

Course Title: MIS & e-Business (3 Cr.)

Course Code: CACS301

Year/Semester: III/V

Class Load: 4 Hrs. / Week (Theory: 3Hrs. Tutorial: 1 Hr.)

Course Description

This course provides the fundamental knowledge of Management Information System and E-Business and its associated infrastructure, security and protection issues, payment system and ultimately live implementation of any web application in Web server.

Course objectives

The general objectives of this course is to know fundamental knowledge of MIS/E-Business and implement the web application in Web Server.

Theory

1. Introduction to E-Commerce : 7 hrs

1. Introduction to E-Commerce (1 Hour)
 - Definitions and Concepts of E-Commerce
 - Difference between E-Commerce and E-Business
 - Pure vs. Partial E-Commerce
2. E-Commerce Framework and Classification (1 Hour)
 - EC Framework Overview
 - Classification of E-Commerce (B2B, B2C, C2C, etc.)
 - Benefits of E-Commerce
3. Electronic Markets and Internet's Role in E-Commerce (1 Hour)
 - Concept of Electronic Markets
 - Role of the Internet and Web in E-Commerce
4. Challenges in E-Commerce (1 Hour)
 - Limitations and Barriers of E-Commerce
 - Security, Privacy, and Trust Issues
5. Social Networks and Their Role in E-Commerce (1 Hour)
 - Social Networks and Social Network Services
 - Impact on Business and Consumer Behavior
6. Mobile Commerce (M-Commerce) (1 Hour)
 - Concept, Scope, and Attributes of M-Commerce
 - Benefits of M-Commerce
7. Location-Based Commerce (1 Hour)
 - Concept of Location-Based Commerce (L-Commerce)
 - Infrastructure, Services, and Applications

2. The Network Infrastructure for E-Commerce : 8 hrs

1. Introduction to Network Infrastructure for E-Commerce (2.5 Hours)
 - Overview of Information Superhighway (I-Way)
 - Components of the I-Way (communication networks, databases, electronic payment systems, etc.)
 - Internet as a Network Infrastructure (architecture, protocols, and services)
2. Wireless Application Protocol (WAP) (2.5 Hours)
 - Definition and Importance of WAP in mobile commerce
 - Architecture of WAP (WAP Gateway, WAP Client, WML)
 - Working of WAP (data transmission process, advantages, and limitations)
3. Wireless Technologies for E-Commerce (3 Hours)
 - Broadband Technologies
 - ADSL (Asymmetric Digital Subscriber Line)
 - WiMAX (Worldwide Interoperability for Microwave Access)
 - Wireless Networks
 - WLAN (Wireless Local Area Network)
 - WMAN (Wireless Metropolitan Area Network)
 - Wi-Fi (Wireless Fidelity)
 - Cellular Network Technologies
 - UMTS (3G - Universal Mobile Telecommunications System)
 - LTE (4G - Long-Term Evolution)
 - 5G NR (New Radio)

3. Introduction to Management Information System : 8 hrs

1. Fundamentals of Information Systems (2 Hours)
 - Definition of Data and Information
 - Overview of Computer-Based Information Systems (CBIS)
 - Information System Resources (People, Technology, Processes, Data)
2. Types of Management Information Systems (2 Hours)
 - Management Information System (MIS) – Role and Importance
 - Transaction Processing System (TPS) – Features and Applications
 - Decision Support System (DSS) – Concept and Examples
 - Executive Information System (EIS) – Benefits for Management
3. Enterprise Systems and Business Applications (2 Hours)
 - Supply Chain Management (SCM) Systems – Definition, Components, and Role
 - Customer Relationship Management (CRM) Systems – Importance and Benefits
 - Enterprise Systems – Overview and Integration in Organizations
 - Challenges of Enterprise System Implementation
 - Managing the Implementation Process
4. International Information Systems and Emerging Trends (2 Hours)
 - Global Information Systems – Importance and Challenges
 - Outsourcing and Offshoring – Concepts and Strategic Importance
 - Trends in International Information Systems

4.E-Commerce Security and Fraud Issues and Protection : 10 hrs

1. Introduction to E-Commerce Security (2 Hours)
 - Basic EC Security Terminology
 - Types of Threats, Attacks, and Attackers
 - Key Security Requirements:
 - Confidentiality, Integrity, and Availability (CIA Triad)
 - Authentication, Authorization, and Non-repudiation
2. Technical Malware Attacks (2 Hours)
 - Common Cyber Threats in E-Commerce:
 - Viruses, Worms, and Trojan Horses
 - Heartbleed, Cryptblocker, and Ransomware
 - Distributed Denial of Service (DDoS) Attacks
 - Botnets, Malvertising, and Page Hijacking
 - Sniffing and Other Interception Attacks
3. Non-Technical Security Threats (2 Hours)
 - Social Engineering-Based Attacks:
 - Phishing and Pharming
 - Identity Theft and Fraud
 - Spam Attacks and Fake Websites
4. E-Commerce Security Defense Strategies (2 Hours)
 - Access Control Mechanisms:
 - Authentication and Authorization
 - Biometric Security Systems
 - Encryption and Public Key Infrastructure (PKI):
 - Symmetric vs. Asymmetric Key Encryption
 - Certificate Authorities (CA) and Digital Signatures
 - Secure Socket Layer (SSL) & Transport Layer Security (TLS)
5. Securing E-Commerce Networks (2 Hours)
 - Firewalls and Intrusion Prevention Systems (IPS)
 - Virtual Private Networks (VPNs) for Secure Transactions
 - Intrusion Detection Systems (IDS) for Threat Monitoring

5. E-payment systems : 6 hrs

1. Introduction to E-Payment Systems (1 Hour)
 - Overview of Electronic Payment Systems
 - Importance and Evolution of Online Payments
2. Online Payment Cards (1.5 Hours)
 - Types of Online Payment Cards:
 - Credit Cards, Charge Cards, Debit Cards, Smart Cards
 - Processing Cards in Online Transactions
 - Credit Card Payment Procedure
3. Alternative Digital Payment Methods (1 Hour)
 - E-Micropayments – Concept and Use Cases
 - E-Checking and Online Processing
 - Automated Clearing House (ACH) Network
4. Mobile Payments and International Transactions (1 Hour)
 - Digital Wallets and Mobile Payment Systems
 - Key Mobile Payment Participants and Associated Issues
 - International Payment Systems and Cross-Border Transactions
5. Emerging Trends in E-Payments (1 Hour)
 - Cryptocurrency and Blockchain-Based Payments
 - Virtual Currency and Its Challenges
 - Security and Regulatory Issues in Emerging Payment Systems
6. Case Study: Online Payment Trends in Nepal (0.5 Hour)
 - Popular Digital Payment Platforms in Nepal
 - Challenges and Future Prospects

Unit 6: Launching a Successful EC Website : 10 hrs

1. Planning an Online Business (2 Hours)
 - Developing a Business Plan
 - Cost-Benefit and Risk Analysis
 - Funding a New Online Business
 - E-Commerce Model Selection (B2B, B2C, C2C, etc.)
2. Website Development Process (2 Hours)
 - Steps to Build an E-Commerce Website
 - Basic Hierarchical Website Structure
 - Website Hosting and Domain Name Registration
 - cPanel Management and Uploading EC Site to Web Server
3. Web Content Creation and Management (2 Hours)
 - Types of Web Content and Categories
 - Content Management and Maintenance
 - Catalog Content and Its Management
4. Website Design and User Experience (2 Hours)
 - Website Design Criteria (Aesthetics & Functionality)
 - Site Map, Navigation, and Web Page Layout Grid
 - Color Schemes, Graphics, and Responsive Design
 - Website Usability and Performance Optimization
5. Website Promotion and Payment Integration (2 Hours)
 - Implementing Payment Systems on EC Websites
 - Search Engine Optimization (SEO) Strategies
 - Website Promotion Techniques (Social Media, Digital Marketing)

Lab Topics & Activities

1. Setting Up an Online Business & Website Hosting (2 Labs)

- Registering a domain and setting up hosting
- Managing cPanel & deploying an EC website to a web server
- Installing and configuring an e-commerce CMS (e.g., WordPress + WooCommerce, Magento, Shopify)

2. Website Structure & Content Management (2 Labs)

- Creating hierarchical website structure (Homepage, Product Pages, Cart, Checkout, Contact)
- Web content management: Adding & updating product catalogs
- Implementing content categories and optimizing navigation

3. Web Design & Usability (2 Labs)

- Designing a site map & web page layout grid
- Customizing themes, colors, typography, and graphics
- Mobile responsiveness & performance optimization

4. Implementing Security & Fraud Prevention (2 Labs)

- Securing an e-commerce website (SSL, HTTPS, Firewall setup)
- Implementing authentication & access control (user login, role-based access)
- Testing for vulnerabilities (SQL Injection, Cross-Site Scripting)

5. Payment System Integration (2 Labs)

- Integrating **payment gateways** (PayPal, Stripe, eSewa, Khalti, or other API-based solutions)
- Setting up automated order processing
- Handling transaction security & encryption

6. Website Promotion & SEO (2 Labs)

- Implementing basic **SEO techniques** (Meta tags, keywords, sitemaps)
- Setting up Google Analytics & tracking website traffic
- Social media marketing & digital advertisement strategies

Final Project (Individual Implementation)

Each student must **develop and deploy a fully functional e-commerce website** with:

- ✓ User registration & authentication
- ✓ Product catalog with categories & search features
- ✓ Shopping cart & checkout system
- ✓ Secure payment integration
- ✓ Admin dashboard for managing products, orders, and users
- ✓ Basic SEO & website performance optimization

At the end of the course, students must present their project, demonstrate key functionalities, and submit documentation covering:

- ◆ Project Overview
- ◆ Technologies Used
- ◆ Features & Functionalities
- ◆ Challenges & Solutions

Internal Evaluation:

Through PPT/Understanding/Assignments/Case-studies reports