Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Institute of Computer Applications

Name of Program: BCA + MCA

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End Sem University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*				
BCCA701	COMPULSORY	Linux and Shell Programming	60	20	20	0	0	4	1	0	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit;
Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.
*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To develop the understanding of student about basic Linux feature and architecture.
- To make the students aware on Linux processing fundamentals.
- To make them aware about various Linux administrative tasks.
- To develop their programming skills in Shell.

Course Outcomes (Cos):
- The student will be able to understand Linux features and its file system.
- The student will be able to demonstrate Linux processing system.
- The student will be able to perform Linux administrative tasks.
- The student will be able to use language skills in practical problems.

UNIT – I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, Linux standard directories.Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp&comm, View files, disk

related commands, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system.

UNIT–II

Essential linux commands Understanding shells, Processes in linux-process fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe& vim editor.

UNIT–III

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel.

UNIT–IV

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between variousshells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V

Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS BOOKS :

1. UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
2. M.J. Bach "Design of UNIX O.S. ", Prentice Hall of India.
3. Y.Kanetkar "Unix shell programming", BPB Pub.
4. Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition)
5. Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.
6. Linux Kernel, Beck Pearson Education, Asia.
7. Linux complete, BPB Publications.

Name of Program: BCA + MCA

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme									
			Theory			Practical						
			End SEM University Exam	Two Term Exam	Teacher Assessment	End SEM University Exam	Teacher Assessment	L	T	P	CREDITS
BCCA 702	Compulsory	Data Communication & Applications	60	20	20			4	1	0	5

Course Education Objectives (CEOs):

The aim of this course is to allow students to develop background knowledge as well as core expertise in data communication technologies, which is one of the fastest growing industries in today's world. The students will be exposed to:

1. Different types of media, multiplexing, switched networks.
2. The Internet, TCP/IP suite, fiber-optic communications and the state-of-art data communication applications.
3. Various transmission media, their comparative study, fiber optics and wireless media.
4. Categories and topologies of networks (LAN and WAN). Layered Architecture (OSI and TCP/IP) and protocol suites.
5. Channel error detection and correction, MAC protocols, Ethernet and WLAN.
6. Associated routing principles.

Course Outcomes (COs):

Upon completion of the course, students will be able to:

1. Identify various components in a data communication system, describe their properties, explain how they work and evaluate their performance.
2. Describe how the physical, data link, and network layers operate in a typical data communication system.
3. Evaluate the performance of some common data and computer networks.
4. Design solutions to solve engineering problems that require the applications of data and computer communication technology.

UNIT – I

Data Communications, Data Networking, and the Internet: What is communication, uses of communication; General block diagram of communication system, types of communication, Data communications, Applications of data communications, Data Communications and Networking for Today's Enterprise, A Communications Model, Networks, Internet.
Data Transmission: Fourier analysis, Band limited signals, The communication channel, Maximum data rate of a channel, Electromagnetic spectrum, electromagnetic waves, frequency and wave length, bandwidth, bandwidth and channel capacity, Modulation, types of Modulation, Concepts and Terminology, Analog and Digital Data Transmission, Transmission Impairments, Channel Capacity.
Transmission Media: Guided Transmission Media, Wireless Transmission, Wireless Propagation, Line-of-Sight Transmission, Optical Fiber -Physics & velocity of propagation of light, Advantages & disadvantages, unguided media: Electromagnetic polarization, attenuation and absorption, optical properties of radio waves, terrestrial propagation of electromagnetic waves, skip distance free-space path loss, microwave, infrared & satellite communication system.

UNIT - II

Signal Encoding Techniques: Digital Data, Digital Signals; Digital Data, Analog Signals; Analog Data, Digital Signals; Analog Data, Analog Signals
Digital Data Communication Techniques: Digital communication, advantages of digital communication, Nyquist theorem ,Sampling Theory, Analog to digital conversion -Pulse Code Modulation (PCM), Delta modulation (DM); encoding of digital signals, Multiplexing and Modulation of Digital Signals, digital radio, digital amplitude modulation, frequency shift keying (FSK), phase shift keying (PSK), quadrature amplitude modulation (QAM), band width efficiency, carrier recovery, differential phase shift keying,(DPSK), clock recovery, probability of error & bit error rate, trellis encoding, Asynchronous and Synchronous Transmission.
Data Link Control Protocols: Types of Errors, Error Detection, Error Correction, Line Configurations, Flow Control, Error Control, High-Level Data Link Control (HDLC)

UNIT – III

Multiplexing: Frequency-Division Multiplexing, Synchronous Time-Division Multiplexing, Statistical Time-Division Multiplexing, Asymmetric Digital Subscriber Line, xDSL.
Spread Spectrum: The Concept of Spread Spectrum, Frequency Hopping Spread Spectrum, Direct Sequence Spread Spectrum, Multiple Access- Random Access, Aloha- Carrier Sense Multiple Access (CSMA)- Carrier Sense Multiple Access with Collision Detection (CSMA)- Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA), - Frequency- Division Multiple Access (FDMA), Time - Division Multiple Access (TDMA), Code - Division Multiple Access (CDMA).

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Circuit Switching and Packet Switching: Switched Communications Networks, Circuit Switching Networks, Circuit Switching Concepts, Soft switch Architecture, Packet-Switching Principles, Modems.

UNIT – IV

Routing in Switched Networks: Routing in Packet-Switching Networks, Examples: Routing in ARPANET, Least-Cost Algorithms.
Congestion Control in Data Networks: Effects of Congestion, Congestion Control, Traffic Management, Congestion Control in Packet-Switching Networks.
Local Area Network Overview and ISDN: Background, Topologies and Transmission Media, LAN Protocol Architecture, Bridges, Hubs and Switches, Virtual LANs, integrated services digital network (ISDN).

UNIT – V

Ethernet: Traditional Ethernet, High-Speed Ethernet, IEEE 802.1Q VLAN Standard
Wireless LANs: Overview, Wireless LAN Technology, IEEE 802.11 Architecture and Services, IEEE 802.11 Medium Access Control, IEEE 802.11Physical Layer, IEEE 802.11 Security Considerations

TEXT BOOKS:

1. B.A. Forouzan, Data Communications and Networking, 4th ed., McGraw-Hill, 2007

REFERENCES:

1. William Stallings, Data and Computer Communications, 8th ed., PrenticeHall, 2007.
2. A.S. Tenanbaum, "Computer Networks"; Pearson Education Asia, 4th Ed., 2003.

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Name of Prgram: BCA+MCA

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme					L	T	P	CREDITS
			Theory			Practical					
			End SEM University Exam	Two Term Exam	Teacher Assessment	End SEM University Exam	Teacher Assessment				
BCCA703	Compulsory	Data Mining and Warehousing	60	20	20	--	--	4	0	0	4

Course Educational Objectives (CEOs):
• To familiarize the students with the need and scope of the subject.
• to build the mental makeup of the students for the field of data mining
• Using simple and well drawn illustrations develop students skills to discover knowledge to support the decision making process.
• To make the students well versed with the latest trends in data warehousing and data mining.

Course Outcomes (Cos): The student will be able to
• understand the basic principles, concepts and applications of data warehousing and data mining
•introduce the task of data mining as an important phase of knowledge recovery process
• Ability to do Conceptual, Logical and Physical design of Data Warehouses, OLAP applications and OLAP deployment
• Have a good knowledge of the fundamental concepts that provide the foundation of data mining
• Design and implement a data warehouse or data mart to present information needed by management in a form that is usable for management client
• Design and implement the data preprocessing solutions for different applications
• Identify and use suitable data mining techniques for Knowledge Discovery
• Develop dashboard solutions for presentation of knowledge
• Explore the subject to start as a researcher

UNIT – I
Data Mining: Introduction, Motivation, importance, Data type for Data Mining: relation Databases, Data Warehouses, Transactional databases, advanced database system and its applications, Data mining Functionalities: Concept/Class description, Association Analysis, classification & Prediction, Cluster Analysis, Outlier Analysis, Evolution Analysis, Classification of Data Mining Systems.

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

UNIT – II

Data Warehouse and OLAP Technology for Data Mining: Differences between Operational Database Systems and Data Warehouses, a multidimensional Data Model, Data Cube, Data Warehouse Architecture, data warehouse servers.

UNIT- III

Data Preprocessing: Introduction and need of data preprocessing, data preprocessing as a process, Data Cleaning, Data Integration and Transformation, Data Reduction, Discretization and Concept Hierarchy Generation. Data Mining Primitives, Concept Description: Characterization and Comparison, Analytical Characterization.

UNIT – IV

Association Rule Mining: Market Basket Analysis, Basic Concepts, Mining Single-Dimensional Boolean Association Rules from Transactional Databases: different algorithms, the Apriori Partition, Dynamic Itemset Counting, Generating Association rules from Frequent items.

UNIT – V

Classification and Prediction and Cluster Analysis: Issues regarding classification and prediction, Major Issues in Data Mining, Applications and Trends in Data Mining: Data Mining Applications, currently available tools.

References

1. J. Han and M. Kamber, *Data Mining: Concepts and Techniques*, Morgan Kaufmann Pub.
2. Berson, *Data Warehousing, Data Mining and OLAP*, TMH.
3. W.H. Inmon, *Building the Data Warehouse*, Wiley India.
4. Anahory, *Data Warehousing in Real World,* Pearson Education.
5. Adriaans, *Data Mining*, Pearson Education.
6. A.K. Pujari, *Data Mining Techniques*, University Press, Hyderabad.

Name of Prgram: BCA+MCA

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme					L	T	P	CREDITS
			Theory			Practical					
			End SEM University Exam	Two Term Exam	Teacher Assessment	End SEM University Exam	Teacher Assessment				
BCCA704	Compulsory	Software Project Management	60	20	20	--	--	4	1	0	5

Legends : L , Lecture; T , Tutorial/Teacher Guided Student Activity; P , Practical; Q/A , Quiz/Assignment/Attendance; MST , Mid Semester Test.

*Teacher Assessment shall be based on following components:
Quiz/Assignment/Project/Participation in class activities, given that no component shall exceed more than 10 marks

Course Objective:

- To outline the need for Software Project Management
- To highlight different techniques for software cost estimation and activity planning.

Outcomes course:

- At the end of the course the students will be able to practice Project Management principles while developing software.

UNIT I:

Introduction to Software Project Management and Project Evaluation

What is a Project? Importance of Software Project Management, Activities Methodologies, Categorization of Software Projects, Setting objectives, Management Principles, Project portfolio Management, Cost-benefit evaluation technology, Risk evaluation, Strategic program Management, Stepwise Project Planning, Project manager skills and job description

UNIT II:

Project Life Cycle

Overview of project life cycle models, Software process and Process Models , Choice of Process models , Rapid Application development , Agile methods , Extreme Programming , Basics of Software estimation , Effort and Cost estimation techniques , Staffing Pattern.

UNIT III:

Activity Planning and Project Risk Management

Objectives of Activity planning, Project schedules, Activities, Sequencing and scheduling, Network Planning models, Forward Pass & Backward Pass techniques, Critical path (CRM) method,

Introduction, Risk Management Process Risk identification, Assessment, Monitoring, Risk Strategies (Risk Response Planning), Risk Monitoring and Control, Risk Response and Evaluation

Cost schedules.

UNIT IV:

Project Management and Control

Framework for Management and control , Collection of data Project termination , Cost monitoring , Earned Value Analysis- Project tracking , Change control- Software Configuration Management , Managing contracts , Contract Management.

UNIT V:

Staffing in Software Projects and Closure of a Project
Managing people , Organizational behavior , Best methods of staff selection , Motivation , The Oldham-Hackman job characteristic model , Working in teams , Decision making , Team structures , Virtual teams , Communications genres , Communication plans.

Project Implementation, Administrative closure, Project Evaluation.

BOOKS:

1. Robert K. Wysocki "Effective Software Project Management", Wiley Publication, 2011.
2. Gopalaswamy Ramesh, "Managing Global Software Projects", McGraw Hill Education (India), Fourteenth Reprint 2013.
3. Bob Hughes, Mike Cotterell and Rajib Mall: Software Project Management, Fifth Edition, Tata McGraw Hill, New Delhi, 2012.
4. Walker Royce: "Software Project Management"- Addison-Wesley, 1998.

Name of Program: BCA+MCA

Subject Code	Category	Subject Name	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL					
			End Sem. University Exam	Two Term Exam	Teachers Assessment*	End Sem University Exam	Teachers Assessment*	L	T	P	CREDITS
MBAI101	Elective	Principles and Practices of Management	60	20	20	--	--	4	0	0	4

Legends: **L** - Lecture; **T** - Tutorial/Teacher Guided Student Activity; **P** – Practical;   **C** - Credit;
***Teacher Assessment** shall be based on following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives

1. To understand the core management principles which applies to individuals, medium and large organizations.
2. The students are expected to learn the basics of management functions and realize the ideal characteristics of a manager.
3. The impetus of this subject is to make the students familiarize with the professional skills required to be an effective manager.

Course Outcomes

- Understand the major functions of management viz. Planning, Organizing, Staffing, leading and controlling.
- Describe the interrelationship among the various functions of Management.
- Develop a general management perspective.
- Use analytical skills for decision making.

Unit I: Nature and Evolution of Management

1. Meaning, Natureand Scope of Management
2. Levels and Types of Managers
3. Function, Role and Skills for Managers
4. Evolution of Management Thought
5. Early Classical Approaches – Scientific Management, Administrative Management, Bureaucracy
6. Neo-Classical Approaches – Human Relations Movement, Behavioral Approaches
7. Modern Approaches – Quantitative Approach; Systems Approach; Contingency Approach

Unit II:Planning

1. Planning: Meaning, Need and Importance
2. Planning Process, Types of Planning and Objectives
3. MBO
4. Strategies, Level of strategies
5. Policies, Methods and Programs
6. Decision Making: Types, Process
7. Techniques of Decision Making,Decision Making model

Unit III: Organizing

1. Concept, Process of Organizing
2. Forms of Organizational Structure
3. Formal and Informal Organizations
4. Principles of Organizations-Chain of Command, Span of Control, Delegation, Decentralization, Empowerment
5. Virtual Organization

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Unit IV: Staffing and Directing
1. Concept
2. Manpower Planning
3. Job Posting
4. Directing

Unit V: Controlling and Reviewing
1. Concept of Controlling
2. Types of Controls
3. Controlling Process
4. Controlling Methods
5. Reviewing

Text Books:

1 Koontz and Heinz Weihrich (2008).Essentials of Management. Tata McGraw-Hill Education, India, Latest Edition.
2 Robbins and Coulter (2007). Management. Prentice Hall of India, Latest Edition.
3 Hillier Frederick S. and Hillier Mark S(2008). Introduction to Management Science: A Modeling and Case Studies Approach with Spreadsheets. McGraw Hill, India,Latest Edition.
4 Weihrich Heinz and Koontz Harold (2011). Management: A Global and Entrepreneurial Perspective. McGraw-Hill Education, New Delhi, India, Latest Edition.
5 Tripathi P.C. and Reddy P.N.(2012). Principles of Management. Tata McGraw Hill Education, New Delhi, India, Latest Edition.

Name of Program: BCA + MCA

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End SEM University Exam	Two Term Exam	Teachers Assessment*	End SEM University Exam	Teachers Assessment*				
BCCA725	ELECTIVE	Soft Computing	60	20	20	--	--	4	0	0	4

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid SEM Test.

***Teacher Assessment** shall be based on following components:

Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

The student should be made to:

1. Learn the various soft computing frame works.
2. Be familiar with design of various neural networks.
3. Be exposed to fuzzy logic.
4. Learn genetic programming.
5. Be exposed to hybrid systems.

Course Outcomes (COs): The student will be able to:

*   Use a new tool /tools to solve a wide variety of real world problems
*   Find an alternate solution , which may offer more adaptability, resilience and optimization
*   Identify the suitable antenna for a given communication system
*   Gain knowledge of soft computing domain which opens up a whole new career option Tackle real world research problems

UNIT 1

Soft Computing: Introduction, Soft computing vs hard computing, various types of soft computing techniques, Application of soft Computing,   **Neural network**: Introduction, characteristics-,learning methods , Human Brain, Function of a single neuron, evolution of artificial neural network, Difference between ANN and human brain ,- important technologies ,applications of ANN, Neural network Architecture

UNIT2

Supervised Learning : Perception learning, Single layer, multilayer , linear Separability, Window & Hebb's learning rule/Delta rule, Adaline , Madaline , Back propagation network, Error back propagation algorithm, derivation of EBPA , application of EBPA

UNIT 3

Counter Propagation Network: architecture functioning & characteristics of counter Propagation network, Hop field/ Recurrent network, configuration, stability constraints, associative memory, and characteristics, limitations and applications , Hopfield v/s Boltzman

machine, Adaptive Resonance Theory: Architecture ,classifications ,Implementation and training, Associative Memory.

UNIT 4

Fuzzy Logic:- Fuzzy set theory, Fuzzy set versus crisp set, operation on Fuzzy Sets: Compliment, Intersection, Union, Product , Difference, Properties of Fuzzy sets, Crisp relation & fuzzy relations, introduction & features of membership functions ,Fuzzy rule base system : fuzzy propositions, formation, decomposition & aggregation of fuzzy Rules, fuzzy reasoning, fuzzy inference systems, fuzzy decision making & Applications of fuzzy logic.

UNIT 5

Genetic Algorithm : Fundamentals, basic concepts, working principle, encoding, fitness function, reproduction, Genetic modeling: Inheritance operator, cross over, inversion & deletion, mutation operator, Bitwise operator, Generational Cycle, Convergence of GA, Applications & advances in GA, Differences & similarities between GA & other traditional methods.

Books and References :

- S, Rajasekaran& G.A. VijayalakshmiPai, Neural Networks, Fuzzy Logic & Genetic Algorithms,Synthesis & applications, PHI Publication.
- S.N. Sivanandam& S.N. Deepa, Principles of Soft Computing, Wiley Publications
- Rich E and Knight K, Artificial Intelligence, TMH, New Delhi.
- Bose, Neural Network fundamental with Graph ,Algo.&Appl, TMH
- Kosko: Neural Network & Fuzzy System, PHI Publication
- Klir&Yuan ,Fuzzy sets & Fuzzy Logic: Theory &Appli.,PHI Pub.
- Hagen, Neural Network Design, Cengage Learning

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Name of Program: BCA + MCA

Subject Code	Category	Subject Name	Teaching & Evaluation Scheme									
			Theory			Practical						
			End SEM University Exam	Two Term Exam	Teacher Assessment	End SEM University Exam	Teacher Assessment	L	T	P	CREDITS
MCCA735	Elective	Advanced Computer Architecture	60	20	20	--	--	4	0	0	4

Course Education Objectives (CEOs):

This course is about the principles of computer design; instruction set design concepts, performance enhancements, new and alternative computer architectures, and the design and implementation of high performance computing systems. It equips the students with the skills to undertake performance comparisons, improve the performance of applications, and develop applications to solve computationally intensive problems.

Course Outcomes (COs):

Generally, the capabilities students will acquire include:
• Technical competence in computer architecture and high performance computing.
• Ability to describe the operation of modern and high performance computers.
• Ability to undertake performance comparisons of modern and high performance computers.
• Ability to improve the performance of applications on modern and high performance computers.

• Describe the principles of computer design.
• Classify instruction set architectures.
• Describe the operation of performance enhancements such as pipelines, dynamic scheduling,

  branch prediction, caches, and vector processors.
• Describe the operation of virtual memory.
• Describe modern architectures such as RISC, Super Scalar, VLIW (very large instruction word),multi-core and multi-CPU systems.
• Compare the performance of different architectures.
• Improve application performance for different CPU architectures.
• Develop applications for high performance computing systems.

UNIT – I

Fundamentals of Quantitative Design and Analysis

Classes of computers, Trends in technology, Measuring and Reporting Performance, Power consumption and efficiency as the metric, Dependability, Quantitative Principles of Computer Design.

UNIT – II

Instruction Set Principles

Classifying Instruction Set Architectures, Memory Addressing, Addressing modes, Operations in the instruction set, Instructions for control flow, encoding an instruction set, Role of compilers.

UNIT – III

Memory Hierarchy Design

Cache performance review, Four basic memory hierarchy questions, Six basic optimizations of cache performance, Ten advanced optimizations of cache performance, Protection: virtual memory and virtual machines, memory technology and optimizations: SRAM, DRAM, Flash memory, Graphics Data RAMs.

UNIT – IV

Instruction-Level Parallelism and its Dynamic Exploitation

Instruction level parallelism: concepts and challenges, basics of pipelining, data hazards, structural hazards, control hazards, minimizing data hazards through forwarding, overcoming branch penalties by delayed branches, static and dynamic branch prediction, dealing with exceptions in pipelining, dynamic scheduling, Tomasulo's algorithm, speculative processors, high performance instruction delivery, VLIW approach, static and dynamic superscalar processors.

UNIT - V

Multiprocessors and Thread-Level Parallelism

Multithreading: exploiting thread-level parallelism within a processor, Symmetric shared-memory

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

architectures and their performance, Distributed shared-memory architectures and their performance, synchronization, models of memory consistency.

TEXT BOOKS:

1. John L. Hennessey and David A. Patterson. Computer Architecture: A Quantitative Approach, 5E, Morgan-Kaufmann, 2012. ISBN-13: 978-0123838728.

REFERENCES:

1. Flynn . Computer Architecture: Pipelined and Parallel Processor Design, Narosa Book Distributors (2011). ISBN-13: 978-8173191008.

2. Kai Hwang. Advanced Computer Architecture: Parallelism, Scalability, Programmability, Tata McGraw Hill Education (2003). ISBN-13: 978-0070530706.

Name of Program: MCA (BANKING TECHNOLOGY)

SUBJECT CODE	Category	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			End SEM University Exam	Two Term Exam	Teacher Assessment	End SEM University Exam	Teacher Assessment				
BCCA707	COMPULSORY	Lab-1(Linux and Shell Programming Lab)	--	--	--	30	20	0	0	4	2

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical;   C - Credit; Q/A – Quiz/Assignment/Attendance, MST - Mid Sem Test.

*Teacher Assessment shall be based on following components: Quiz/Assignment/Project/Participation in class (Given that no component shall be exceed 10 Marks)

Course Educational Objectives (CEOs):

- To develop the understanding of student about basic Linux feature and architecture.
- To make the students aware on Linux processing fundamentals.
- To make them aware about various Linux administrative tasks.
- To develop their programming skills in Shell.

Course Outcomes (Cos):
- The student will be able to understand Linux features and its file system.
- The student will be able to demonstrate Linux processing system.
- The student will be able to perform Linux administrative tasks.
- The student will be able to use language skills in practical problems.

Note: Labs shall be conducted as per the prescribed syllabus.

TEXTS BOOKS :

1. UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.
2. M.J. Bach "Design of UNIX O.S. ", Prentice Hall of India.
3. Y.Kanetkar "Unix shell programming", BPB Pub.
4. Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition)
5. Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.

Chairperson
Board of Studies
(Computer Science & Engineering,
Information Technology & Computer Applications)
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore