PUNJABI UNIVERSITY REGIONAL CENTRE FOR IT & MANAGEMENT, MOHALI

Computer Science

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)

(Course Outcomes)

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: General English – I	**Course Code**: MDDM51101T
Course Outcomes: Upon completion of this course, the students will be: • Able to communicate efficiently and properly in real-life conditions. • To use English effectively for study purposes. • To create an interest in Literature. • To develop Reading, Listening, Speaking, and Writing skills.	

Program Name FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Punjabi (Compulsory) or Elementary Punjabi**	**Course Code**: MDDM51102T
Course Outcomes: Upon completion of this course, the students will be: • To develop a bonding with the mother tongue • To know and understand the local language in a better way. • gains the knowledge and understanding of the grammar and literature of Punjabi.	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Fundamentals of Information Technology	**Course Code**: MDDM51103T
Course Outcomes: Upon completion of this course, the students will be: • Understanding the concept of input and output devices of Computers	

- Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.
- Understand an operating system and its working, and solve common problems related to operating systems
- 4. Study to use the Internet safely, legally, and responsibly

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Programming Fundamentals using C	**Course Code**: MDDM51104T

Course Outcomes: Upon completion of course, Students should be able to:

- Understand the basic components of an object-oriented program including methods and attributes.
- Perform object-oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.
- Demonstrate adeptness of object-oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.
- Demonstrate ability to implement one or more patterns involving realization of an abstract interface and utilization of polymorphism in the solution of problems which can take advantage of dynamic dispatching.
- Learn syntax, features of, and how to utilize the Standard Template Library.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Office Automation and Productivity Tools	**Course Code**: MDDM51105T

Course Outcomes: By learning the course, the students will be able

- to use documentation tools
- to use accounting operations
- to use presentation tools and skills

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – I	**Course Code**: MDDM51106L

Course Outcomes: Upon completion of the course, students should be able to:

- Understand the basic components of an object-oriented program including methods and attributes.
- Perform object-oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.
- Demonstrate adeptness of object-oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.

- Demonstrate ability to implement one or more patterns involving realization of an abstract interface and utilization of polymorphism in the solution of problems that can take advantage of dynamic dispatching.
- Learn syntax, features of, and how to utilize the Standard Template Library.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – II	**Course Code**: MDDM51107L

Course Outcomes: By learning the course, the students will be able

- to use documentation tools
- to use accounting operations
- to use presentation tools and skills

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: General English – II	**Course Code**: MDDM51201T

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

- Students will cultivate reading and comprehension skills by reading contemporary English. To acquire awareness regarding latest trends and skills in business communication through business letter writing and preparation of advertising copies. To horn writing skills by learning about resume writing.
- Equips students with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing through usage of idioms and phrases, synonyms and antonyms, abbreviations and acronyms.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Digital Electronics	**Course Code**: MDDM51202T

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

- To use the concepts of combinational and sequential circuits.
- To write a high-level description of a complex digital system based on a computational unit and a control unit.
- Apply the knowledge and understanding developed to the analysis of practical problems.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Mathematical Foundation of Computer Science	**Course Code**: MDDM51203T

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

- To use mathematical logic to solve problems.
- Understand sets, relations, functions, and discrete structures.
- Use logical notation to define the fundamental mathematical.
- To make problems and solve recurrence relations.
- Able to form and answer the real-world problems using graphs and trees.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Data Structures	**Course Code**: MDDM51204T

Course Outcomes: Upon completion of course, Students should be:

- Familiar with basic techniques of algorithm analysis
- Familiar with writing recursive methods
- Master the implementation of linked data structures such as linked lists and binary trees
- Familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Programming with Visual Basic	**Course Code**: MDDM51205T

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

- Understand visual programming concepts.
- Explain basic concepts and definitions.
- Use constants and arithmetic operations.
- Distinguish variable and data types.
- Code visual programs by using Visual Basic work environment.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – III	**Course Code**: MDDM51206L

Course Outcomes: Upon completion of course, Students should be:

- Familiar with basic techniques of algorithm analysis
- Familiar with writing recursive methods

- Master the implementation of linked data structures such as linked lists and binary trees
- Familiar with advanced data structures such as balanced search trees, hash tables, priority queues and the disjoint set union/find data structure

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – IV	**Course Code**: MDDM51207L

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

- Understand visual programming concepts.
- Explain basic concepts and definitions.
- Use constants and arithmetic operations.
- Distinguish variables and data types.
- Code visual programs by using Visual Basic work environment.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Drug Abuse and De-addiction**	**Course Code**: MDDM51208T

Course Outcome: At the end of this course the student will be able to

- To create a general awareness of drugs and substances of abuse and their effects.
- To understand prevention, treatment, rehabilitation and re-entry options
- To persuade those that have not experimented not to, and those that might have started, to stop.
- To describe and understand the relationship between alcohol and drug abuse.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: English Communication Skills – I	**Course Code**: MDDM52301T

Course Outcome: At the end of this course the student will be able to

- Students will cultivate reading and comprehension skills by reading contemporary English prose edited book GLEANINGS FROM HOME AND ABROAD. To acquire awareness regarding latest trends and skills in business communication through business letter writing and preparation of advertising copies. To horn writing skills by learning about resume writing.

- Equips students with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing through usage of idioms and phrases, synonyms and antonyms, abbreviations and acronyms.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Discrete Mathematics	**Course Code**: MDDM52302T

Course Outcome: Students completing this course will be able

- to express a logic sentence in terms of predicates, quantifiers, and logical connectives.
- to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.
- to use tree and graph algorithms to solve problems
- to evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Computer System Organization and Architecture	**Course Code**: MDDM52303T

Course Outcome:On completion of this course, the students will be able to

- To conceptualize the basics of organizational and architectural issues of digital computer
- To analyze performance issues in processor and memory design of digital computer
- To understand various data transfer techniques in digital computers.
- To analyze processor performance improvement using instruction level parallelism

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Object Oriented Programming using C++	**Course Code**: MDDM52304T

Course Outcome: On completion of this course, the students will be able to

- Write, compile and debug programs in C++language.
- Use different data types, operators and console I/O function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.

- Comprehend the concepts of structures and classes: declaration, initialization and implementation.
- Apply basics of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Fundamentals of Database Management System	**Course Code**: MDDM52305T

Course Outcome: On completion of this course, the students will be able to

- Analyze the Information Systems as socio-technical systems, its need and advantages as compared to traditional file based systems.
- Comprehend architecture of DBMS, conceptual data modelling, logical database design and physical database design.
- Analyze Database design using E-R data model by identifying entities, attributes, relationships, generalization and specialization along with relational algebra.
- Apply and create Relational Database Design process with Normalization and De-normalization of data.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab-V	**Course Code**: MDDM52306L

Course Outcome: On completion of this course, the students will be able to

- Write, compile and debug programs in C++language.
- Use different data types, operators and console I/O function in a computer program.
- Design programs involving decision control statements, loop control statements and case control structures.
- Understand the implementation of arrays, pointers and functions and apply the dynamics of memory by the use of pointers.
- Comprehend the concepts of structures and classes: declaration, initialization and implementation.
- Apply basics of object oriented programming, polymorphism and inheritance.
- Use the file operations, character I/O, string I/O, file pointers, pre-processor directives and create/update basic data files.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab-VI	**Course Code**: MDDM52307L

Course Outcome: On completion of this course, the students will be able to

- Identify and define concepts linked with Access.
- Design, create, and edit a database using design and datasheet views.

- Generate queries using the select query window.
- Maintain a database using the design and update features of Access.
- Create a database with tables, and queries using the skills acquired in this course.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Environment Studies (Qualifying Exam)	**Course Code**: MDDM52308T

Course Outcome: After successful completion of the course, student will be able to:.

- Develop an attitude of concern for the environmental problems. Develop an understanding of the concepts of ecosystem and biodiversity conservation, Environmental Protection laws in India
- Awareness about road safety and issues like stubble burning and relevant environmental legislations.
- Understand ecosystems, the scale dependence of biodiversity and its measurement.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: English Communication Skills – II	**Course Code**: MDDM52401T

Course Outcome: At the end of this course the student will be able to

- Students will cultivate reading and comprehension skills by reading contemporary English prose edited book Oliver Twist by Charles Dickens To acquire awareness regarding latest trends and skills in business communication through business letter writing and preparation of advertising copies. To horn writing skills by learning about resume writing.
- Equips students with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing through usage of idioms and phrases, synonyms and antonyms, abbreviations and acronyms.

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP

Course Name: Data Communication	**Course Code**: MDDM52402T
Course Outcome: Upon completion of this course the student will be able to ... • Learn how computer network hardware and software operate • Investigate the fundamental issues driving network design • Learn about dominant network technologies • Understand and be able to describe for common services, system services, such as name and address lookups, and communications applications.	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Management Information System Computer Oriented Statistical Method	**Course Code**: MDDM52403T
Course Outcome: Upon completion of this course the student will be able to ... • Understand Management Information Systems (MIS) and their role in today's organizations • Become familiar with the major trends in MIS and MIS infrastructures (Cloud, Big Data, ERPs, outsourcing) and how these evolutions will affect workplaces and business strategies	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Computer Oriented Statistical Method	**Course Code**: MDDM52404T
Course Outcome: On completion of this course, the students will be able to • Describe various statistical formulas. • Compute various statistical measures. • Understand Binomial Distribution, Poisson Distribution, Normal Distribution • Also understand the concept of hypothesis	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Relational Database Management Systems with Oracle	**Course Code**: MDDM52405T
Course Outcome: On completion of this course, the students will be able to • Analyze the Information Systems as socio-technical systems, its need and advantages as compared to traditional file based systems. • Comprehend architecture of DBMS, conceptual data modelling, logical database design and physical database design. • Analyze Database design using E-R data model by identifying entities, attributes, relationships, generalization and specialization along with relational algebra. • Apply and create Relational Database Design process with Normalization and De-normalization of data.	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab-VII	**Course Code**: MDDM52406L
Course Outcome: On completion of this course, the students will be able to • implement various statistical formulas. • Compute various statistical measures. • Understand Binomial Distribution, Poisson Distribution, Normal Distribution • Also implement the concepts of hypothesis	

Program Name: FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab-VIII	**Course Code**: MDDM52407L
Course Outcome: The student will be exposed to a commercial RDBMS environment such as ORACLE server. • The student will learn ORACLE commands for data definition and manipulation. • The student understands conceptual through physical data base design and student takes up a case study and applies the design steps.	

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: English Literacy Skills – I	**Course Code: MDDM53501T**
Course Outcomes: At the end of this course the students will be able to • Understand the values and features of effective writing skills • Enlarge vocabulary for written communication • Compose letters and e-mails • understand Adjectives and Adverbs • understand Prepositions, Infinitives and Gerunds	

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: System Analysis and Design	**Course Code: MDDM53502T**

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

- Understand the role of system analysis and design within various systems development stages. develop an awareness of the different approaches that might be taken to systems design.
- understand the activities of the management and systems analyst, and in the overall development of the system.
- develop an understanding of Testing software and complying the various software quality parameters.
- understand how to migrate old data within newly developed systems with the help of various techniques.

P FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: System Software	**Course Code: MDDM53503T**

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

- Identify different system software
- Write macros as and when required to increase readability and productivity
- Design handwritten lexical analyser
- Design new language structures with the help of grammars
- Appreciate the role of Operating System functions such as memory
- Management as pertaining to run-time storage management
- Appreciate the role of Intermediate Code Generation in connection with language designing
- Apply optimization principles on given code

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Java Programming	**Course Code: MDDM53504T**

Course Outcomes: Upon completion of this course, students will:

- Write, compile and execute Java programs
- Build robust applications using Java's object-oriented features
- Develop platform-independent GUIs
- Read and write data using Java streams
- Retrieve data from a relational database with JDBC
- Write network programs.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Web Designing using HTML and DHTML	**Course Code: MDDM53505T**

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

- Design and implement dynamic websites with a good aesthetic sense of designing and the latest technical know-how.
- Have a Good grounding in Web Application Terminologies, Internet Tools, E-Commerce, and other web services.
- Write a well-formed / valid HTML document.
- To write server-side programs using DHTML.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – IX	**Course Code: MDDM53506L**

Course Outcomes: Upon completion of this course, students will:

- Write, compile and execute Java programs
- Build robust applications using Java's object-oriented features
- Develop platform-independent GUIs
- Read and write data using Java streams
- Retrieve data from a relational database with JDBC
- Write network programs.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – X	**Course Code: MDDM53507L**

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

- Design and implement dynamic websites with a good visual sense of designing and latest technical know-how.
- Have a Good grounding of Web Application Terminologies, Internet Tools, E – Commerce and other web services.
- Write a well-formed / valid HTML document.
- To write server-side programs using DHTML.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: English Literary Skills – II	**Course Code: MDDM53601T**

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

- Students will cultivate reading and comprehension skills.
- Students should be able to apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.
- Equips students with nuances of language that includes proficiency in grammar, its effective usage in speaking and writing through usage of idioms and phrases, synonyms and antonyms, abbreviations and acronyms.
- Form an idea about the various stages in the development of English language
- Students should be able to understand the process of communicating and interpreting human experiences through literary representation

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: E-Commerce	**Course Code: MDDM53602T**

Course Outcomes: Upon successful completion, the student will be able to:

- Demonstrate an understanding of the foundations and importance of E-commerce
- Analyze the impact of E-commerce on business models and strategy
- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
- Describe the infrastructure for E-commerce
- Discuss legal issues and privacy in E-Commerce
- Recognize and discuss global E-commerce issues

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Operating Systems	**Course Code: MDDM53603T**

Course Outcomes: Upon completion of this course, students will be able to:

- Learn the principles operating systems
- Understand relationship between subsystems of a modern operating system
- Evaluate the efficiency aspect of using system resources (processor, memory, disk).
- Understand what a process is and how processes are synchronized and scheduled.
- Understand different approaches to memory management.
- Be able to use system calls for managing processes, memory and the file system.
- Understand the data structures and algorithms used to implement an OS.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Engineering	**Course Code: MDDM53604T**

Course Outcomes: After completing this course, students will have

- knowledge of basic SW engineering methods and practices, and their appropriate application;
- A general understanding of software process models such as the waterfall and evolutionary models.
- An understanding of the role of project management including planning, scheduling, risk management, etc.
- An understanding of software requirements and the SRS document.
- An understanding of implementation issues such as modularity and coding standards.
- An understanding of approaches to verification and validation including static analysis, and reviews.
- An understanding of software testing approaches such as unit testing and integration testing.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Web Designing using ASP.NET	**Course Code: MDDM53605T**

Course Outcomes: Upon completion of this course, students will:

- Learn how computer network hardware and software operate
- Investigate the fundamental issues driving network design
- Learn about dominant network technologies
- Understand and be able to describe for common services, system services, such as name and address lookups, and communications applications.

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – XI	**Course Code: MDDM53606L**

Course Outcomes: Upon completion of this course, students will:

- Write, compile and execute Java programs
- Build robust applications using Java's object-oriented features
- Develop platform-independent GUIs
- Read and write data using Java streams
- Retrieve data from a relational database with JDBC
- Write network programs

FIVE YEAR DUAL DEGREE COURSE IN MASTER OF COMPUTER APPLICATIONS (M.C.A.)	**Program Code**: MDDM5PUP
Course Name: Software Lab – XII	**Course Code: MDDM53607L**

Course Outcomes: Upon completion of this course, students will:

- Learn how computer network hardware and software operate
- Investigate the fundamental issues driving network design
- Learn about dominant network technologies
- Understand and be able to describe for common services, system services, such as name and address lookups, and communications applications.