google Perspective, Microsoft Windows Azure, Open Source Software Platforms, Cloud storage diversity, Inter cloud, energy use and ecological impact, responsibility sharing, user experience, Software licensing.</p> <p><b>Cloud Computing Applications and Paradigms:</b> Challenges for cloud, existing cloud applications and new opportunities, architectural styles, workflows, The Zookeeper, HPC on cloud.</p>							

<b>UNIT-III (12 Hrs)</b>	<p><b>Cloud Resource virtualization:</b> Virtualization, layering and virtualization, virtual machine monitors, virtual machines, virtualization- full and para, performance and security isolation, hardware support for virtualization,</p> <p><b>Resource Management and Scheduling:</b> Policies and Mechanisms, Stability of a two-level resource allocation architecture, coordination, resource bundling, scheduling algorithms, fair queuing, start time fair queuing, cloud scheduling subject to deadlines.</p>
<b>UNIT-IV (12 Hrs)</b>	<p><b>Storage Systems:</b> Storage models, file systems and database, distributed file systems, general parallel file systems. Google file system. Big Table, Megastore (text book 1), Amazon Simple Storage Service(S3) (Text book 2),</p> <p><b>Cloud Security:</b> Cloud security risks, security – a top concern for cloud users, privacy and privacy impact assessment, trust, OS security, Virtual machine security, Security risks.</p>
<b>UNIT-V (10Hrs)</b>	<p><b>Cloud Application Development:</b> Amazon Web Services : EC2 – instances, connecting clients, security rules, launching, usage of S3 in Java, Cloud based simulation of a Distributed trust algorithm( Text Book 1)</p> <p><b>Google:</b> Google App Engine, Google Web Toolkit (Text Book 2),</p> <p><b>Microsoft:</b> Azure Services Platform, Windows live, Exchange Online, Share Point Services, Microsoft Dynamics CRM (Text Book 2)</p>
<b>Text Books:</b>	
1.	Cloud Computing, Theory and Practice,1st Edition, Dan C Marinescu, MK Elsevier publisher ,2013
2.	Cloud Computing, A Practical Approach, 1st Edition, Anthony T Velte, Toby J Velte, Robert Elsenpeter, TMH,2017
<b>Reference Books:</b>	
1.	Mastering Cloud Computing, Foundations and Application Programming,1st Edition, Raj Kumar Buyya, Christen vecctiola, S Tammarai selvi, TMH,2013
2.	Essential of Cloud Computing, 1st Edition, K Chandrasekharan, CRC Press, 2014.
3.	Cloud Computing, A Hands-on Approach, Arshdeep Bahga, Vijay Madiseti, Universities Press, 2014.

<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4108</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>
<b>MEAN STACK TECHNOLOGIES</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected to learn								
1	Translate user requirements into the overall architecture and implementation of new systems and Manage Project and coordinate with the Client							
2	Writing optimized front end code HTML and JavaScript							
3	Monitor the performance of web applications & infrastructure and Troubleshooting web application with a fast and accurate a resolution							
4	Design and implementation of Robust and Scalable Front End Applications							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
<b>S.No</b>	<b>Outcome</b>							<b>Knowledge Level</b>
1	Enumerate the Basic Concepts of Web & Markup Languages							K2
2	Develop web Applications using Scripting Languages & Frameworks							K3
3	Make use of Express JS and Node JS frameworks							K3
4	Illustrate the uses of web services concepts like restful, react JS							K3
5	Apply Deployment Techniques & Working with cloud platform							K3
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	<b>Introduction to Web:</b> Internet and World Wide Web, Domain name service, Protocols: HTTP, FTP, SMTP. Html5 concepts, CSS3, Anatomy of a web page. <b>XML:</b> Document type Definition, XML schemas, Document object model, XSLT, DOM and SAX Approaches.							
<b>UNIT-II (10 Hrs)</b>	<b>JavaScript:</b> The Basic of JavaScript: Objects, Primitives Operations and Expressions, Control Statements, Arrays, Functions, Constructors, Pattern Matching using Regular Expressions. Angular Java Script Angular JS Expressions: ARRAY, Objects, \$eval, Strings, Angular JS Form Validation & Form Submission, Single Page Application development using Angular JS.							
<b>UNIT-III (12 Hrs)</b>	<b>Node.js:</b> Introduction, Advantages, Node.js Process Model, Node JS Modules. <b>Express.js:</b> Introduction to Express Framework, Introduction to Nodejs , What is Nodejs, Getting Started with Express, Your first Express App, Express Routing, Implementing MVC in Express, Middleware, Using Template Engines, Error Handling, API Handling , Debugging, Developing Template Engines, Using Process Managers, Security & Deployment.							

<b>UNIT-IV (12 Hrs)</b>	<b>RESTful Web Services:</b> Using the Uniform Interface, Designing URIs, Web Linking, Conditional Requests. React Js: Welcome to React, Obstacles and Roadblocks, React's Future, Keeping Up with the Changes, Working with the Files, Pure React, Page Setup, The Virtual DOM, React Elements, ReactDOM, Children, Constructing Elements with Data, React Components, DOM Rendering, Factories.
<b>UNIT-V (10Hrs)</b>	Mongo DB: Introduction, Architecture, Features, Examples, Database Creation & Collection in Mongo DB. Deploying Applications: Web hosting & Domains, Deployment Using Cloud Platforms.
<b>Text Books:</b>	
1.	Programming the World Wide Web, Robert W Sebesta, 7ed, Pearson.
2.	Web Technologies, Uttam K Roy, Oxford
3.	Pro Mean Stack Development, ELadElrom, Apress
4.	Restful Web Services Cookbook, Subbu Allamraju, O'Reilly
5.	JavaScript & jQuery the missing manual, David sawyer mcfarl and, O'Reilly
6.	Web Hosting for Dummies, Peter Pollock, John Wiley Brand
<b>Reference Books:</b>	
1.	Ruby on Rails up and Running, Lightning fast Web development, Bruce Tate, Curt Hibbs, Oreilly (2006).
2.	Programming Perl, 4ed, Tom Christiansen, Jonathan Orwant, Oreilly (2012).
3.	Web Technologies, HTML, JavaScript, PHP, Java, JSP, XML and AJAX, Black book, Dream Tech. Estd. 1980
4.	An Introduction to Web Design, Programming, Paul S Wang, Sanda S Katila, Cengage Learning.
5.	Express.JS Guide, The Comprehensive Book on Express.js, Azat Mardan, Lean Publishing.

Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4109	PE	3	--	--	3	30	70	3 Hrs.
<b>BUSINESS INTELLIGENCE</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected to								
1	Become familiar with the ethics and basics of Business Intelligence and Decision Support Systems.							
2	Define mathematical models, data mining and data preparation.							
3	Describe classification problems and clustering methods.							
4	Study marketing models, Logistic and production models and Data envelopment analysis							
5	Grasp the objectives of knowledge management and artificial intelligence and expert systems.							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
S.No	Outcome							Knowledge Level
1	Summarize the role of mathematical models, BI architectures, representation of the decision-making process, and evolution of information systems.							K2
2	Describe the development of a model, representation of input data, analysis methodologies, data validation, transformation and reduction.							K2
3	Understand and use the technologies and tools that make up BI.							K2
4	Design technological architecture that underpins BI systems.							K3
5	Plan the implementation of a BI system.							K4
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	<b>Introduction to Business Intelligence:</b> The Business pressure-Responses and support model Definition of BI- Architecture of BI- Styles of BI-vent-Driven alerts-A cyclic process of Intelligence Creation. The value of Business intelligence-Value driven and Information use Performance metrics and key performance indicators-horizontal use cases for BI.							
<b>UNIT-II (10 Hrs)</b>	<b>Data Ware Housing:</b> Definitions and concepts-DW process an Innovation-Data Warehousing Implementation-Data warehousing Administration-Security Issues and future trends. Business Performance Management-Overview Strategic plan, monitor, performance measurement, BPM methodologies-BPM Techniques-Performance dashboard and scorecards							
<b>UNIT-III (12 Hrs)</b>	<b>Data Mining for Business Intelligence:</b> Data mining concepts and definitions-Data mining applications - Artificial neural Networks for data mining - Text and web mining-Natural language processing-Text mining applications-Text mining process-tools-Web							

	mining overview Web content overview-Web structure mining-Web usage mining.
<b>UNIT-IV (12 Hrs)</b>	<b>Business Rules:</b> The Value Proposition of Business Rules - Business rules approach- Business rule system - Sources of business rules and management approach.
<b>UNIT-V (10Hrs)</b>	<b>Business Intelligence Implementation:</b> Business Intelligence and integration - Implementation - connecting in BI systems- Issues of legality- Privacy and ethics- Social networking and BI. Relevant cases have to be discussed in each unit and in examination case is compulsory from any unit.
<b>Text Books:</b>	
1.	Amit Johri “Business Intelligence” Himalaya, 2012
2.	Rajiv Sabherwal “Business Intelligence” Wiley Publications, 2012
3.	Pro Mean Stack Development, ELadElrom, Apress
<b>Reference Books:</b>	
1.	Carlo Vercellis “Business Intelligence” Wiley Publications, 2012
2.	Nina Godbole & Sunit Belapure“ Cyber Security” Wiley india 2012.
3.	Jawadekar, MIS Text and Cases, TMH, 2012 6. Efraim Turban et al. “Business Intelligence” 2e, Pearson Education, 2012



<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4110</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>

## IT PROJECT MANAGEMENT

(For CSBS)

**Course Objectives:** Students are expected to

1	Effectively plan, manage, execute, and control projects within the stipulated time
2	Effectively manage cost targets with a focus on Information Technology and Service Sector
3	Understand various agile project management techniques such as Scrum and DevOps.

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Understand Project Management activities and to identify basic project management skills with a strong emphasis on issues and problems associated with delivering successful IT projects.	K2
2	Develop activity network to use PERT and to manage project risks such as Resource scheduling and cost control.	K3
3	Analyze Cost Control Scheduling for a Project by implement Project Management features.	K4
4	Understand the concept of Agile Project Management and IT Service Management.	K2
5	Apply the concept of DevOps and its Working, Automated testing and test driven methods and continuous deployment.	K3

## SYLLABUS

<b>UNIT-I (10 Hrs)</b>	<b>Project Overview and Feasibility Studies:</b> Project Identification, Market and Demand Analysis, Project Cost Estimate, Financial Appraisal
<b>UNIT-II (10 Hrs)</b>	<b>Project Scheduling:</b> Project Scheduling, Introduction to PERT and CPM, Critical Path Calculation, Precedence Relationship, Difference between PERT and CPM, Float Calculation and its importance, Cost reduction by Crashing of activity.
<b>UNIT-III (12 Hrs)</b>	<b>Cost Control and Scheduling:</b> Project Cost Control (PERT/Cost), Resource Scheduling & Resource Levelling. <b>Project Management Features:</b> Risk Analysis, Project Control, Project Audit and Project Termination.
<b>UNIT-IV (12 Hrs)</b>	<b>Agile Project Management:</b> Introduction, Agile Principles, Agile methodologies, Relationship between Agile Scrum, Lean, DevOps and IT Service Management (ITIL). <b>Scrum:</b> Various terminologies used in Scrum (Sprint, product backlog, sprint backlog,

	sprint review, retro perspective), various roles (Roles in Scrum), Best practices of Scrum.
<b>UNIT-V (10Hrs)</b>	<b>DevOps:</b> Overview and its Components, Containerization Using Docker, Managing Source Code and Automating Builds, Automated Testing and Test-Driven Development, Continuous Integration, Configuration Management, Continuous Deployment, Automated Monitoring, Other Agile Methodologies: Introduction to XP, FDD, DSDM, Crystal.
<b>Text Books:</b>	
1.	Mike Cohn, Succeeding with Agile: Software Development Using Scrum, 2015, 1stEdition Addison Wesley Professional.
<b>Reference Books:</b>	
1.	Roman Pichler, Agile Product Management with Scrum: Creating Products that Customers Love, 2011, First edition, Addison-Wesley.
2.	Ken Schwaber, Agile Project Management with Scrum, 2014,1 st edition, Microsoft Press US





Code	Category	L	T	P	C	I.M	E.M	Exam
B20CB4111	PE	3	--	--	3	30	70	3 Hrs.

## DEEPLARNINGTECHNIQUES

(For CSBS)

### Course Objectives:

1.	Learn deep learning methods for working with sequential data,
2.	Learn deep recurrent and memory networks,
3.	Learn deep Turing machines,
4.	Apply such deep learning mechanisms to various learning problems.
5.	Know the open issues in deep learning, and have a grasp of the current research directions.

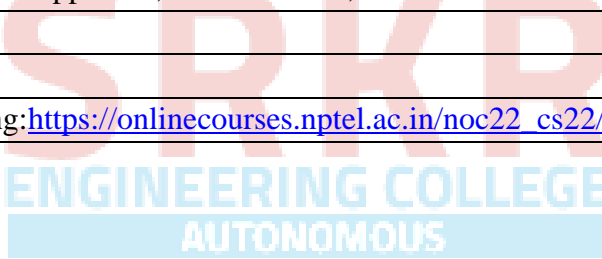
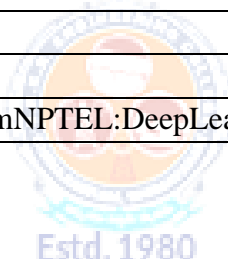
### Course Outcomes

S.No	Outcome	Knowledge Level
1.	Understand the fundamental concepts and learning techniques of Artificial Intelligence, Machine Learning and Deep Learning.	K2
2.	Understand Deep Learning Networks	K2
3.	Explain the Techniques of Keras, TensorFlow, Theano and CNTK	K3
4.	Classify the Concepts of CNN and RNN	K3
5.	Implement Interactive Applications of Deep Learning.	K4

## SYLLABUS

<b>UNIT-I</b> (10Hrs)	<b>Fundamentals of Deep Learning:</b> Artificial Intelligence, History of Machine learning: Probabilistic Modeling, Early Neural Networks, Kernel Methods, Decision Trees, Random forests and Gradient Boosting Machines, <b>Fundamentals of Machine Learning:</b> Four Branches of Machine Learning, Evaluating Machine learning Models, Overfitting and Underfitting.
<b>UNIT-II</b> (10 Hrs)	<b>Introducing Deep Learning:</b> Biological and Machine Vision, Human and Machine Language, Artificial Neural Networks, Training Deep Networks, Improving Deep Networks.
<b>UNIT-III</b> (10 Hrs)	<b>Neural Networks:</b> Anatomy of Neural Network, Introduction to Keras: Keras, TensorFlow, Theano and CNTK, Setting up Deep Learning Workstation, Classifying Movie Reviews: Binary Classification, Classifying new swires: Multiclass Classification.
<b>UNIT-IV</b> (10 Hrs)	<b>Convolutional Neural Networks:</b> Neural Network and Representation Learning, Convolutional Layers, Multichannel Convolution Operation, <b>Recurrent Neural Networks:</b> Introduction to RNN, RNN Code, PyTorch Tensors: Deep Learning with PyTorch, CNN in PyTorch.

<b>UNIT-V (10 Hrs)</b>	<b>Interactive Applications of Deep Learning:</b> Machine Vision, Natural Language processing, Generative Adversarial Networks, Deep Reinforcement Learning. <b>Deep Learning Research:</b> Autoencoders, Deep Generative Models: Boltzmann Machines Restricted Boltzmann Machines, Deep Belief Networks.
<b>Textbooks:</b>	
1.	Deep Learning-Ian Good fellow, Yoshua Bengio and Aaron Courville, MITPress, 2016
2.	Deep Learning with Python - Francois Chollet, Released December 2017, Publisher(s): Manning Publications, ISBN:9781617294433
3.	Deep Learning Illustrated: A Visual, Interactive Guide to Artificial Intelligence - Jon Krohn, Grant Beyleveld, Aglaé Bassens, Released September 2019, Publisher(s): Addison-Wesley Professional, ISBN:9780135116821
4.	Deep Learning from Scratch - Seth Weidman, Released September 2019, Publisher(s): O'Reilly Media, Inc., ISBN: 9781492041412
<b>Reference Books:</b>	
1.	Artificial Neural Networks, Yegnanarayana,B., PHI Learning Pvt. Ltd,2009.
2.	Matrix Computations, Golub, G.,H.,andVanLoan,C.,F,JHUPress,2013.
3.	Neural Networks: A Classroom Approach, Satish Kumar, Tata McGraw-HillEducation,2004.
<b>e-Resources</b>	
1.	SwayamNPTEL:DeepLearning: <a href="https://onlinecourses.nptel.ac.in/noc22_cs22/preview">https://onlinecourses.nptel.ac.in/noc22_cs22/preview</a>



Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4112	PE	3	--	--	3	30	70	3 Hrs.

## SERVICES SCIENCE AND SERVICE OPERATIONAL MANAGEMENT

(For CSBS)

**Course Objectives:** Students are expected to

1	Examine the management of services focusing on both the strategic and operational aspects of designing new services
2	Demonstrate service design and development
3	Assessing and improving service quality, improving the efficiency and effectiveness of service processes
4	Understand the integration of new technologies into service operations.
5	Examine the management of services supply focusing on both the strategic and operational aspects of designing new services

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Apply the concepts about Services and distinguish it from Goods	K3
2	Comprehend ways to design Services and evaluate them	K3
3	Assess the quality in the service and improve the yield	K3
4	Examine various methods to be used to operate and manage Service businesses	K3
5	Understand how innovation can be approached from Services point of view	K2

## SYLLABUS

<b>UNIT-I (10 Hrs)</b>	<p><b>Introduction to services</b></p> <p>Introduction to the course, introduction to service operations, role of service in economy and society, introduction to Indian service sector, differences between services and operations, service package, characteristics, various frameworks to design service operation system, kind of service encounter, importance of encounters.</p>
<b>UNIT-II (10 Hrs)</b>	<p><b>Service Design</b></p> <p>Service-Dominant Logic, Goods-Dominant logic to Service-Dominant logic, Value Co-creation, Customer Journey and Service Design, Design Thinking methods to aid Service Design, Development of Strategic Service Vision (SSV), Data Envelopment Analysis, NSD cycle, Service Blueprinting, Elements of service delivery system</p>
<b>UNIT-III (12 Hrs)</b>	<p><b>Quality and Yield Management</b></p> <p>Models of facility locations (Huff's retail model), role of service-scape in layout design,</p>

	SERVQUAL, walk through audit, dimensions of service quality & other quality tools Service Guarantee & Service Recovery, Service guarantee, benefits, types, design of service of guarantees, service failure, service recovery, strategy, customer response analysis.
<b>UNIT-IV (12 Hrs)</b>	<b>Forecasting, Managing Capacity and facilities</b> Forecasting Demand for Services, review of different types of forecasting methods, managing capacity and demand: Strategies for matching capacity and demand, psychology of waiting, application of various tools used in managing waiting line in services, managing facilitating Goods, review of inventory models, role of inventory in services
<b>UNIT-V (10Hrs)</b>	<b>Service Supply, Queuing Models</b> <b>Managing service supply relationship:</b> Understanding the supply chain/hub of service, Strategies for managing suppliers of service, Vehicle Routing Problem: Managing after sales service, Understanding services that involve transportation of people and vehicle, Techniques for optimizing vehicle routes <b>Service Innovation:</b> Services Productivity, Need for Services Innovation, Case studies, Contemporary issues: Expert lecture on recent trends
<b>Text Books:</b>	
1.	Fitzsimmons & Fitzsimmons, Service Management: Operations, Strategy, Information Technology, 2019, 9th edition, McGraw Hill publications.
<b>Reference Books:</b>	
1.	Wilson, A., Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. Services marketing: Integrating customer focus across the firm. 2012. McGraw Hill publications.
2.	Reason, Ben, and Lovlie, Lavrans, Service Design for Business: A Practical Guide to Optimizing the Customer Experience, 2016, Pan Macmillan India.

Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20CB4113	PE	3	--	--	3	30	70	3 Hrs.

## BLOCK CHAIN TECHNOLOGIES

(For CSBS)

**Course Objectives:** Students are expected to

1.	To understand block chain technology and Cryptocurrency working principle
2.	Explore the functionalities and applications of crypto-currency
3.	Gain knowledge of advanced block chain concepts and applications
4.	Understand the working of specific block chain platforms and technologies
5.	Evaluate the challenges and real world applications of block chain

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1.	Demonstrate the block chain basics and Crypto currency concepts	K2
2.	Compare and contrast the use of different private vs. public block chain and use cases	K3
3.	Design an innovative Bit coin Block chain and scripts, Block chain Science on various coins	K4
4.	Familiarize with Ethereum, Hyper ledger related to transaction of crypto currency.	K3
5.	Apply Block-chain technology in E-Governance, Land Registration, Medical Information Systems and others	K3

## SYLLABUS

<b>UNIT-I (10Hrs)</b>	<b>Introduction:</b> Introduction, basic ideas behind block chain, how it is changing the landscape of digitalization, introduction to cryptographic concepts required, Block chain or distributed trust, Currency, Cryptocurrency, How a Cryptocurrency works, Financial services, Bitcoin prediction markets.
<b>UNIT-II (10 Hrs)</b>	Hashing, public key cryptosystems, private vs public block chain and use cases, Hash Puzzles, Extensibility of Block chain concepts, Digital Identity verification, Block chain Neutrality, Digital art, Block chain Environment.
<b>UNIT-III (10 Hrs)</b>	<b>Introduction to Bitcoin:</b> Bitcoin Block chain and scripts, Use cases of Bitcoin Blockchain scripting language in micropayment, escrow etc Downside of Bit coin mining, Block chain Science: Grid coin, Folding coin, Block chain Genomics, Bit coin MOOCs.
<b>UNIT-IV (10 Hrs)</b>	Ethereum continued, IOTA, The real need for mining, consensus, Byzantine Generals Problem, and Consensus as a distributed coordination problem, Coming to private or permissioned block chains, Introduction to Hyper ledger, Currency, Token, Campus coin,

	Coin drop as a strategy for Public adoption, Currency Multiplicity, Demurrage currency
<b>UNIT-V (10 Hrs)</b>	Technical challenges, Business model challenges, Scandals and Public perception, Government Regulations, Uses of Block chain in E-Governance, Land Registration, Medical Information Systems
<b>Textbooks:</b>	
1.	1. Blockchain Blue print for Economy by Melanie Swan
<b>Reference Books:</b>	
1.	1. Blockchain Basics: A Non-Technical Introduction in 25 Steps 1st Edition, by Daniel Drescher



<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M.</b>	<b>Exam</b>
<b>B20CB4114</b>	<b>PE</b>	<b>3</b>	<b>--</b>	<b>--</b>	<b>3</b>	<b>30</b>	<b>70</b>	<b>3 Hrs.</b>

## HUMAN RESOURCE MANAGEMENT

(For CSBS)

**Course Objectives:** Students are expected to

1	Understand the importance of human resource management as a field of study and as a central management function;
2	Appraise the elements of the HR function (e.g. – recruitment, selection, training and development, etc.) and be familiar with each element's key concepts & terminology; and
3	Apply the performance appraisal methods in assessing the employees
3	Understand the importance of Human resource development
4	Assess the global HR polices and conditions

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Discuss the HR role in the success of business firm	K2
2	Identify the right methods of staffing activity for an organization	K4
3	Assess the employee performance by using appraisal techniques	K3
4	Interpreting the Human resource development activity of an organization	K2
5	Predict the international environment for choosing suitable HR policy	K3

## SYLLABUS

<b>UNIT-I (10 Hrs)</b>	<b>Introduction to HRM:</b> Meaning and Definition of HRM; Nature and Scope of HRM; Objectives of HRM; Functions of HRM; Strategic Human Resource Management-Process, Corporate level strategies, Organizational and Human resource Strategies; Merger and Acquisition strategies.
<b>UNIT-II (10 Hrs)</b>	<b>Staffing: HR Planning-</b> JobAnalysis- Need and Team analysis; JobDescription - Characteristics, contents and steps; JobSpecification- information; Uses of job Analysis; Ergonomics; <b>Recruitment-</b> Definition and Objectives of recruitment, Strategic Management and recruitment; Recruitment policies; Sources of recruitment; Factors effecting recruitment; <b>Selection-</b> Meaning and definition, essential of selection procedure; <b>Job Evaluation-</b> Meaning and definition, objectives, principles, procedure of job Evaluation, problems of job evaluation; Merit rating.
<b>UNIT-III (12 Hrs)</b>	<b>PerformanceManagement:</b> <b>Performance Appraisal</b> -Meaning, Need and purposes; Methods of performance appraisal , Uses of performance appraisal, Problems of performance appraisal, Recent developments in performance appraisal; <b>Promotions-</b> Meaning, types, purposes, bases,

	benefits and problems; <b>Transfer</b> - Meaning, Reasons and Types.
<b>UNIT-IV (12 Hrs)</b>	<b>Human Resource Development:</b> <b>Training</b> -Meaning, Assessment of Training Needs, Training Methods- On the Job, off-the Job Methods-Training Evaluation, Advantages of training; <b>Management Development</b> —objectives, principles and methods of Management Development: on the job and off-the job methods; <b>Career Development Planning</b> - meaning, need for, steps, process and actions, Succession planning.
<b>UNIT-V (10Hrs)</b>	<b>Global Human Resource Management &amp; Ethics in Human Resource Management:</b> Global recruitment-Global selection approach; Cross- cultural training; Compensation; Women in International Business; <b>Ethics</b> - Meaning, Ethics in job design; Human Resource Planning; Employee Turnover; Wage and Salary Administration; Training and Development.
<b>Text Books:</b>	
1.	SubbaRao P., Personnel and Human Resource Management-Text and Cases, Himalaya Publications, Mumbai, 2013.
	Dessler,G. ,Fundamentals of Human Resource Management ,4 <sup>th</sup> Edition, Pearson,2017.
<b>Reference Books:</b>	
1.	Human Resource and Personnel Management” by K Aswathappa, Tata McGraw Hill, New Delhi, 2013.
2.	Human Resource Management” by Seema Sanghi, Macmillan Publishers India Ltd.
3.	Shashi K.Gupta.Human Resource Management, Kalyani Publishers. 2011
4.	N.Sambasiva Rao and Dr. Nirmal Kumar: “Human Resource Management and Industrial Relations”, Himalaya Publishing House, Mumbai.



Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4115	PE	3	--	--	3	30	70	3 Hrs.
<b>CONSUMER BUYING BEHAVIOUR</b>								
(For CSBS)								
<b>Course Objectives:</b> Students are expected to								
1	Understand the consumer decision making and behaviour							
2	Asses Internal factors influences on consumer behaviour							
3	Examine External Influences on consumer buying behaviour							
4	Interpret the influence of social media and other media on consumer							
5	Explain the ethics and social responsibility aspects in protecting the consumer							
<b>Course Outcomes:</b> After completion of the course, the student will be able to								
S.No	Outcome							Knowledge Level
1	Understand the basics of consumer behaviour							K2
2	Discover Internal influences on consumer behaviour							K3
3	Interpret the External Influences on consumer buying behaviour							K3
4	Predict the influence of various media on consumer							K3
5	Describe various ethical practices of organizations towards consumer							K2
<b>SYLLABUS</b>								
<b>UNIT-I (10 Hrs)</b>	Introduction to consumer behaviour, Decision making and consumer behaviour models, Cultural influences on consumer decision making, Consumer and Social wellbeing							
<b>UNIT-II (10 Hrs)</b>	Motivation and Perception, learning and memory, Self, Attitudes and persuasion							
<b>UNIT-III (12 Hrs)</b>	Group and Situational effects on consumer behaviour, Gender roles and subculture							
<b>UNIT-IV (12 Hrs)</b>	Social class and lifestyles, Media habits, Social media, word of mouth, and fashion							
<b>UNIT-V (10Hrs)</b>	Consumer Decision-Making and Diffusion of Innovations, Marketers' Ethics and Social Responsibility							
<b>Text Books:</b>								
1.	Consumer Behaviour by Schiff man, 11/e, Pearson							
2.	Consumer Behaviour: Building Marketing Strategy by Hawkins and Mother Baugh, 12/e, McGraw-Hill							

**Reference Books:**

1	Consumer Behaviour by David Loudon and Albert Della Bitter 4/e
2	Consumer Behaviour: Building Marketing Strategy by Del I Hawkins, David L Mother Baugh and Amity Mukherjee, 11/e, McGraw-Hill- Special Indian Edition
3	Shopper, Buyer and Consumer Behaviour: Theory and Marketing Applications by Jay D Lindquist and Joseph M Sergey , 2/e, Biztantra



Course Code	Category	L	T	P	C	I.M	E.M.	Exam
B20CB4116	SOC	1	--	2	2	0	50	3 Hrs.

## MULTIMEDIA APPLICATION DEVELOPMENT

(For CSBS)

**Course Objectives:** Students are expected to learn

1	The principles and current technologies of multimedia systems, multimedia standards, and gain hands-on experience in this area.
2	Issues in effectively representing, processing, and retrieving multimedia data such as sound and music, graphics, image and video will be addressed.

**Course Outcomes:** After completion of the course, the student will be able to

S.No	Outcome	Knowledge Level
1	Analyse the image components and develop video using flash	K4
2	Develop animation videos using Flash animation Tool	K4
3	Prepare animation on audio visual materials using Adobe Flex and AJAX	K4

## SYLLABUS

<b>Experi-ment-I (10 Hrs)</b>	<p><b>Basic Multimedia programs using PHOTOSHOP</b></p> <ol style="list-style-type: none"> <li>Write a program to visualize a given image in different forms using features like brightness, contrast, blur etc.</li> <li>Write a program to design a visiting card containing at least one Graphic and Text information.</li> <li>Write a program to prepare a cover page for any book in your subject area.</li> <li>Write a program to use appropriate tools from the tool box to cut the objects from three files (F1.jpg, F2.jpg, F3.jpg) ; Organize them in a single file and apply feather effects.</li> </ol>
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<b>Experi-ment-II (10 Hrs)</b>	<p><b>Multimedia Programs developed using FLASH</b></p> <ol style="list-style-type: none"> <li>Write a Program to perform motion twinning operation using flash</li> <li>Write a Program to create a 24 spokes on a wheel using flash.</li> <li>Write a Program to change and object shape using a shape twinning concept.</li> <li>Write a program to create an animated e-card using adobe Flash.</li> <li>Write a Program to create an animation to represent the Growing Moon.</li> <li>Write a Program to create an animation to indicate a ball bouncing on Steps</li> <li>Write a Program to simulate a ball hitting another ball.</li> <li>Write a Program to change a circle into a square using Flash.</li> </ol>
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<b>Experiment-III (12 Hrs)</b>	<p><b>Rich Internet Applications (RIA) using Adobe Flex and Ajax</b></p> <ol style="list-style-type: none"> <li>1. Write an MXML code to display Hello World using Flex.</li> <li>2. Create a Flex Project using Flash Builder IDE to run Hello World Application.</li> <li>3. Implement an AJAX program to fetch RSS feeds from a well-known RSS feed site. Provide a scrolling display of latest news on your page. You can use xparser.js if you like.</li> <li>4. Implement an RSS-based search feature. Have a text box and a button in your page for the same. Show the results in a separate &lt;div&gt; which has the results as hyperlinks, which the user can click.</li> <li>5. Use the Reverse AJAX technique to build a web-based chat application. The application is one-way browser-based. That is, we have a window in which one user types his messages. From other side, the second user directly updates a file on the server (instead of a browser area).</li> <li>6. A file on a server has information about cricket players. The fields represent name, country, matches, runs and centuries. The fields are separated by colons (:). The front end screen has a text field in which the user can enter a country. The server returns details of all players belonging to that country in the form of one big JSON object. The client parses the JSON object and builds an HTML table to print the results. Implement the server side script and the client code.</li> <li>7. Write an Ajax enabled address book web application that interacts with a web service to obtain data and to modify data in a server-side database.</li> <li>8. 20. Write a Calendar web application built using Dojo toolkit</li> </ol>
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**Reference Books:**

1	1. Multimedia systems Author: Ralf Steinmetz, Klara Nahrstedt
2	Flash 5 Visual JumpStart Author: Patricia Hartman Publisher: BPB 3. Data Compression Author: Mark Nelson
3	Flash MX Action Script Programming Author: Robert Reinhardt and Joey Lott Publisher: Wiley
4	Flash 5 Magic with Action Script Author: J. Scott Hamlin and David J. Emberton Publisher: Techmedia
5	Generator/Flash Web Development Author: Richard Alvarez Publisher: Techmedia

<b>Course Code</b>	<b>Category</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>I.M</b>	<b>E.M</b>	<b>Exam</b>
<b>B20CB4118</b>	<b>SOC</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>50</b>	<b>3 Hrs.</b>

### DISTRIBUTED TECHNOLOGIES-MONGODB

(For CSBS)

**Course Objectives:** This Course will enable students to

1	Master the leading document-oriented NoSQL database, MongoDB Architecture, CRUD, Schema
2	Design, Data Modelling and Indexing using real-life case studies
3	Learn how to design Schema using Advanced Queries Course Outcomes

**Course Outcomes:** At the end of the course the student will be able to:

S.No	Outcome	Knowledge Level
1	Install, configure and setup the drivers to use MongoDB with your programming language of choice	K4
2	Gain an in-depth understanding of main features of MongoDB and their use cases workout filters, projections, operators etc	K3
3	Build Queries to Retrieve data in the database using advanced querying and aggregations	K3
4	Build new types of sample applications for mobile, cloud, e-commerce and social technologies using MongoDB as backend Perform Experiments related to the following concepts	K3

### SYLLABUS

1	MongoDB on Windows
2	MongoShell
3	Databases, Documents
4	Collections
5	MongoDB Connections
6	Query and Projection
7	Operators
8	Aggregation Pipeline Operators
9	Database Commands
10	Shell Methods



Estd:1980

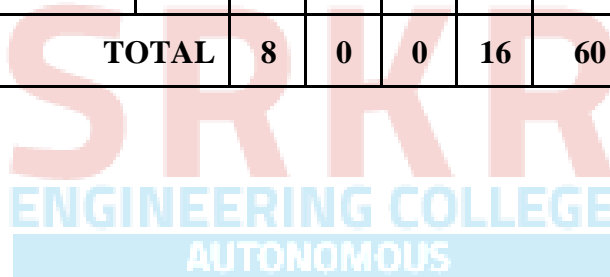
## SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (AUTONOMOUS)

(Affiliated to JNTUK, Kakinada), (Recognized by AICTE, New Delhi)

UG Programmes CE,CSE,ECE,EEE,IT & ME are Accredited by NBA, Accredited by NAAC with A<sup>+</sup>

CHINNA AMIRAM (P.O):: BHIMAVARAM :: W.G.Dt., A.P., INDIA :: PIN: 534 204

Regulation: R20		IV / IV - B.Tech. II - Semester							
COMPUTER SCIENCE & BUSINESS SYSTEMS									
SCHEME OF INSTRUCTION & EXAMINATION (With effect from 2020-21 admitted Batch onwards)									
Course Code	Course Name	Category	Cr	L	T	P	Int. Marks	Ext. Marks	Total Marks
B20CB4201	Project Work (Project work, seminar and internship in industry)	PR	8	0	0	16	60	140	200
<b>TOTAL</b>			<b>8</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>60</b>	<b>140</b>	<b>200</b>



Course Code	Category	L	T	P	C	I.M	E.M	Exam
B20CB4201	PR	--	--	16	8	60	140	--
<b>PROJECT WORK</b>								
(For CSBS)								
<b>Course Objectives:</b>								
1	To provide an opportunity to work in group on a topic / problem / experimentation							
2	To encourage creative thinking process							
3	To provide an opportunity to analyze and discuss the results to draw conclusions							
4	To acquire and apply fundamental principles of planning and carrying out the work plan of the project through observations, discussions and decision-making process.							
<b>Course Outcomes:</b> At the end of the course the students will be able to								
S.No.	Outcome							Knowledge Level
1	Identify a current problem through literature/field/case studies							K3
2	Identify the objectives and methodology for solving the problem							K3
3	Design and Develop technology/process for solving the problem							K4
4	Evaluate the technology/process							K5
<p>*The object of Project Work is to enable the student to take up investigative study in the broad field of Computer Science &amp; Business Systems, either fully theoretical/practical or involving both theoretical and practical work to be assigned by the Department on an individual basis or a group of students, under the guidance of a Supervisor. This is expected to provide a good initiation for the student(s) in R&amp;D work.</p> <p>The assignment to normally include:</p> <ol style="list-style-type: none"> <li>Survey and study of published literature on the assigned topic.</li> <li>Working out a preliminary approach to the problem relating to the assigned topic.</li> <li>Conducting preliminary Analysis/Modeling/Simulation/Experiment/Design/ Feasibility.</li> <li>Preparing a written report on the study conducted for presentation to the department.</li> <li>Final Seminar, as oral Presentation before a departmental committee.</li> </ol>								