Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Institute of Computer Applications

Name of Program : MCA (Banking Technology)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT401	COMPULSORY	Data Communication & Applications	3	1	0	4	60	20	20	0	0

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 Educational Objectives (CEOs)

- This course provides an introduction to the fundamental concepts on data communication
- This course introduces the underlying concepts behind networking using the Internet and its protocols
- To provide the concept of circuit switching an Packet switching

Course Outcomes (COs) After successful completion of this course students will be able to :

- Identify the different components and their respective roles in a communication system
- Propose efficient, cost effective, reliable and appropriate technology to establish communication links
- Design an enterprise network employing the common LAN technologies and be able to evaluate the advantages and disadvantages
- Configure a PC to work as a host in a TCP/IP network and to use the IP based commands to facilitate the trouble shooting process

UNIT 1

Data Communications, 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

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

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-2

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 **Signal Encoding Techniques**: Digital Data, Digital Signals; Digital Data, Analog Signals; Analog Data, Digital Signals; Analog Data, Analog Signals

UNIT-3

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.

UNIT-4

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).

UNIT 5

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

Suggested Readings:

1. Data Communications and Networking, Fourth Edition by Behrouza A. Forouzan, TMH
2. Computer Networks,A.S.Tanenbaum,4th edition, Pearson education.
3. Introduction to Data communications and Networking, W.Tomasi, Pearson education.

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

4. Data and Computer Communications, G.S.Hura and M.Singhal, CRCPress, Taylor and Francis Group.
5. An Engineering Approach to Computer Networks-S.Keshav,2ndEdition,Pearson Education.
6. Understanding communications and Networks,3rd Edition, W.A.Shay, Cengage Learning.

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT 402	Compulsory	Mobile Operating System	3	1	0	4	60	20	20	0	0

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 understand the fundamentals of Mobile communication systems
- To understand the different multiplexing scheme
- To understand the significance of different layers in mobile system

Course Outcomes (Cos): After the successful completion of this course students will be able to

- Understand the concepts of mobile and wireless communications.
- Apply the knowledge gained in exploring, application and protocol development
- Understand methods and tools used in Mobile Operating Systems
- Develop knowledge and skills of application design of Mobile Operating 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 – I

Introduction to wireless network, mobile and cellular mobile telephone systems, analog and digital cellular systems, Networking Applications and Mobile Technology, Wireless/Direct cable, Limitations of mobile access, Private and public networks, Trusted versus untrusted connections, Roaming, Security considerations when using Virtual Private Networks, IPSec and SSL, frequency reuse, co-channel interference.

UNIT II

Evolution of Modern Mobile Wireless Communication System-First Generation Wireless Networks, Second Generation (2G) Wireless Cellular, Networks, Major 2G standards, *2.5G* Wireless Networks, Third Generation 3G Wireless, introduction to MAC, SDMA, FDMA, TDMA, CDMA, Hand offs and dropped calls-initiation of handoff, power difference, mobile assisted cell-site and Intersystem handoff

UNIT III

Mobile Telecommunication standards, GSM Architecture and Protocols, General Packet Radio Services: (GPRS) Networks Architecture, GPRS Interfaces and Reference Points, GPRS Logical Channel, GPRS Mobility Management Procedures, GPRS Attachment and Detachment, introduction to DECT, TETRA, IMT-2000, CTEO, satellite systems – GEO, LEO and MEO, and broadcast systems –Digital audio and video broadcasting

UNIT IV

Network support for mobile systems, Mobile IP introduction, IP packet delivery, MIPV4 and MIPv6, Tunneling, and Reverse Tunneling MIPv4, MIPv4 Route Optimization, Mobility Management Issues, Role of IP on Wireless Networks IP for GPRS

UNIT V

Switched Domain Protocol Stacks, Role of Interfaces, Interface and Mobility Management, Packet routing and transport of user data in UMTS, Mobile transport and application layer protocol, GTP Tunnel, WWW, WAP, Configuring PDP Addresses on Mobile Stations

Suggested Readings:

1. Arash Habibi Lashkari, Mohammadreza Moradhaseli, "Mobile Operating Systems and Programming", VDM Verlag Publications, 2011

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

2. Lauren Collins, Scott R. Ellis, "Mobile Devices: Tools and Technologies", Kindle Edition, 2015
3. Dominic Chell , Tyrone Erasmus ,Shaun Colley "The Mobile Application Hacker's Handbook", WILEY, 2015
4. Michael J. Jipping, "Smartphone Operating System Concepts with Symbian OS: A Tutorial Guide", Wiley, 2007
5. Silberschatz, Galvin, Gagne, "Operating System Concepts", Wiley, 2009
6. Andrew S. Tanenbaum, "MODERN OPERATING SYSTEMS", PHI, 2013
7. Jochen Sciiiller, "Mobile Communications ", Pearson Education India, 2009
8. Theodore S. Rappaport, "Wireless Communications: Principles and Practice", Pearson Education, 2010
9. William C.Y Lee, "Mobile Cellular Telecommunications ", McGraw Hill, 1995
10. Sobell, Gargenta, Wildermuth, "Introduction to mobile operating systems", Pearson, 2014

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT 403	Compulsory	Decision Support System	3	1	0	4	60	20	20	0	0

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 Objectives:
Introduce decision support systems;

- Show their relationship to other computer based information systems,
- Demonstrate DSS development approaches,
- Show students how to utilize DSS capacities to support different types of decisions.

Course Outcomes:

- Ability to select appropriate modeling techniques for supporting semi-structured business decision making.

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

- Ability to identify and select appropriate decision support systems for generating innovative business solutions
- Ability to design and implement decision support systems for generating innovative business solutions

Unit 1

Decision-Making: Introduction and Definitions; Systems; Models; Phases of the Decision Making Process; Decision-Making: The Intelligence Phase; The Design Phase; The Choice Phase; Implementation Phase; Personality Types, Gender, Human Cognition, and Decision Styles.

Decision Support Systems: An Overview

DSS Configurations; Characteristics and Capabilities of DSS; Components of DSS; The Data Management Subsystem; The Model Management Subsystem; The User Interface (Dialog) Subsystem; The Knowledge-Based Management Subsystem; The User; DSS Hardware; DSS Classifications

Unit 2:

Modeling and Analysis

MSS Modeling; Static and Dynamic Models; Certainty, Uncertainty, and Risk; Problem-Solving Search Methods; Heuristic Programming; Simulation; Visual Interactive Modeling and Visual Interactive Simulation; Quantitative Software Packages; Model Base Management

Decision Support System Development

Introduction to DSS Development; The Traditional System Development Life Cycle, Alternative Development Methodologies; Prototyping: The DSS Development Methodology; Change Management; DSS Technology Levels and Tools;

Unit 3:

Knowledge Management

Introduction to Knowledge Management; Organizational Learning and Transformation; Knowledge Management Initiatives; Approaches to Knowledge Management; Information Technology in Knowledge Management; Knowledge Management Systems Implementation; Roles of People in Knowledge Management.

Unit 4:

Knowledge-Based Systems

Basic Concepts of Expert Systems; Applications of Expert Systems; Structure of Expert Systems; How Expert Systems Work; Problem Areas Suitable for Expert Systems; Benefits and Capabilities of Expert Systems; Problems and Limitations of Expert Systems; Expert System Success Factors; Types of Expert Systems; Expert Systems on the Web

Knowledge Acquisition, Representation, and Reasoning

Concepts of Knowledge Engineering; Scope and Types of Knowledge; Methods of Knowledge Acquisition from Experts; Knowledge Acquisition from Multiple Experts;

Automated Knowledge Acquisition from Data and Documents; Knowledge Verification and Validation.

Unit-V

Advanced Intelligent Systems

Machine-Learning Techniques; Case-Based Reasoning; Basic Concept of Neural Computing; Learning in Artificial Neural Networks; Developing Neural Network-Based Systems; Genetic Algorithms Fundamentals; Developing Genetic Algorithm Applications; Fuzzy Logic Fundamentals; Developing Integrated Advanced Systems

Intelligent Systems over the Internet

Web-Based Intelligent Systems; Intelligent Agents: An Overview; Characteristics of Agents; Classification and Types of Agents; Internet-Based Software Agents; DSS Agents and Multi-Agents; Semantic Web: Representing Knowledge for Intelligent Agents; Web-Based Recommendation Systems; Managerial Issues of Intelligent Agents

Suggested Readings:

1. Decision Support Systems and Intelligent Systems, Seventh Edition, Efraim Turban, Jay E. Aronson, Richard V. McCarthy, Prentice-Hall of India, 2007
2. Decision Support Systems, A Knowledge-Based Approach, Clyde W. Holsapple and Andrew B. Whinston
3. Decision Support Systems For Business Intelligence by Vicki L. Sauter

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT404	Compulsory	Grid Computing	3	1	0	4	60	20	20	0	0

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)

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Institute of Computer Applications

Course Educational Objectives (CEOs):

- To Understand and explain the key concepts of Grid computing.
- To Identify the resource selection for Grid environment.
- To understand about Grid computing history ,evolution of Grid and its Security issues
- To understand Data management and transfer in Grid environments.
- To know about Resource management technologies for Grid.
- To understand the recent versions of Globus toolkit.

Course Outcomes (COs):

- Students will understand the key concepts of Grid computing.
- Students will identify the resource selection for Grid environment.
- Students will understand about Grid computing history, evolution of Grid and its Security issues.
- Students will know about Data management and transfer in Grid environments
- Students will understand Resource management technologies for Grid.
- Students will understand the recent versions of Globus toolkit
- The students will be encouraged to adapt their research problem in a Grid environment as a project.

UNIT-I

Introduction: Parallel and Distributed Computing, Cluster Computing, Grid Computing Early and Current Grid Activities, Grid Computing Organizations and Their Roles: Developing Grid Standards & Best Practice Guidelines, Developing Grid Computing Toolkits & Frameworks, to Solve Computing using Grid-Based Solutions, Data, and Network Requirements, Building and Using Grid-Based Solutions Commercially, Grid Business Areas, Grid Applications.

UNIT-II

Grid Monitoring Architecture (GMA): An Overview of Grid Monitoring Systems.
Grid Computing Anatomy: The Grid Problem, TheGrid Computing Roadmap, Web Services and Grid Services Architecture.

UNIT-III

OGSA: Introduction, Platform Components of OGSA, Open Grid Services Infrastructure (OGSI), Basic Services of OGSA.
Grid Security: A Brief Security Primer-PKI-X509 Certificates.

UNIT-IV

Grid Development Toolkits: Globus GT3 Toolkit: Architecture, Programming Model, Implementation and High-Level Services, Data Management-Categories and Origins of Structured Data-Data Management Challenges.

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

UNIT-V

Case Studies- Recent version of Globus Toolkitandg Lite-Architecture, Components and Features.

Message Passing Interface (MPI) Standard: Overview, Arguments and Procedures, Data Types, Processes, Error Handling, Platform independence, Point-to-Point and Collective Communication, Groups- Contexts Communicators, Process Technologies.

Suggested Readings:

1. Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson Education 2004.
2. JoshyJoseph, Craig Fellenstein—Grid Computing, Pearson Education, 2004.
3. Vladimir Silva,Grid Computing for Developers, DreamtechPress,2006.
4. Ian Foster & Carl Kesselman, The Grid 2 – Blueprint for a New Computing Infrascture , Morgan Kaufman, 2004
5. Fran Berman,Geoffrey Fox, Anthony J.G.Hey, "Grid Computing: Making the Global Infrastructure a reality", John Wiley and sons, 2003.
6. Ahmar Abbas--Grid Computing —A Practical Guide to Technology and Applications, Firewall Media, 2006.

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT 415	Elective	Advanced Computer Architecture	3	1	0	4	60	20	20	0	0

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:

- An overview of computer architecture, which stresses the underlying design principles and the impact of these principles on computer performance.

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

- General topics include design methodology, processor design, control design, memory organization, system organization, and parallel processing.

Outcomes:

- know the classes of computers, and new trends and developments in computer architecture
- Understand pipelining, instruction set architectures, memory addressing.
- Understand the performance metrics of microprocessors, memory, networks, and disks
- Understand the various techniques to enhance a processors ability to exploit Instruction-level parallelism (ILP), and its challenges.
- Understand exploiting ILP using dynamic scheduling, multiple issue, and speculation.
- Understand multithreading by using ILP and supporting thread-level parallelism (TLP).
- Understand the performance and efficiency in advanced multiple-issue processors.
- Understand symmetric shared-memory architectures and their performance.
- Understand multiprocessor cache coherence using the directory based and snooping class of protocols.

Unit-I

Flynn's Classification, System Attributes to Performance, Parallel computer models - Multiprocessors and multicomputer, Multivector and SIMD Computers. Data and resource dependences, Hardware and software parallelism.

Program partitioning and scheduling, Grain size and latency, Control flow, data flow and Demand driven mechanisms.

Unit- II

Instruction set architecture: The Arithmetic and Logic Unit, The Control Unit, Memory and I/O devices and their interfacing to the CPUCISC Scalar Processors , RISC Scalar Processors, VLIW architecture, Memory Hierarchy, Inclusion, Coherence and Locality, Memory capacity planning. Interleaved memory organization- memory interleaving, pipelined memory access, Bandwidth and Fault Tolerance. Backplane Bus System :Backplane bus specification, Addressing and timing protocols, Arbitration transaction and interrupt.

Unit-III

Basic concepts of pipelining: data hazards ,Linear pipeline processor, Nonlinear pipeline processor, Instruction pipeline design, Mechanisms for instruction pipelining, pipeline hazards, Dynamic instruction scheduling - score boarding , Branch handling techniques, Arithmetic Pipeline Design, Static arithmetic pipeline, Multifunctional arithmetic pipelines.

Unit-IV

Hierarchical Memory Technology: Inclusion Cache coherence, Snoopy protocols, Directory based protocols. Message routing schemes in multicomputer network, deadlock and virtual

channel. Vector Processing Principles, Vector instruction types, SIMD organization: distributed memory model and shared memory model.

Principles of Multithreading: Multithreading Issues and Solutions, Multiple-Context Processors

Unit-V

Shared-Variable Model, Message-Passing Model, Data-Parallel Model, Object-Oriented Model, Functional and Logic Models, Parallel Languages and Compilers, Language Features for Parallelism, Parallel Programming Environment, Software Tools and Environments, Systolic Architectures.

Suggested Readings:

1. Kai Hwang, "Advanced computer architecture", TMH.
2. J.P.Hayes, "computer Architecture and organization"; MGH.
3. V.Rajaranam&C.S.R.Murthy, "Parallel computer"; PHI Learning.
4. Kain,"Advance Computer Architecture: - A System Design Approach", PHI Learning
5. M.J Flynn, "Computer Architecture, Pipelined and Parallel Processor Design"; Narosa Publishing.
6. Hwang and Briggs, "Computer Architecture and Parallel Processing"; MGH.
7. David E. Callav&Jaswinder Pal Singh Marge Kaufmann"Advance Computer Architecture", EIS India.
8. Sajjan G. Shiva, Taylar& Francis, "Advance Computer Architecture
9. Computer Organization and Architecture: Designing for performance, W. Stallings, 4th Ed. PHI, 1996

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT 425	Elective	Embedded Systems	3	1	0	4	60	20	20	0	0

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)

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Institute of Computer Applications

Course Educational Objectives (CEOs):

- Understand the fundamentals of embedded systems
- Know about typical engineering issues of software development

Course Outcomes (Cos): After the successful completion of this course students will be able to

- Learn software modeling fundamentals
- Familiarize the student with the architecture of embedded systems ingeneral
- Learn the rationale and concepts for designing embedded systems

UNIT – I

Embedded System: introduction, architecture, classifications, requirements, Applications, challenges and design issues in embedded systems, fundamentals of embedded processor and microcontrollers, communication interface, Embedded firmware, system components, CISC vs. RISC, types of microcontrollers

UNIT – II

Hardware and software design, Microprocessor Vs Micro Controller, Embedded system model, embedded board using von Neuman model, Fundamental issues of hardware software co-design, computational models in embedded design, unified modeling language, general purpose ISA models, instruction level parallelism,

UNIT-III

Internal processor design: ALU – registers – control unit - clock – on chip memory – processor i/o – interrupts – processor buses – processor, Introduction and application of Middleware, Architecture of 8085 microcontroller, architectural patterns and reference models, analyzing and evaluating the architecture, debugging testing and maintaining

UNIT-IV

Embedded firmware design approaches- OS based, Super loop based. Embedded firmware development languages- Assembly language based, high level language based, mixed. Programming in embedded C

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

UNIT-V

Objective, Need, different Phases & Modeling of the EDLC. choice of Target Architectures for Embedded Application Develop mentfor Control Dominated, Data Dominated Systems, Software & Hardware Design, PCB Design, Manufacturing & PCB Assembly Bug, tracking reduction of risks & costs, Unit testing, Regression testing, Functional tests, Testing embedded software, Performance testing

Suggested Readings:

1. James K.Peckol, "Embedded system Design",JohnWiley&Sons,2010
2. EliciaWhite, "Making Embedded Systems", O'Reilly Series,SPD,2011
3. Rajkamal, "Embedded Systems",TMH,2009
4. Lyla B Das," Embedded Systems-An Integrated Approach",Pearson2013
5. Steve Heath, "Embedded system design", Elsevier, 2003.
6. David E. Simon, "An Embedded Software Primer", Pearson Education,2003

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT435	Elective	Biometric Systems in Banking	3	1	0	4	60	20	20	0	0

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 Educational Objectives (CEOs):

- To provide the Introduction of Biometric traits and its aim, image processing basics, basic image operations
- Understand the various methods of password management and protocols to maintain system security

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Course Outcome:

- Introducing the security aspects.
- Giving protection from hackers.
- Understand the various methods of password management and protocols to maintain system security

UNIT 1
BIOMETRIC FUNDAMENTALS
AND STANDARDS

Definition, Biometrics versus traditional techniques, Characteristics, Key biometric processes: Verification Identification Biometric matching, Performance measures in biometric systems, Assessing the privacy risks of biometrics Designing privacy sympathetic biometric systems, Different biometric standards, Application properties.

UNIT 2
PHYSIOLOGICAL BIOMETRICS

Facial scan, Ear scan, Retina scan, Iris scan, Finger scan, Automated finger print identification system, Palm print, Hand vascular geometry analysis, DNA, Dental.

UNIT 3
BEHAVIOURAL BIOMETRICS:

Signature scan, Keystroke scan, Voice scan, Gait recognition, Gesture recognition, Video face, Mapping the body technology.

UNIT 4
USER INTERFACES

Biometric interfaces: Human machine interface BHMI structure, Human side interface: Iris image interface Hand geometry and fingerprint sensor, Machine side interface: Parallel port Serial port Network topologies, Case study: Palm Scanner interface.

UNIT 5
BIOMETRIC APPLICATIONS:

Categorizing biometric applications, Application areas: Criminal and citizen identification Surveillance PC/network access Ecommerce and retail/ATM, Costs to deploy, Issues in deployment, Biometrics in medicine, cancellable biometrics

TEXT BOOKS

1. Paul Reid, “Biometrics for Network Security”, Pearson Education, 2004.
2. NaliniK. Ratha, RundBolle, “Automatic fingerprint recognition system, Springer”, 2003.
7. L C Jain, I Hayashi, S B Lee, U Haleci, “Intelligent Biometric Techniques in Fingerprint and Face Recognition”.
8. S.Y.Kung, S.H.Lin,M.W., “MakBiometric Authentication: A Machine Learning

Approach".

Suggested Readings:

1. John Chirillo, Scott Blaul, "Implementing Biometric Security", John Wile, 2003.
2. Samir Nanavati, Michael Thieme, Raj Nanavati, "Biometrics Identity Verification in a Networked World", Wiley dreamtech India Pvt Ltd, New Delhi, 2003
3. John R Vacca, "Biometric Technologies and Verification Systems", Elsevier Inc, 2007

Name of Program: MCA (BANKING TECHNOLOGY)

COURSE CODE	CATEGORY	COURSE NAME	L	T	P	CREDITS	TEACHING & EVALUATION SCHEME				
							THEORY			PRACTICAL	
							END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*
MCBT406	COMPULSORY	Lab-1 (Mobile Operating System Lab)	0	0	4	2	0	0	0	30	20

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 understand the fundamentals of Mobile communication systems
- To understand the different multiplexing scheme
- To understand the significance of different layers in mobile system

Course Outcomes (Cos): After the successful completion of this course students will be able to

- Understand the concepts of mobile and wireless communications.
- Apply the knowledge gained in exploring, application and protocol development
- Understand methods and tools used in Mobile Operating Systems
- Develop knowledge and skills of application design of Mobile Operating Systems

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Institute of Computer Applications

List of Practical (Android Program)

1. Display calendar of current month
2. Display today's date and time
3. Display usernames those are currently logged in the system
4. Create menu using XML
5. Display your terminal number
6. Enable and Disable WI-Fi.
7. Perform action on any Hardware Button.
8. Java android Program to build a simple android Application.
9. Java android Program to demonstrate usage of string.xml file
10. Java android Program to perform all operation using calculator.
11. Java android Program to demonstrate to alert dialogue box
12. Java android Program to demonstrate to Sound Button application
13. Java android Program to demonstrate a simple to do application.
14. Java android Program to set the wallpaper of your device using Bitmap Class.
15. Java android Program to demonstrate Count Down Timer Application
16. Android Chat application project.
17. Call details after ending call.
18. Open file on SD Card.
19. Add Face book SDK in android Application.
20. Student result automation project

Suggested Readings:

1. Arash Habibi Lashkari, Mohammadreza Moradhaseli, "Mobile Operating Systems and Programming", VDM Verlag Publications, 2011
2. Lauren Collins, Scott R. Ellis, "Mobile Devices: Tools and Technologies", Kindle Edition, 2015
3. Dominic Chell , Tyrone Erasmus ,Shaun Colley "The Mobile Application Hacker's Handbook", WILEY, 2015
4. Michael J. Jipping, "Smartphone Operating System Concepts with Symbian OS: A Tutorial Guide", Wiley, 2007
5. Silberschatz, Galvin,Gagne, "Operating System Concepts", Wiley, 2009
6. Andrew S. tanenbaum, "MODERN OPERATING SYSTEMS", PHI, 2013
7. Jochen Sciiiller, "Mobile Communications ", Pearson Education India, 2009
8. Theodore S. Rappaport, "Wireless Communications: Principles and Practice", Pearson Education, 2010
9. William C.Y Lee, "Mobile Cellular Telecommunications ", McGraw Hill, 1995
10. Sobell, Gargenta, Wildermuth, "Introduction to mobile operating systems", Pearson, 2014

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore

Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore

Institute of Computer Applications

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

Joint Registrar
Shri Vaishnav Vidyapeeth Vishwavidyalaya
Indore