| Course Code | Title of the Course |
|---|---|
| **IGNOU MCA 1st Sem syllabus** | |
| MCS11 | Problem Solving and Programming |
| MCS12 | Computer Organization and Assembly Language Programming |
| MCS13 | Discrete Mathematics |
| MCS14 | Systems Analysis and Design |
| MCS15 | Communication Skills |
| MCSL16 | Internet Concepts and Web Design |
| MCSL17 | C and Assembly Language Programming Lab |
| **IGNOU MCA 2nd Sem syllabus** | |
| MCS21 | Data and File Structures and Programming |
| MCS22 | Operating System Concepts and Networking Management |
| MCS23 | Introduction to Database Management Systems |
| MCS24 | Object Oriented Technologies and Java Programming |
| MCSL25 | Lab (based on MCS-021, 022, 023 and 024) |
| **IGNOU MCA 3rd Sem syllabus** | |
| MCS31 | Design and Analysis of Algorithms |
| MCS32 | Object Oriented Analysis and Design |
| MCS33 | Advanced Discrete Mathematics |
| MCS34 | Software Engineering |
| MCS35 | Accountancy and Financial Management |
| MCSL36 | Lab (based on MCS-032, 034 and 035) |
| **IGNOU MCA 4th Sem syllabus** | |
| MCS41 | Operating Systems |
| MCS42 | Data Communication and Computer Networks |
| MCS43 | Advanced Database Mathematics Management Systems |
| MCS44 | Mini Project |
| MCSL45 | Lab (UNIX and Oracle) |
| **IGNOU MCA 5th Sem syllabus** | |
| MCS51 | Advanced Internet Technologies |
| MCS52 | Principles of Management and Information systems |
| MCS53 | Computer Graphics and Multimedia |
| MCSL54 | Lab (based on MCS-051 and 053) |
| MCSE3 | Artificial Intelligence and |

| | |
|---|---|
| | Knowledge Management |
| MCSE4 | Numerical and Statistical Computing |
| MCSE11 | Parallel Computing |
| **IGNOU MCA 6th Sem syllabus** | |
| MCSP60 | Project |

## IGNOU MCA Updated Syllabus 2019

Check out details IGNOU MCA Syllabus 2019 according to the blocks divided by the university. Let's go through it and collect information regarding all the units you all need to go through during the whole duration of your course.

## BLOCK 1: An Introduction to C

### Unit 1: Problem Solving

- Problem – Solving Techniques
- Steps for Problem – Solving
- Using Computer as a Problem-Solving Tool
- Design of Algorithms
- Definition Included in IGNOU MCA Syllabus
- Features of Algorithm
- Criteria to be followed by an Algorithm
- Top Down Design
- Analysis of Algorithm Efficiency
- Redundant Computations
- Referencing Array Elements
- Inefficiency Due to Late Termination of Early Detection of Desired Output
- Condition
- Trading Storage for Efficient Gains
- Analysis of Algorithm Complexity
- Computational Complexity of The Order of Notation
- Rules for using the Big – O Notation o Worst and Average Case Behavior
- Flowcharts
- Basic Symbols used in Flowchart Design

## Unit 2: Basics of C

- What is a Program and what is a Programming Language?
- Character Constants
- String Constants Included in IGNOU MCA Syllabus
- Symbolic Constants
- C Language
- History of C
- Salient Features of C
- Structure of a C Program
- A Simple C Program
- Writing a C Program
- Compiling a C Program
- The C Compiler
- Syntax and Semantic Errors
- Link and Run the C Program
- Run the C Program through the Menu
- Run from an Executable File
- Linker Errors
- Logical and Runtime Errors
- Diagrammatic Representation of Program Execution Process

## Unit 3: Variables and Constants

- Character Set
- Identifiers and Keywords Included in IGNOU MCA Syllabus
- Rules for Forming Identifiers
- Keywords
- Data Types and Storage Data Type Qualifiers Variables
- Declaring Variables Initializing Variables
- Constants
- Integer Constants
- Floating Point Constants
- Built-in String Functions and Applications
- Strlen Function
- Strcpy Function
- Strcmp Function
- Strcat Function
- Strlwr Function
- Strrev Function Included in IGNOU MCA Syllabus
- Strspn Function

- Other String Functions

## BLOCK 2: Control Statements, Arrays and Functions

### Unit 5: Decision and Loop Control Statements

- Decision Control Statements
- The if Statement
- The switch Statement
- Loop Control Statements
- The while Loop
- The do-while Statement
- The for Loop
- The Nested Loop Included in IGNOU MCA Syllabus
- The Go to Statement
- The Break Statement
- The Continue Statement

### Unit 6: Arrays

- Array Declaration
- Syntax of Array Declaration o Size Specification
- Initialization of Array Elements in the Declaration
- Character Array Initialization Subscript
- Processing the Arrays
- Multi-Dimensional Arrays
- Multi-Dimensional Array Declaration
- Initialization of Two-Dimensional Arrays

### Unit 7: Strings

- Declaration and Initialization of Strings
- Display of Strings Using Different
- Formatting Techniques Included in IGNOU MCA Syllabus
- Array of Strings
- define to Create Functional Macros Reading from Other Files using # include
- Conditional Selection of Code using #ifdef
- Using #ifdef for different computer types
- Using #ifdef to temporarily remove program statements
- Other Preprocessor Commands

- Predefined Names Defined by Preprocessor Macros vs Functions

## Unit 8: Functions

- Definition of a Function
- Declaration of a Function
- Function Prototypes Included in IGNOU MCA Syllabus
- The Return Statement
- Types of Variables and Storage Classes
- Automatic Variables o External Variables o Static Variables
- Register Variables Types of Function Invoking Call by Value
- Recursion

# Block 3: Structures, Pointers and File Handling

## Unit 9: Structures and Unions

- Declaration of Structures
- Accessing the Members of a Structure
- Initializing Structures
- Structures as Function Arguments
- Structures and Arrays
- Unions
- Initializing an Union Included in IGNOU MCA Syllabus
- Accessing the Members of an Union

## Unit 10: Pointers

- Pointers and their Characteristics Address and Indirection Operators Pointer Type Declaration and Assignment
- Pointer to a Pointer
- Null Pointer Assignment
- Pointer Arithmetic
- Passing Pointers to Functions
- A Function Returning More than One Value
- Function Returning a Pointer Arrays and Pointer
- Array of Pointers and Strings Included in IGNOU MCA Syllabus

## Unit 11: The C Preprocessor

- # define to Implement Constants

- Open a file using the function fopen ( )
- Close a file using the function fclose( )
- Input and Output using file pointers
- Character Input and Output in Files o String Input / Output Functions
- Formatted Input / Output Functions o Block Input / Output Functions Sequential Vs Random Access Files Positioning the File Pointer
- The Unbufferred I/O – The UNIX like File Routines

Unit 12: Files

- File Handling in C Using File Pointers Included in IGNOU MCA Revised Syllabus

## IGNOU MCA Structure

| Course Title | Credits |
|---|---|
| **I Semester** | |
| Problem Solving and Programming | 3 |
| Computer Organization and Assembly Language Programming | 4 |
| Discrete Mathematics | 2 |
| Systems Analysis and Design | 3 |
| Communication Skills | 2 |
| Internet Concepts and Web Design | 2 |
| C and Assembly Language Programming Lab | 2 |
| **III Semester** | |
| Design and Analysis of Algorithms | 4 |
| Object Oriented Analysis and Design | 3 |
| Advanced DiscreteMathematics | 2 |
| Software Engineering | 3 |
| Accountancy and Financial Management | 3 |
| Lab (based on MCS-032, 034 and 035) | 3 |
| **V Semester** | |
| Advanced Internet Technologies | 3 |
| Principles of Management and Information Systems | 2 |
| Computer Graphics and Multimedia | 4 |
| Lab (based on MCS-051 & 053) | 2 |
| Elective Courses*Artificial Intelligence and Knowledge | 333 |

| | |
|---|---|
| ManagementNumerical and Statistical ComputingParallel Computing | |

## IGNOU MCA IInd/IVth Semester Structure

| Course Code | Course Title | Credits |
|---|---|---|
| **II Semester** | | |
| MCS-021 | Data and File Structures | 4 |
| MCS-022 | Operating System Concepts and Networking Management | 4 |
| MCS-023 | Introduction to DatabaseManagement Systems | 3 |
| MCS-024 | Object OrientedTechnologies andJava Programming | 3 |
| MCSL-025 | Lab (based on MCS-021, 022, 023 & 024) | 4 |
| **IV Semester** | | |
| MCS-041 | Operating Systems | 4 |
| MCS-042 | Data Communication and Computer Networks | 4 |
| MCS-043 | Advanced Database Management Systems | 4 |
| MCS-044 | Mini Project | 4 |
| MCSL-045 | Lab (UNIX & Oracle) | 2 |
| **IV Semester** | | |
| MCSP-060 | Project | 16 |