DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

1 – University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Internet Programming and E-commerce

Course Code: MBA-DE-701	Max. Marks = 100 (Mid-term = 50, End-term = 50) Credits: 4 (L = 4, P = 0, T = 1)

Course Objective

To develop a basic understanding of the technological and business aspects of e-commerce and enable students to deploy effective and secure online business platforms.

Course Outcomes – Students will be able to

1. *Understand the fundamental concepts and techniques of e-commerce.*
2. *Develop an understanding of the technological framework of internet and its protocols.*
3. *Develop proficiency in designing and implementing e-commerce business plans and models using relevant tools.*
4. *Demonstrate an understanding of e-commerce payment and security protocols and systems.*

SYLLABUS

Unit I Overview of E-commerce. Characteristics of E-commerce Transactions. Types of E-commerce. Buy-side vs. Sell-side E-commerce. E-commerce vs. E-business. Business applications of E-commerce. Nature and Characteristics of E-commerce Technology. Evolution of E-commerce. The Electronic Commerce Environment. Reintermediation and Disintermediation.

Unit II Overview of Computer Networks. Architectural Framework of E-commerce. World Wide Web. History and Evolution of Internet. Building Blocks of Internet – TCP/IP Protocol Suite, Client Server Computing, Packet Switching Technology. Internet Architecture – Internet Backbone and Internet Exchange Points. Internet Protocols and their Corresponding Services.

Unit III Business and Revenue Models of E-commerce. Applications of E-commerce Technology to Supply Chain Management. E-procurement. Business to Consumer E-commerce Applications. Electronic Marketplaces. Online Retail. Pricing Strategies. Order Prioritization, Scheduling, and Fulfilment. Order Billing and Payment Management. Post Sales Services.

Unit IV Security, Privacy, and Legal Issues in E-commerce Secure Electronic Transaction Protocol. Certificates for Authentication. Electronic Payment Systems. Types of Payment Systems – Debit and Credit Cards. Net Banking. E-wallets. UPI. Role of Payment Gateways. Operational, Credit, and Legal Risks of E-payment. Risk Management Options for E-payment Systems.

Skill Development Activities

Design an e-business plan for a business.

Design web interface for an e-commerce platform.

Suggested Readings

1. Chaffey, D. (2009). *E-Business and E-Commerce Management: Strategy, Implementation and Practice*. Pearson.
2. Laudon, K., & Traver C. (2014*). E-Commerce: Business, Technology and Society*. Pearson.
3. O'Mahony, D., Pierce, M., & Tewari, H. (2001). *Electronic Payment Systems for E-Commerce*. Artech.

Note: *The schedule for case discussion shall be announced by the concerned faculty in the class*

DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

1 – University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Relational Database Management System

Course Code: MBA-DE -702	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L = 3, P = 0, T = 1)

Course Objective: *To develop an acumen towards the fundamental tenets of RDBMS by utilisation & administration of Database Management Systems.*

Course Outcomes: After attending the course, students will be able to:

- *Understand the physical & logical structure of the database.*
- *Understand the transaction management system &effective data extraction.*
- *Design, develop and administer the oracle database system.*
- *Develop skills for writing SQL queries for managing relational database management system.*

SYLLABUS

Unit I: DBMS software's, three layered Architecture, Introduction to RDBMS, E.F. Codd's 12 rules for a relation database, Distributed systems, Data warehousing, Data mining. Hierarchical Model, Network Model, ER model, Relation Model. First Normal Forms, second Normal Form, Third Normal Form.

Unit II: Properties of a transaction, commit, &roll back, concurrency, locking, Access control, Data Integrity, Integrity constraints, Auditing, Back-up & Recovery, Interfaces to databases; Implementation & Maintenance Issues; Database Administration. Physical storage, File organization.

Unit III: Windows server series, ODBC connectivity, Configuring, Oracle Server and Oracle Client. Oracle 10g Architecture, Oracle 10g Editions, Creating Databases in Oracle 10g, Creating, altering and dropping users in Oracle 10g, assigning privileges to oracle 10g users, Managing Password security of users, Creating, Assigning and managing Roles.

Unit IV: SQL data types, Creating Tables in SQL, Updating, deleting and inserting records in tables with SQL, modifying tables, Dropping Tables with SQL, Using Inbuilt functions in SQL, RMAN Features and Components, RMAN vs Traditional Backup methods, Overview of RMAN Commands and Options.

Skill Development Activities:

1. Creation and Formulation of database of any reference organisation.
2. Creating and authenticating od users on database.

Suggested Readings:

1. Elmasri, R. (2000). *Fundamentals Of Database Systems,1/e*.
2. Connolly, T. M., & Beg, C. E. (2015). *Database Systems: A Practical Approach to Design, Implementation, and Management*. Addison-Wesley.
3. Silberschatz, Korth, H. F., & Sudarshan, S. (2013). *Database System Concepts* (6th ed.). McGraw Hill Education.
4. Koch, G., & Loney, K. (1997). *Oracle: The Complete Reference*. Oracle Press.
5. Leon, A. (2009). *Database Management Systems, 1E*.

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DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Software Project Management

Course Code: MBA-DE -703	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L =3, P=0, T=1)

Course Objectives: *To focus on the issues crucial to the development of good quality software and analyze several approaches to the process of software development. Also, to learn project management task in terms of cost and time estimation.*

SYLLABUS

Unit I: What is a Project - Traditional Project Management - Scoping the Project - Identifying Project Activities

Unit II: Estimating Duration, Resource Requirements and Cost - Constructing and Analyzing the Project Network Diagram - Finalizing the Schedule and Cost Based on Resource Availability – Organizing and Conducting the Joint Project Planning Session.

Unit III: Recruiting Organizing and Managing the Project Team - Monitoring and Controlling Progress - Closing out the Projects - Critical Chain Project Management.

Unit IV: Introduction to the Adaptive Project Framework - Version Scope - Cycle Plan - Cycle Build – Client Checkpoint - Post-Version Review - Variations to APF Organizational Considerations - Project Portfolio Management - Project Support Office.

Suggested Readings:

1. Bob Hughes, Mike Cotterell, “Software Project Management”, Third Edition, Tata McGraw Hill, 2004.
2. Ramesh, Gopalaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
3. Royce, “Software Project Management”, Pearson Education, 1999.
4. Jalote, “Software Project Management in Practice”, Pearson Education, 2002.
5. Software Engineering: A Practitioner's Approach, 8th edition.

Note: *The schedule for case discussion shall be announced by the concerned faculty in the class.*

DEPARTMENT OF MANAGEMENT STUDIES
Islamic University of Science and Technology
One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Object Oriented Programming

Course Code: MBA-DE -704	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L =3, T=1, P=0)

Course Objective*:* *Polymorphism. OOP presents new concepts and new tools for implementing them. Some of the key concepts are operator overloading and inheritance. One of the main features of this course will be to develop object oriented databases. The course will be taught using Turbo C++.*

SYLLABUS

Unit I: Basics: Fundamentals of object oriented programming – procedure oriented programming Vs. object oriented programming (OOP)Object oriented programming concepts – Classes, reusability, encapsulation, inheritance, polymorphism, dynamic binding, message passing. Language Constructs Review of constructs of C used in C++ : variables, types and type declarations, user defined data types; increment and decrement operators, relational and logical operators; if then else clause; conditional expressions, input and output statement, loops, switch case, arrays, structure, unions, functions, pointers; pre-processor directives.

Unit II: Classes and Objects Creation, accessing class members Private Vs Public Constructor and Destructor Objects Member Functions Method definition2 Inline Implementation Constant member functions Overloading Member Functions Need of operator overloading, prefix and postfix, overloading binary operators, operator overloading, in stream/out stream operator overloading.

Unit III: Inheritance Definition of inheritance, protected data, private data, public data, inheriting constructors and destructors, constructor for virtual base classes, constructors and destructors of derived classes, and virtual functions, size of a derived class, order of invocation, types of inheritance, single inheritance, hierarchical inheritance, multiple inheritance, hybrid inheritance.

Unit IV: Polymorphism and Virtual Functions Importance of virtual function, function call binding, virtual functions, implementing late binding, need for virtual functions, abstract base classes and pure virtual functions, virtual destructors. File and Streams Components of a file, different operation of the file, communication in files, creation of file streams, stream classes, header files, updating of file, opening, and closing a file, file pointers and their manipulations, functions manipulation of file pointers, detecting end-offile. Programming of Intelligent Games.

Suggested Readings:

1. C++: An introduction to programming by Jense Liberty Tim Keogh: BPB Publications, New Delhi
2. OO Programming in C++ by Robert Lafore: Galgotia Publications Pvt. Ltd., Daryaganj, New Delhi
3. Object Oriented Programming in C++ by E. Balaguruswamy, TMH Publishing Co. Ltd., New Delhi
4. Let Us C++ 2nd Edition, Yashwant Kanetkar, BPB Publications
5. Let Us C (English) 13th Edition, Yashwant Kanetkar, BPB Publications
6. Introduction to C++ for Financial Engineers: An Object- Oriented Approach by Daniel J. Duffy

C++ and Object-Oriented Programming by - Kip R. Irvine, Prentice Hall.

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DEPARTMENT OF MANAGEMENT STUDIES
Islamic University of Science and Technology
One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Business Intelligence & Data Mining

Course Code: MBA-DE -705	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L =3, P=0, T=1)

Course Objective*: The objective of this course is to provide an overview about business intelligence and data mining process and to acquit the students about is application and uses in business.*

SYLLABUS

Unit I: Introduction and General Principle, On-line Transaction Processing (OLTP), Data Warehouse (DW) Architecture Fundamentals, Data Mart, Approaches to Architecture, Top-down, Centralized, Bottom- up, Architected.

Unit II: Data Warehouse Process, Technical and Business Meta Data, Meta Data Process, Data Warehouse Design, Star and Snowflake Schemas, Online Analytical Processing (OLAP) Architecture, Multidimensional Database (MDD), Data Cubes, ROLAP Data Model, MOLAP Data Model, Logical Models for Multidimensional Information, Conceptual Models for Multidimensional Information, Query and Reporting, Executive Information Systems (EIS), Data Warehouse and Business Strategy.

Unit III: Data Mining, Fundamental Concepts, Architectural Aspects of Data Mining, Data Mining Techniques, Data Mining Issues and Challenges, The Business Context of Data Mining, Data Mining for Process Improvement, Data Mining as a Research Tool, Data Mining for Marketing, Data Mining for Customer Relationship Management.

Unit IV: Association Rules, Introduction and Overview, Discovering Association Rules, A Priori Algorithm, Partition Algorithm, Incremental Algorithm, Border Algorithm, Association Rules with item Constraints, Classification and Clustering Introduction, Clustering Paradigms, Partitioning Algorithm, K-means Clustering Algorithm, Hierarchical Clustering, Fuzzy c-means Algorithm, Categorical Clustering Algorithm.

Suggested Readings:

1. Efraim Turban, Ramesh Sharda, Jay E. Aronson, David King "Business Intelligence: A Managerial Approach," Pearson Prentice Hall.
2. J. Mundy, W. Thornthwaite, R. Kimball "The Microsoft Data Warehouse Toolkit: With SQL Server 2005 and the Microsoft Business Intelligence Toolset," Wiley.

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DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

1 – University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Technology Management

Course Code: MBA-DE-706	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L = 3, P= 0, T = 1)

Course Objective: *The course aims to familiarize students with technology management concepts and their role in building competitive advantage through technology acquisition, forecasting, and adoption.*

Course Outcomes: After attending the course, students will be able to:

- *Understand the concept and significance of technology management and its impact on society and business.*
- *Evaluate technology acquisition, alternatives and impact of technology on economies of scale. .*
- *Craft effective forecasting strategies to gain competitive advantages.*
- *Understand and analyse the process of technology adoption, diffusion, and absorption*

SYLLABUS

Unit I: Introduction to technology management. Concept and Meaning of Technology; Technology management, Evolution and Growth of Technology, Role and Significance of Technology Management, Impact of Technology on Society and Business- Technology and competition; Key issues in managing technological innovation, Forms of Technology- Process technology; Product technology.

Unit II: Technology Acquisition: Technology Acquisition, Alternatives for Acquiring New Technologies, Reasons Compelling a Company for Obtaining a New Technology, Management of Acquired Technology, Measures of Scale and Mechanisms for Acquiring Technologies- Economy of scale or Scale economy; Levels of scale; The measurement of scale; Factors affecting the choice of scale

Unit III: Technology Forecasting. Concept of Technology Forecasting- Characteristics of technology forecasting, Technology forecast method, Principles of technology forecasting, Technology Forecasting Process, Need and Role of Technology Forecasting, Forecasting Methods and Techniques, Planning and Forecasting. Technology Strategy and Competitiveness: Technology Strategy-Technology strategy and management; Elements of an accessible technology strategy, Innovation Management, Competitive Advantage- Components of competitive advantage; Creating competitive advantage using value chain, Technology Management Evaluation or Assessment.

Unit IV: Technology Diffusion, and Absorption, Perspectives of innovation diffusion process; Activities necessary for diffusion process, Technology Absorption- Role of technology absorption; Benefits of technology absorption; Constraints in technology absorption, Technology Package and Technological Dependence, Indian Experience in Technology Absorption Efforts, Issues Involved in the Management of Technology Absorption and Government Initiatives

Skill Development Activities:

1. Group project (where students research and analyze a company's technology management practices, including their approach to technology acquisition, innovation, and competition
2. Case Studies, why and how companies adopt new technology
3. Develop a technology forecasting report for a new product or service idea using principles and methods learned in the course.
4. Case studies of companies that successfully adopted and diffused new technologies, as well as those that struggled with technology absorption.

Suggested Readings:

1. Gangopadhyay, S. (2012). *Technology Management: Perspectives and Practices*. New Delhi: PHI Learning Pvt. Ltd.
2. Gupta, A. K., & Wilemon, D. (2018). *The Dynamics of Technology Management: Insights from a Global Survey*. New Delhi: Sage Publications India Pvt. Ltd.
3. Kumar, P., & Singh, R. (2014). *Technology Management in India*. New Delhi: Oxford University Press.
4. Mohanty, R. P., & Desai, P. S. (2017). *Technology Management: A Strategic Perspective.* New Delhi: McGraw Hill Education (India) Private Limited.
5. Saha, A. K., & Rangnekar, S. (2017). *Management of Technology: The Key to Competitiveness and Wealth Creation.* New Delhi: PHI Learning Pvt. Ltd.

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DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Enterprise Resource Planning.

Course Code: MBA-DE-707	**Max. Marks = 100 (Mid-term = 50, End-term = 50)** **Credits: 5 (L = 4, P = 0, T = 1)**

Course Objective: - To understand how organizations implement and deploy Enterprise Resource Planning Systems to run their operations more efficiently and effectively.

Course Outcomes: - *After studying this Course, Students will be able to;*

1. *Develop the basic understanding of how ERP enriches the business organizations in achieving a multidimensional growth.*
2. *Analyse organisation's readiness for enterprise system implementation with a professional approach.*
3. *Understand the challenges associated with implementing enterprise systems and their impacts on organisations.*
4. *Analyse the strategic options for ERP identification, adoption and be able to design the ERP implementation strategies.*

SYLLABUS

Unit I: - Fundamentals of enterprise resource planning (ERP) systems concepts, and the importance of integrated information systems in an organization. Enterprise Systems Architecture. Enterprise Resource Planning and Organisational optimization. Reduction of Lead-Time, On-time Shipment, Reduction in Cycle Time, Improved Resource Utilization, Better Customer Satisfaction, Improved Supplier Performance, Increased Flexibility, Reduced Quality Costs, Improved Information Accuracy and Design-making Capability

Unit II: -ERP or Not ERP. Organizational Change and Business Process Reengineering for enterprise resource planning Implementation. The Make or Buy Decision. Prerequisites to Enterprise Resource Planning implementation. enterprise resource planning Implementation Life Cycle. Enterprise Resource Planning Implementation Team composition. Maintaining the Enterprise Resource Planning System

Unit III:-.Selection and Planning Issues in Enterprise Resource Planning Deployment . Challenges in Enterprise Resource Planning Deployment. Risk Assessment. Issues . Data Migration. Managing Change in Organisation. Success and Failure factors of ERP Implementation. The Inability to Redesign Current Processes to Fit the Software. Inadequate flexibility. The Importance of Time and Budget.

Unit IV: -Designing the Enterprise Resource Planning Deployment Strategy. Choosing among the available alternatives. Big Bang, Phased Rollout (Module, Business Priority, Geographical), Parallel Adoption and Hybrid approach. How to Select an ERP Implementation Strategy. What makes Software as a Service approach as the most sought ERP deployment arrangement.

Skill Development Activities: -a) Designing ERP Deployment strategy for selected Business or Governmental Process.

b) Cost Benefit analysis of selected ERP Software's.

Suggested Readings :-

1) Goyal, D. P. (2011). Enterprise resource planning. Tata McGraw-Hill Education.
2) Ray. (2011). Enterprise resource planning. Tata McGraw-Hill Education.
3) Atkinson, R. (2013). Enterprise resource planning (erp) the great gamble. Xlibris Corporation
4) Williams, G. C. (2008). Implementing SAP ERP Sales & Distribution. New York, NY: Osborne/McGraw-Hill.

Note: *The schedule for case discussion shall be announced by the concerned faculty in the class*

DEPARTMENT OF MANAGEMENT STUDIES
Islamic University of Science and Technology
1- University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Multimedia Management

Course Code: MBA-DE-708	**Max. Marks =** 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L = 3, P = 0, T = 1)

Course Objective: *To equip students with the knowledge and skills necessary to effectively create, organize, and optimize multimedia content.*

Course Outcomes: After attending the course, students will be able to:

- *Demonstrate proficiency in utilizing multimedia tools and techniques to create engaging and impactful content.*
- *Apply principles of multimedia design and aesthetics to effectively communicate messages and evoke desired user responses.*
- *Develop the ability to strategically manage the planning, budgeting, scheduling, and resource allocation of multimedia projects.*
- *Understand and implement multimedia optimization strategies to maximize audience reach, engagement, and conversion rates.*

SYLLABUS

Unit I: Overview of multimedia management principles and concepts. Understanding the role and significance of multimedia in various industries. Exploring current trends and emerging technologies in multimedia. Ethical considerations and legal aspects in multimedia management.

Unit II: Fundamentals of multimedia design and aesthetics. Tools and software for multimedia creation and editing techniques for integrating various multimedia elements (text, graphics, audio, video). Project planning and organization for multimedia production

Unit III: Project management methodologies for multimedia projects. Resource allocation and scheduling for multimedia projects Budgeting and cost estimation in multimedia management. Collaboration and teamwork in multimedia project environment

Unit IV: Strategies for optimizing multimedia content for different platforms and devices. Techniques for enhancing multimedia user experience and interactivity. Search engine optimization (SEO) for multimedia content. Distribution channels and platforms for multimedia content dissemination

Skill Development Activities:

1. Multimedia Project Planning and Execution.
2. Multimedia Optimization and Analytics.

Suggested Readings:

1. Vaughan, T. (2014). *Multimedia: Making it Work*. McGraw-Hill.
2. Aston, Rand Schwarz, J.A. (1994). *Multimedia: Gateway to the Next Millennium*. Academic Press Inc.
3. Karen S. I, and Barron, A. E (2010). *Multimedia Projects in education: Designing, Producing, and Accessing*. Bloomsbury Publishing.

Note: *The schedule for case discussion shall be announced by the concerned faculty in the class*

DEPARTMENT OF MANAGEMENT STUDIES
Islamic University of Science and Technology
One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: **Information Security and Risk Management**

Course Code: MBA-DE -709	Max. Marks = 100 (Mid-term = 50, End-term = 50) Credits: 4 (L = 4, P = 0, T = 1)

Course Objective:

To provide Students with a comprehensive understanding of key principles, practices, and methodologies in the field of information security and risk management.

Course Outcomes: Students will be able to:

- *Articulate and apply fundamental principles of information security, including confidentiality, integrity, and availability.*
- *Identify potential information security risks within an organizational context, conduct risk assessments, and propose effective mitigation strategies.*
- *Capable of analyse and understand relevant information security compliance frameworks and regulatory requirements.*
- *Create and communicate comprehensive information security policies that align with organizational goals and industry best practices.*

SYLLABUS

UNIT –I

Aspects of Security: Information Age and Risks Vulnerabilities Causes and Effects Communications Security Criteria Requirement Specification System Design Physical Security Organizational Integrity. Risk Management: Grade of Risk Level of Threat Constraints, Balancing Risks and Countermeasures Standards..

UNIT –II

Encryption Principles: Theory and Terminology Public Key Systems Massage Authentication Underlying Mathematics Data Encryption Algorithm Public Key Algorithms Current Developments Keys and Key management: Algorithm and Keys Types of Keys, Secret Key Public Key Hashing Digital Signature Key Management Digital Signature and One Way Hash Functions.

UNIT –III

Technical Controls: Access Control File Protection Virus Protection Operating Systems Databases and DBMSs Security Protocols Identification and Authentication Network Security Email Security Intrusion Detection Audit Trails and Audit Reduction.

UNIT –IV

Application Specific Risks: Real-Time Control Systems Banking and Financial Transactions Legal and Contract Data Intellectual Property Personal Data National Security.

Skill Development Activities:

1. Conduct a hands-on threat modelling workshop where participants analyse systems, identify vulnerabilities, and prioritize threats. Emphasize the importance of understanding risk scenarios and implementing effective countermeasures.
2. Simulate real-world security incidents, such as a data breach or malware attack. Participants will practice coordination, communication, and decision-making during a crisis. Debrief the simulation to analyse strengths and areas for improvement.
3. Develop and deliver a comprehensive security awareness training program covering topics such as phishing, social engineering, and secure password practices. Encourage interactive elements,

like quizzes and scenario-based learning, to reinforce understanding and promote proactive security behaviour.

4. Guide participants through a risk assessment exercise where they identify potential risks, assess their impact and likelihood, and develop mitigation plans. Emphasize the need for a continuous risk management process, including regular reassessment and adjustment of mitigation strategies based on evolving threats and organizational changes.

Suggested Readings:

1. Whitman, M. E., & Mattord, H. J. (2018). Principles of Information Security. Cengage Learning.
2. Schneier, B. (2015). Data and Goliath: The Hidden Battles to Collect Your Data and Control Your World. W. W. Norton & Company.
3. Anderson, R. (2015). Security Engineering: A Guide to Building Dependable Distributed Systems. Wiley.
4. Dhillon, G. (2012). Principles of Information Systems Security: Texts and Cases. John Wiley & Sons.
5. Dubey, S. K., & Gunasekaran, A. (2015). Information Security in the Big Data Era: A New Paradigm. Springer

Note: The schedule for case discussion shall be announced by the concerned faculty in the class

DEPARTMENT OF MANAGEMENT STUDIES

Islamic University of Science and Technology

One University Avenue, Awantipora, Pulwama, J&K, 192122.

Course Title: Business & Communication Networks

Course Code: MBA-DE -710	**Max. Marks** = 100 (Mid-term = 50, End-term = 50) **Credits:** 4 (L = 3, P = 0, T = 1)

Course Objective: *To develop a basic understanding of the principles, technologies, and protocols underlying electronic communication networks.*

Course Outcomes: After attending the course, students will be able to:

- *Understand the principles of data transmission and networking protocols used in electronic communication networks.*
- *Understand the technologies used in cellular networks and wireless communication.*
- *Explore the concepts of network security and privacy, including encryption, authentication, and access control mechanisms, and the potential vulnerabilities and countermeasures in electronic communication networks.*
- *Gain knowledge of emerging trends and technologies in electronic communication networks, their impact on network design, scalability, and future development.*

SYLLABUS

Unit I: Introduction to Electronic Communication Networks, Overview of electronic communication networks and their significance in modern communication systems. Introduction to the OSI (Open Systems Interconnection) model and its seven-layer architecture. Examination of the TCP/IP protocol suite as the foundation of internet communication.

Unit II: Overview of cellular networks and their role in providing wireless communication services. Evolution of cellular technology from 1G to 5G and beyond. Understanding the concept of cell planning, frequency reuse, and coverage. Introduction to technologies used in cellular networks, including Multiple Access Techniques (e.g., FDMA, TDMA, CDMA.

Unit III: Overview of network security concepts, threats, and vulnerabilities. Exploring different types of attacks, such as passive and active attacks, and their impact on electronic communication networks. Exploring different types of attacks, such as passive and active attacks, Exploring common vulnerabilities such as denial-of-service attacks, network eavesdropping, and man-in-the-middle attacks, and discussing corresponding countermeasures.

Unit IV: Overview of emerging trends in electronic communication networks, including cloud computing, IoT, and mobile networks. Study of cloud computing concepts, including infrastructure as a service (IaaS), platform as a service (PaaS), and software as a service (SaaS). Introduction to IoT and its applications in various domains, such as smart homes, healthcare, and industrial automation. Future Development.

Skill Development Activities:

1. Designing and Development of LAN (Wired).
2. Configuring network devices (Hotspot, Router etc).

Suggested Readings:

1. Forouzan, B. A. (2019). *Data communications and networking* (6th ed.). McGraw-Hill Education.
2. Stallings, W. (2013). *Wireless communications & networks* (2nd ed.). Pearson Education.
3. Tanenbaum, A. S., Wetherall, D. J., & Brey, B. (2018). *Computer networks* (6th ed.). Pearson Education.
4. Kurose, J. F., & Ross, K. W. (2017). *Computer networking*: A top-down approach (7th ed.). Pearson Education.
5. Lathi, B. P., & Ding, Z. (2010). *Modern digital and analog communication systems* (4th ed.). Oxford University Press.

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