# Government College of Engineering, Karad

(An Autonomous Institute of Government of Maharashtra)
## Academic Unit

# GUIDELINES FOR CURRICULUM UNDER AUTONOMY

Following guidelines shall be strictly followed while designing the curriculum under Autonomy.
➢ Contact hours and credits for each semester

| Semester | Contact Hours | Credits |
|---|---|---|
| I & II | 60(30+30) | 50(25+25) |
| III & IV | 60(30+30) | 50(25+25) |
| V & VI | 60(30+30) | 40(25+15) |
| Total Credits | | 140(75+65) |

1 credit for Lecture/ Tutorial hour and 1 credit for 2 Practical hours per week.
➢ Theory & practical should be separated and made as Theory course & laboratory or Lab course separately.
➢ There will be max. 5 theory courses and max. 5 Laboratory courses per semester. Total courses (passing heads) in a semester should not be more than 10.
➢ Number of practical batches for each class should be as under-

| Class | No. of  Practical batches |
|---|---|
| 1st Year Class | 2 |
| 2nd  and  3rd   Year Class | 2 |

➢ Laboratory courses (excluding seminar & other presentations) should essentially be in laboratory where performance is conducted. Exceptionally demonstration may also be considered for laboratory course. For theoretical subjects, such performance can be evaluated through assignments and quiz.
➢ Heads are requested not to keep laboratory courses for which laboratory is not available and the department is not likely to purchase required equipment in next three years. That can be considered only after procurement of equipment and establishment of laboratory. Same strategy should be applied for the list of experiments to be included in the syllabus in a particular laboratory.
➢ ESE for laboratory courses (excluding seminars & projects) should be kept only when performance based practical examination is possible. Under the circumstances, students should essentially be assessed based only on his practical performance during the examination.
➢ In view of AICTE guidelines, observations in different reports by NKC, NASSCOM, NSDM, FICCI etc., the curriculum shall consist of courses like Professional Practises (I Communication skills, II Soft skills, III Aptitude skills), industrial training, Mini Project, Minor Project, Project, Electives, self-study etc. In view of giving industry exposure, more thrust shall be given on expert lectures from industry, industrial visits, industry problem based/ sponsored projects, real life problem based mini projects etc.
➢ All laboratory courses including seminar & projects (excluding mini project) shall be assessed continuously based on continuous evaluation formats.
➢ At least one industrial visit in one of the appropriate laboratory courses in each of III, IV, V semester=it should be mentioned in the details of that course. It is mandatory=however, the department shall encourage more visits, if possible, in many courses at any level. The visit report should be included in the list of experiments and should be a part of journal/ term work to be submitted by students. Due weightage shall be given in CE & ESE of that lab course.

➢ The credits and the level at which few common courses shall be offered are given below:

| Course | Semester/ Level | Contact Hours | Credits | Remarks |
|---|---|---|---|---|
| Soft Skills | II | 2(T)+2(P) | 3 | |
| Business Communication | IV | 2(T)+2(P) | 3 | |
| Professional Communication | V | 3(L) | 3 | |
| Industrial Training/ Mini Project (Batch size 2 students) | During vacation After SY and credits in V | -- | 2 | Mini project essentially based on industry or real life problem |
| Minor Project (Project Planning and Management Lab) | IV | 5 | 3 | At the most 2 students can do one minor project (Batch of 10 students per faculty) |
| Seminar | II | 2 | 2 | |
| Elective-I | IV | 3 | 3 | |
| Project Phase-I | V | 6 | 4 | At the most 5 students can do one major project (2 project batches per faculty) |
| Project Phase-II | VI | 30 | 15 | |
| Elective-II & III | V | 6 | 6 | |

➢ The curriculum structure should essentially contain list of electives in concerned semester. The list though contain at least three courses, should not be too exhaustive.
➢ The curriculum structure & syllabus should be in the formats only.
➢ In order to enhance the self-learning ability of the student, the self-study modules needs to be separately specified in the contents of the syllabus for the subject. The student's ability to express his/her own thoughts will be tested by asking questions on self-study modules in ESE
➢ Text books, reference books, websites etc should be correctly mentioned with latest version. The Heads are requested to verify it personally on Internet at the time of mentioning in the curriculum.
➢ The courses for UG and PG need to be formulated with its Course Objectives, course outcomes, assessment rubrics, mapping of course objectives with programme outcomes etc.
In the structure all theory courses should appear first followed by laboratory courses

# Government College of Engineering, Karad

(An Autonomous Institute of Government of Maharashtra)

## MCA First year
## Curriculum Structure (W.E.F. AY 2017-18)
## Semester – I

| Sr. No. | Course Code | Course Title | L | T | P | Contact Hrs/Wk | Credits | EXAM SCHEME | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CT1 | CT2 | TA/CA | ESE | TOTAL |
| 1 | MC101 | Digital Electronics & Microprocessor | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 2 | MC102 | Computer Organisation and Architecture | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 3 | MC103 | Discrete Mathematics | 3 | | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 4 | MC104 | Data Structures and Algorithms | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 5 | MC105 | Software Engineering | 3 | 1 | - | 4 | 4 | 15 | 15 | 10 | 60 | 100 |
| 6 | MC106 | Digital Electronics & Microprocessor Lab | - | - | 2 | 2 | 1 | - | - | 50 | - | 50 |
| 7 | MC107 | C Programming Lab | - | 2 | 4 | 6 | 4 | - | - | 25 | 50 | 75 |
| 8 | MC108 | Data Structure and Algorithm Lab | - | - | 2 | 2 | 1 | - | - | 25 | 50 | 75 |
| 9 | MC109 | Web Programming Lab | - | 2 | 2 | 4 | 3 | - | - | 50 | - | 50 |
| | | Total | 15 | 5 | 10 | 30 | 25 | 75 | 75 | 200 | 400 | 750 |

L- Lecture     T-Tutorial     P-Practical

CT1- Class Test 1          TA/CA- Teacher Assessment for theory courses / Continuous Assessment for lab courses
CT2- Class Test 2          ESE- End Semester Examination (For Laboratory End Semester performance)

Credits Distribution:

| Course Category | HS (Hum. And So.Sci) | BS (Basic Sc.) | ES (Eng. Sc.) | PC (Programme Core) | PE (Programme Electives) | OE (Open Elective) | MC (Mandatory Course) |
|---|---|---|---|---|---|---|---|
| Credits | 0 | 0 | 0 | 25 | 0 | 0 | 0 |
| Cumulative Sum | 0 | 0 | 0 | 25 | 0 | 0 | 0 |

# Government College of Engineering, Karad

(An Autonomous Institute of Government of Maharashtra)

## MCA First year
## Curriculum Structure (W.E.F. AY 2017-18)
## Semester – II

| Sr. No. | Course Code | Course Title | L | T | P | Contact Hrs/Wk | Credits | EXAM SCHEME | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | CT1 | CT2 | TA/CA | ESE | TOTAL |
| 1 | MC201 | Computer Oriented Numerical and Statistical Methods | 3 | 1 | - | 4 | 4 | 15 | 15 | 10 | 60 | 100 |
| 2 | MC202 | Principle Of Management | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 3 | MC203 | Object Oriented Programming | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 4 | MC204 | System Software | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 5 | MC205 | Database Management System | 3 | - | - | 3 | 3 | 15 | 15 | 10 | 60 | 100 |
| 6 | MC206 | Object Oriented Programming Lab | - | - | 4 | 4 | 2 | - | - | 25 | 50 | 75 |
| 7 | MC207 | Database Management System Lab | - | - | 4 | 4 | 2 | - | - | 25 | 50 | 75 |
| 8 | MC208 | Seminar | - | 2 | - | 2 | 2 | - | - | 50 | - | 50 |
| 9 | MC209 | Soft Skills | - | 2 | 2 | 4 | 3 | - | - | 50 | - | 50 |
| | | Total | 15 | 5 | 10 | 30 | 25 | 75 | 75 | 200 | 400 | 750 |

L- Lecture     T-Tutorial     P-Practical

CT1- Class Test 1          TA/CA- Teacher Assessment for theory courses / Continuous Assessment for lab course
CT2- Class Test 2          ESE- End Semester Examination (For Laboratory End Semester performance)

Credits Distribution:

| Course Category | HS (Hum. And So.Sci) | BS (Basic Sc.) | ES (Eng. Sc.) | PC (Programme Core) | PE (Programme Electives) | OE (Open Elective) | MC (Mandatory Course) |
|---|---|---|---|---|---|---|---|
| Credits | 6 | 0 | 0 | 19 | 0 | 0 | 0 |
| Cumulative Sum | 6 | 0 | 0 | 44 | 0 | 0 | 0 |

# Government College of Engineering Karad
# First Year M.C.A.
# MC101: Digital Electronics And Microprocessor

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | CT1 | 15 |
| **Total Credits** | 3 | CT2 | 15 |
| | | TA | 10 |
| | | ESE | 60 |

## Course Objectives

1. The students to know basic concepts of digital electronics and familiarity with available chips.
2. The students will be able to represent numerical values in various number systems and perform number conversions between different number systems
3. The students will be able to design arithmetic circuits using counters, registers, multiplexers, de-multiplexers etc

## Course Contents

| | | Hours |
|---|---|---|
| **Unit I** | **Fundamental Concepts and Number Systems & Codes:** Introduction , Digital Signal, Basic Digital Circuits, The NAND,NOR Operations, EXOR Operation, Boolean Algebra, Introduction to number system, Number Systems, Binary Number Systems, signed binary numbers, binary arithmetic, 2∮s complement arithmetic, Octal Number Systems, Hexadecimal Number Systems., Codes, Error Codes. | 10 |
| **Unit II** | **Combinational Logic Design using MSI Circuits:** Introduction, Standard Representation For Logic functions, K-map representation, simplification of logical function using Kmap, Minimization of logical function, don∮t care conditions, design examples (half adder, full adder, half subtractor, full subtractor), Multiplexer and their use in combinational logic design, Demultiplexer and their use in combinational logic design, Encoder, Decoder, BCD-to 7 Segment Decoder | 8 |
| **Unit III** | **Flip Flops:** Introduction, Clocked S-R Flip Flop, J-K Flip Flop, D- Flip Flop, T-Flip Flop, Excitation Table Of Flip Flop, Clocked Flip Flop Design, Edge Triggered Flip Flop, Applications Of Flip Flop. | 6 |
| **Unit IV** | **Introduction to Intel 8085 microprocessor:** introduction, Applications of microprocessor, Intel 8085, ALU, Timing and control unit, Registers, Data and Address bus, Pin configuration. PSW and Flags: Status flag carry, zero, sign, parity, Auxiliary carry, Symbols and abbreviations, instruction word size- one byte, two byte, three byte instructions, Instruction cycle | 8 |
| **Unit V** | **Programming-Instruction Set of Intel 8085:** Instruction and data format, single byte instruction, two byte instruction, three byte instruction, Addressing mode-direct addressing, register addressing, register indirect addressing, Immediate addressing, Implicit addressing, 8085 instructions group-Data | 8 |

transfer groups- Arithmetic group, logical group, branch group, and Stack, I/O and machine group.

**Course Outcomes (CO)**

1   Students will be able to represent numerical values in various number systems and perform number conversions between different number systems.
2   After undergoing this course the students will have the awareness of various arithmetic circuits, counter design, registers, multiplexers and de-multiplexers etc.
3   Students will have extensive knowledge of microprocessor based systems and interfacing techniques.

**Text Books**

1   Modern Digital Electronics By R P Jain
2   Digital Systems By Morris Mono

**References**

1   Digital Electronics Technology By D C Green, Wheeler And Company
2   Digital Electronics circuits and systems by V.K.Puri, TMH
3   Digital Computer Fundamental By P C Bartee Inter-National Student Edition
4   Digital systems and microprocessors by Douglas Hall, TMH
5   Microprocessor Architecture, Programming and Application by Gaonkar, Wiley Eastern Publication.

**Useful Links**

http://www.nptel.ac.in, Digital System
www.ocw.mit.edu

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | √ | | | | √ | | | √ | | |
| CO2 | | √ | | | √ | | √ | | √ | |
| CO3 | √ | | | | √ | √ | √ | | √ | |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | 05 | 05 | | 10 |
| Understand | 05 | 05 | 02 | 10 |
| Apply | 05 | 05 | 03 | 20 |
| Analyze | | | | |
| Evaluate | | | 02 | 20 |
| Create | | | 03 | |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering, Karad
# First Year M.C.A.
# MC102:Computer Organisation and Architecture

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/Week | CT1 | 15 |
| **Total Credits** | 3 | CT2 | 15 |
| | | TA | 10 |
| | | ESE | 60 |

**Course Objectives**

1   To have a thorough understanding of the basic structure and operation of a digital computer.
2   To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division.
3   To study the different ways of communicating with I/O devices and standard I/O interfaces.
4   To study the hierarchical memory system including cache memories and virtual memory.

**Course Contents**

|  |  | **Hours** |
|---|---|---|
| **Unit I** | **Basic Structure of Computers:**<br>Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Performance ó Processor Clock, Basic Performance Equation, Pipelining and Superscalar Operation, Clock Rate, Instruction set: CISC and RISC, Performance Measurement, Historical Perspective. | 8 |
| **Unit II** | **Machine Instructions and Programs:**<br>Numbers, Arithmetic Operations, and Characters, Memory Locations and Addresses, Instruction and Instruction Sequencing, Addressing Modes, Basic Input/Output Operations. | 8 |
| **Unit III** | **Input/Output Organization:**<br>Accessing I/O Devices, Interrupts, Direct Memory Access, Buses, Interface Circuits, Standard I/O Interfaces. | 8 |
| **Unit IV** | **The Memory System:**<br>Read Only Memories, Speed, Size and Cost, Cache Memories, Performance consideration, Virtual Memories, Memory Management Requirements, Secondary Storage. | 8 |
| **Unit V** | **Basic Processing Unit:**<br>Some Fundamental Concepts, Execution of a Complete Instruction, Pipelining: Basic Concepts, Data Hazards. | 8 |

**Course Outcomes (CO)**

1   Identify Computer system components
2   Analyze the Memory System, Speed, Size, Cost and Performance

| 3 | Demonstrate the Instruction execution concept |

**Text Books**

| 1 | Computer Organization by Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, Mc-Graw Hill |
| 2 | Computer Architecture and Organization, John P. Hayes, 3rd Edition, McGraw-Hill Series |

**References**

| 1 | Computer Organization & Architecture, William Stallings, 7th Edition, PHI |
| 2 | Computer Systems Design and Architecture, Vincent P. Heuring & Harry F. Jordan, 2nd Edition, Pearson Education |

Mapping of CO with PO

|     | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | √   |     |     |     |     |     | √   | √    |      |      |
| CO2 | √   | √   | √   |     | √   |     | √   |      | √    |      |
| CO3 | √   |     |     |     | √   | √   | √   | √    | √    |      |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|-----------------|-----|-----|-----|-----|
| Remember        |     |     |     |     |
| Understand      | 02  | 02  | 02  | 10  |
| Apply           | 05  | 05  | 03  | 20  |
| Analyze         | 04  | 04  | 03  | 20  |
| Evaluate        | 04  | 04  | 02  | 10  |
| Total           | 15  | 15  | 10  | 60  |

# Government College of Engineering Karad
# First Year M.C.A
# MC103: Discrete Mathematics

| **Teaching Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| Lectures | 3 Hrs/week | CT1 | 15 |
| Total Credits | 3 | CT2 | 15 |
| | | TA | 10 |
| | | ESE | 60 |

## Course Objectives

1  To construct simple mathematical proofs and possess the ability to verify them
2  To comprehend formal logical arguments
3  Be skillful in expressing mathematical properties formally via the formal language of propositional logic and predicate logic
4  Be able to specify and manipulate basic mathematical objects such as sets, functions, and relations and will also be able to verify simple mathematical properties that these objects possess

## Course Contents

**Hours**

**Unit I**   **Relations**
Introduction, Product Sets, Relations, Pictorial Representatives of Relations, Composition of Relations, Types of Relations, Closure Properties ,Equivalence Relations ,Partial Ordering Relations ,n-ARY relations, A Relational Model for databases

**Ordered Sets and Lattices**
Introduction, Ordered Sets, Hasse Diagrams of Partially Ordered Sets, Consistent Enumeration, Supremum and Infimum, Isomorphic (Similar) Ordered Sets, Well-Ordered Sets, Lattices, Bounded Lattices, Distributive Lattices, Complements, Complemented Lattices

6

**Unit II**   **Graph Theory**
Introduction, Data Structures ,Graphs and Multigraphs,Subgraphs, Isomorphic and Homeomorphic Graphs,Paths, Connectivity,Traversable and Eulerian Graphs, Bridges of Königsberg,Labeled andWeighted Graphs ,Complete, Regular, and Bipartite Graphs,Tree Graphs,Planar Graphs,Graph Colorings,Representing Graphs in Computer Memory,
Graph Algorithms,Traveling-Salesman Problem

**Binary Trees**
Introduction,Binary Trees,Complete and Extended Binary Trees,Representing Binary Trees in MemoryTraversing Binary Trees,Binary Search Trees,Priority Queues, Heaps,Path Lengths, Huffman¢s Algorithm,General (Ordered Rooted) Trees Revisited

10

**Unit III**   **Boolean algebra**
Introduction,Basic Definitions ,Duality,Basic Theorems,Boolean Algebras as Lattices,Representation Theorem,Sum-of-Products Form for Sets,Sum-of-Products Form for Boolean Algebras,Minimal Boolean Expressions, Prime

6

Implicants, Logic Gates and Circuits, Truth Tables, Boolean Functions, Karnaugh Maps,Solved Problems,Supplementary Problems

**Unit IV**  **Theory of Automata & Regular Sets and Regular**

Grammar: Definition of automata, Description of Finite Automata, Transition Systems, Properties of transition function, Acceptability of a string by FA. Non- Deterministic Finite State Machines ó Non- Deterministic Finite State Machines. The equivalence of DFA and N-DFA, Mealy and Moore machine, Minimization of Finite Automata, Regular Expressions, Finite Automata and Regular Expressions, Pumping Lemma for Regular sets, Application of Pumping Lemma, Closure properties of regular sets, Regular sets and regular grammar.                                                                                         10

**Unit V**  **Context free languages & Pushdown automata:**

Context free language and derivation tree, ambiguity in CFG, specification of CFG, normal forms for CFG, basic definitions, acceptance by PDA, PDA and CFG, parsing and push PDA, Introduction to Turing machine, model, representation, language acceptability and design.

10

**Course Outcome (CO):**
1  Understand fundamental mathematical concepts and terminologies such as sets, relations, functions.
2  Apply graph theory and binary tree models of data structures and state machines to solve problems of connectivity and constraints satisfaction.
3  Understand techniques for constructing mathematical proofs illustrated by discrete mathematical examples.

**Text Books**
1  Discrete Mathematics By Lipschutz
2  Theory of Computer Science By K.L.P.Mishra

**References**
1  Discrete Mathematical Structure By Rosen.
2  Discrete Mathematical Structure By Tremblay and Manohar.
3  Graph Theory By Narsing Deo.
4  Introduction To Computer Theory By Danniel I.A.Cohen,John Wiley and Sons
5  Introduction To Languages And Theory Of Computation By John C.Martin,TMH.
6  Graph Theory and Itøs Applications  By Gross Yellen, CRC Publication
7  SCHUMøs Solved Problems Graph Theory By V. K. Balkrishanan.
8  SCHUMøs Discrete Mathematics By Lipschutz, Marc Lars MGH

**Useful Links**
http://www.nptel.ac.in, Discrete Mathematical Structure
www.ocw.mit.edu

Mapping of CO and PO

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | √ |  |  |  | √ |  | √ | √ |  |  |
| CO2 | √ |  |  | √ | √ |  |  |  | √ |  |
| CO3 | √ |  |  | √ | √ |  | √ |  | √ | √ |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | 02 | 02 | 02 | 10 |
| Understand | 04 | 04 | 02 | 15 |
| Apply | 04 | 04 | 03 | 15 |
| Analyze |  |  |  |  |
| Evaluate | 05 | 05 | 03 | 20 |
| Create | 02 | 02 | 02 | 10 |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering, Karad
# First Year M.C.A.
# MC104: Data Structures and Algorithm

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | **CT1** | 15 |
| **Total Credits** | 3 | **CT2** | 15 |
| | | **TA** | 10 |
| | | **ESE** | 60 |

## Course Objectives

1  To learn how data structure concepts are useful in problem solving.
2  To implement different ways of implementing data structures such as stacks linked lists and trees.
3  To design and solve real life problems using various data structures efficiently.

## Course Contents

**Unit I**  **Basic Concepts and Linked Lists:** Data, Data representation and types, Notation of Data Structure, Linear, Non-linear Types data structure operations, Array, Records, Pointers, Linked List-Representation in memory, traversing and searching a linked list, insertion and deletion from a linked list, header and doubly linked list.        10

**Unit II**  **Stacks and Queues**: Definitions, array representation of stacks, arithmetic expression: polish notation, application of stack (quick sort, recursion, tower of Hanoi), queues, Dequeues, priority queues.        7

**Unit III**  **Trees and Graphs:** Binary trees, representing binary trees in memories, traversing binary trees, binary search trees, searching and inserting in binary trees, deleting in a binary search tree, Heap, Heap sort, path lengths, Huffman's algorithm, general trees.
**Graphs-** Graph theory terminology, sequential representation of graphs, adjacency matrix, path matrix, Warshall's algorithm for shortest path, Link representation of graphs, operation on graphs, traversing a graph.        10

**Unit IV**  **Searching and sorting: sorting** - insertion, selection, merge, radix sort, searching and data modification.        6

**Unit V**  **Indexing, Hashing and File Structure:** Basic concepts, indexing, B-tree index file, static and dynamic hash function.
File-physical storage media, records, files, sequential and random access files, Index sequential files, data dictionary, buffer management, inverted list and multilists.        8

## Course Outcomes (CO):

1  To learn how data structure concepts are useful in problem solving.
2  To implement different ways of data structures such as stacks, linked lists and trees
3  To analysis and design notation of algorithm

**Text Books**

1    Data structure by Lipschutz, MGH

**References**

1    Data and file structure by A. Tanenbaum by PHI
2    Data structure using C by Tremblay
3    Database system concepts by H.P.Korth

**Useful Links**

http://www.nptel.ac.in, Data Structures And Algorithms, Data Structures and Program Methodology
www.ocw.mit.edu

Mapping of CO and PO

|     | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | √   | √   |     |     | √   |     | √   | √    |      |      |
| CO2 |     | √   |     |     |     |     |     |      | √    |      |
| CO3 | √   | √   |     |     | √   |     |     |      | √    | √    |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|-----------------|-----|-----|----|----|
| Remember   | 05 | 05 | 02 | 10 |
| Understand | 05 | 05 | 03 | 10 |
| Apply      | 05 | 05 | 05 | 20 |
| Analyse    |    |    |    |    |
| Evaluate   |    |    |    | 20 |
| Total      | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad.
# First Year M.C.A.
# MC105: Software Engineering

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | **CT1** | 15 |
| **Tutorial** | 1 Hr/week | **CT2** | 15 |
| **Total Credits** | 4 | **TA** | 10 |
| | | **ESE** | 60 |

**Course Objectives**
1. Understand and implement SDLC in their academic projects
2. Implement any Software Process Model for building project
3. Build test cases and automation testing scripts for testing of project

**Course Contents**

| | | Hours |
|---|---|---|
| **Unit I** | **Introduction to Software Engineering:** The Evolving Role of Software, Software, The Changing Nature of Software, Legacy Software, Software Myths, A Generic View of process-Software Engineering, a process framework, The capability Maturity Model Integration(CMMI), Process Pattern, Process Assessment, Personal and Team Process Models, Process Technology, Product and Process. | 06 |
| **Unit II** | **Software Process Models:** Prescriptive Models, The Waterfall Models, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process, Agile View Of Process, Agile Process Model. | 06 |
| **Unit III** | **Software Requirement Engineering:** A Bridge to Design And Construction, Requirement Engineering Task, Initiating The Requirement Engineering Process, Eliciting Requirement, Developing Use Cases, Building the Analysis Models, Negotiating Requirement, Validating Requirement. <br> Software Building the Analysis Models: <br> Requirement Analysis, Analysis Modeling Approaches, Data Modeling Concepts, Object-Oriented Analysis, Scenario-Based Modeling, Flow Oriented Modeling, Class-Based Modeling, Creating Behavioral Model. <br> -Software Design Engineering: <br> Design within the Context of Software Engineering, Design Process and Design Quality, Design Concepts, The Design Model, Pattern-Based Software Design, Software Architecture, Data Design, Architectural Styles And Patterns, Architectural Design, Assessing Alternative Architectural Designs, Mapping Data Flow into a Software Architecture. | 10 |
| **Unit IV** | **Software Modeling Component-Level Design:** <br> What is Component, Designing Class-Based Components, Conducting Component-Level Design, Object Constraint Language, Designing | 8 |

Conventional Components, The Golden Rules, User Interface Analysis and Design, Interface analysis, Interface Design Steps, Design Evolution.

**Unit V**    **Software Testing Strategies:**
A Strategic Approach to Software Testing, Strategic Issues, Test Strategies for Conventional Software, Test Strategies for Object-Oriented Software, Validation Testing, System Testing, Art of Debugging.                                    06

**Unit VI**   **Software Testing Tactics:**
Software Testing Fundamentals, White Box And Black box Testing, White Box Testing, Basis path Testing, Control Structure Testing, Black Box Testing, Object-Oriented Testing Methods, Testing Methods Applicable at the class Level, Interclass Test Case Design, Testing for Specialized Environments, Architectures and applications, Testing Patterns.

**Software Product Metrics:**
Software Quality, Framework for product metrics, Metrics for the analysis Model, Metrics for the Design Model, Metrics for source Code, Metrics for testing, Metrics for Maintenance, Reengineering.

8

**Tutorial**
**A set of Tutorial/ problems based on above syllabus is to be submitted.**

**Course Outcomes (CO):**
1     Be able to understand and implement SDLC in their academic projects
2     Be able to  implement any Software Process Model for building project
3     Be able to  build test cases and automation testing scripts for testing of project

**Text Books**
1     Software Engineering ó a practitionerøs approach by Roger S. Pressman, MGH.

**References**
1     Software Engineering by Shoomar, PHI
2     System Analysis and Design by Award, TMH
3     An Integrated Approach to Software Engineering by Pankaj Jalote
**Useful Links**
http://www.nptel.ac.in, Software Engineering,
www.ocw.mit.edu

Mapping of CO and PO

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 |  |  |  |  | √ |  | √ | √ | √ |  |
| CO2 | √ |  | √ | √ | √ |  |  |  | √ | √ |
| CO3 | √ | √ |  | √ | √ |  | √ |  | √ | √ |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | 05 | 05 |  | 10 |
| Understand | 05 | 05 | 02 | 10 |
| Apply | 05 | 05 | 03 | 20 |
| Analyze |  |  |  |  |
| Evaluate |  |  | 02 | 20 |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
# First Year M.C.A.
## MC106: Digital Electronics and Microprocessor Lab

| **Laboratory Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| Practical | 2 Hrs/week | CA | 50 |
| Total Credits | 1 | | |

## Course Objectives

1. The students to know basic concepts of digital electronics and familiarity with basic chips
2. The students will be able to represent numerical values in various number systems and perform number conversions between different number systems
3. The students will be able to design arithmetic circuits using counters, registers, multiplexers, de-multiplexers etc

## Sample List of Experiments

| | |
|---|---|
| **Experiment 1** | Study of Basic gates. |
| **Experiment 2** | Study of Universal gates. |
| **Experiment 3** | Study of De Morganøs theorem using gates. |
| **Experiment 4** | Study of Boolean algebra |
| **Experiment 5** | Study of K map |
| **Experiment 6** | Study of MUX/DEMUX. |
| **Experiment 7** | Study of Encoder And Decoder |
| **Experiment 8** | Study of BCD t0 Seven Segment Display |
| **Experiment 9** | Study of R-S and J-K flip-flops. |
| **Experiment 10** | Study of D Flip flop and T-Flip-flop |
| **Experiment 11** | To study architecture of 8085 microprocessor. |
| **Experiment 12** | Write ALP for addition of two 8 bit numbers. |
| **Experiment 13** | Write ALP for subtraction of two 8bit numbers. |

## List of Submission

1. Total number of Experiments : 13

## Course Outcomes (CO)

1. Students will be able to design various arithmetic circuits, counter design, registers, multiplexers and de-multiplexers etc.
2. Students will be able to get knowledge of microprocessor based systems interfacing techniques.
3. Students will be able to verify different Laws.

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | | ç | | | ç | | ç | √ | | |
| CO2 | ç | | | | ç | ç | ç | | √ | |
| CO3 | ç | | ç | ç | | | ç | √ | √ | |

Assessment Pattern

| Skill Level | Exp 1 | Exp 2 | Exp 3 | Exp 4 | Exp 5 | Exp 6 | Exp 7 | Exp 8 | Exp 9 | Exp 10 | Exp 11 | Exp 12 | Exp 13 | CA |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Assembling | | ç | ç | | | | | | | | | ç | | |
| Testing | | | | | | | | | | | | | | |
| Observing/ implementing | ç | | | ç | ç | | | | ç | ç | | | ç | |
| Analyzing | ç | | | ç | ç | | | | ç | ç | | | | |
| Interpreting | | | | | | | | | | | | ç | | |
| Designing | | | | | ç | ç | | | | | | | | |
| Creating | ç | ç | | | | | | | | | | | ç | |
| Deducing conclusions | | | | | | | | | ç | ç | | | | |

# Government College of Engineering Karad
# First Year M.C.A.
# MC107: C Programming Lab

| Laboratory Scheme | | Examination Scheme | |
|---|---|---|---|
| Practical | 4 Hrs/week | CA | 25 |
| Tutorial | 2 | | |
| Total Credits | 4 | ESE | 50 |

## Course Objectives
1 To compile and run basic C program.
2 To apply fundamentals of arrays and string using c program.
3 To implement concept of structure and pointers.

## Sample List of Experiments
**Experiment 1** Program to sum of no. from m to n.
**Experiment 2** List of no from 1 to 35 which is not divisible by 5 and 7, the last digit is not 7.
**Experiment 3** Program to print prime no. up to ‑nønumberøs.
**Experiment 4** Program to sort an array.
**Experiment 5** Write a program to add first numbers using command line argument.
**Experiment 6** Writ a program to 3*3 matrix multiplication.
**Experiment 7** Program to calculate , find no of character, words and vowels.
**Experiment 8** Program to display Fibonacci series using function.
**Experiment 9** Program to display student information using structure.
**Experiment 10** Program to concatenate two strings and display no of characters.
**Experiment 11** Program to copy content of one file to another.
**Experiment 12** Program to display student record using structure and pointer.

## List of Submission
1 Total number of Experiments : 10
**Tutorial**
**A set of Tutorial/ problems based on above syllabus is to be submitted**
## Course Outcomes(CO):
1 Implement basic c programming concepts.
2 Analyze program behaviour and errors for different set of inputs
3 Solve various problem statements by using c programming.

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|------|------|------|------|------|------|------|------|------|------|------|
| CO1 | √ | | | √ | √ | | √ | √ | | |
| CO2 | √ | | | √ | √ | √ | | √ | √ | |
| CO3 | √ | | | √ | √ | √ | √ | | √ | |

Assessment Pattern

| Skill Level | Exp 1 | Exp 2 | Exp 3 | Exp 4 | Exp 5 | Exp 6 | Exp 7 | Exp 8 | Exp 9 | Exp 10 | CA |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-----|
| Assembling | | ç | ç | | | | | | | | |
| Testing | | | | | | | | | | | |
| Observing/ implementing | ç | | | ç | ç | | | | ç | ç | ç |
| Analyzing | ç | | | ç | ç | | | | ç | ç | ç |
| Interpreting | | | | | | | | | | | |
| Designing | | | | | ç | ç | | | | | |
| Creating | ç | ç | | | | | | | | | |
| Deducing conclusions | | | | | | | | | ç | ç | |

# Government College of Engineering, Karad
# First Year M.C.A.
# MC108: Data Structures and Algorithm Lab

| **Laboratory Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| **Practical** | 2 Hrs/week | CA | 25 |
| | | ESE | 50 |

**Total Credits**   1

## Course Objectives
1    To learn to design the basic data structure algorithms.
2    To apply the concepts of data structure for solving simple mathematical problems
3    To enable to implement complex data structures like trees & graphs in High level language.
4    To implement searching & sorting methods.

## Sample List of Experiments
**Experiment 1**    Program to implement array operations (Insert, Delete, Display)
**Experiment 2**    Program to sort an array using bubble sort.
**Experiment 3**    Program to search an element in array in array using linear & binary search.
**Experiment 4**    Program to implement linked list & its operations (Insert, Delete, Display).
**Experiment 5**    Program to search an element from linked list.
**Experiment 6**    Program to implement stack operation (PUSH, POP & Show).
**Experiment 7**    Program for conversion of infix expression to postfix expression.
**Experiment 8**    Program to evaluate postfix expression.
**Experiment 9**    Program to sort an array using quick sort method.
**Experiment 10**    Program to implement Tower Of Hanoi problem.
**Experiment 11**    Program to implement queue.
**Experiment 12**    Program for traversing of a binary tree (Preorder, Inorder, Postorder).
**Experiment 13**    Program to implement binary search tree.
**Experiment 14**    Program to implement heap sort method.
**Experiment 15**    Program to sort an array using insertion & selection sort.
**Experiment 16**    Program to sort an array using merge sort.
**Experiment 17**    Program to sort an array using radix sort method.
**Tutorial**
                    **A set of Tutorial/ problems based on above syllabus is to be submitted**
**List of Submission**
1    Total number of experiment**:** 10

## Course Outcomes (CO):
    After completion of the course the student will be able to
1    Implement the advance C programming concepts and searching, sorting methods
2    Implement sequential and linked representation of linear data structure.
3    Implement non linear data structure like tress and graph.

Mapping of CO and PO

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | √ | √ |  |  | √ |  | √ | √ |  |  |
| CO2 |  | √ |  |  |  |  |  |  | √ |  |
| CO3 | √ | √ |  |  | √ |  |  | √ | √ |  |

Assessment Pattern

| Skill Level | Exp 1 | Exp 2 | Exp 3 | Exp 4 | Exp 5 | Exp 6 | Exp 7 | Exp 8 | Exp 9 | Exp 10 | CA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Assembling |  | ç | ç |  |  | ç |  | ç |  |  |  |
| Testing |  |  |  |  |  |  | ç |  |  |  |  |
| Observing | ç |  |  | ç | ç |  |  | ç | ç | ç | ç |
| Analysing | ç |  |  | ç | ç |  | ç |  | ç | ç | ç |
| Interpreting |  |  | ç |  |  |  |  |  |  |  |  |
| Designing |  |  |  |  | ç | ç |  | ç |  |  |  |
| Creating | ç | ç |  |  |  |  | ç |  |  |  |  |
| Deducing conclusions |  |  |  |  |  |  | ç |  | ç | ç |  |

# Government College of Engineering Karad
## First Year M.C.A.
## MC109: Web Programming Lab

**Laboratory Scheme**                                                    **Examination Scheme**

**Practical**      2 Hrs/week                                    **CA**                50
**Tutorial**       2
**Total Credits**  3

## Course Objectives
1        To study basics of Internet.
2        To study HTML
3        To study DHTML

## Course Contents:
**Unit I**    **Overview of Internet Technology:**
           Internet, web site, www, server, client, IP address, tcp/ip protocol.
**Unit II**   **Detail Study of HTML:**
           What is HTML, History, creating, installing, viewing, and checking web pages, TAGS, core HTML elements 3. HTML links and addressing: What are URLøs, linking in HTML, Anchor attributes, Image maps.
**Unit III**  **Presentation and layout:**
           Image preliminaries, HTML image basics, maps and buttons,Text colors and background: Fonts colors in HTML, color attributes for bod, background images.
**Unit IV**   **Tables, layouts and frames:**
           Table creation and layouts, frame creation and layouts. Multimedia: Audio, video and animation.
**Unit V**    **Cascading style sheets:**
           Basics, creation and use.
**Unit VI**    **DHTML:** Introduction to DHTML, text, tables as dynamic elements of web page, use of dynamic fonts, filters and transitions, drag-drop and data binding.

## Sample List of Experiments
**Experiment 1**    Introduction to Internet Technology
**Experiment 2**    To create a web page using HTML for Anchor attributes.
**Experiment 3**    To create a web page in HTML using Image maps
**Experiment 4**    To create a web page in HTML with color and background effects.
**Experiment 5**    To create a web page in HTML using table creation and layout.
**Experiment 6**    To create a web page in HTML with multimedia effects.
**Experiment 7**    To create Cascading style sheets:

**Experiment 8**    To create a  dynamic web page in DHTML with multimedia effects
**Experiment 9**    To create a  dynamic web page in DHTML with dynamic elements of web page
**Experiment 10**   To create a dynamic web page in DHTML for filters and transitions, drag-drop and data binding.

## List of Submission
1        Total number of Experiments : 10

## Tutorial
         A set of Tutorial/ problems based on above syllabus is to be submitted

**Course Outcomes(CO):**

1      Students will be able to understand the basics of Internet
2      Students will be able to create the web page using HTML with all effects
3      Students will be able to create the web page using DHTML with all effects

**Text Books**    1.The Complete Reference HTML and XHTML 4/e Thomas A. Powell - TMH
            2. HTML beginners guide – by Wendy Willard – TMH
**References**    1. HTML black book by Steven Holzner – Dream-tech press
            2. HTML and CSS: the Complete Reference, Fifth Edition- by Thomas A. Powell- TMH

Mapping of CO and PO

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|------|------|------|------|------|------|------|------|------|------|------|
| CO1 | ç |  |  | ç | ç |  | ç | √ |  |  |
| CO2 | ç |  |  | ç | ç | ç |  |  | √ |  |
| CO3 | ç |  |  | ç | ç |  | ç |  | √ | √ |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|------|------|------|------|------|
| Remember | 02 | 02 | 02 | 10 |
| Understand |  |  |  |  |
| Apply | 05 | 05 | 03 | 20 |
| Analyze |  |  |  |  |
| Evaluate | 08 | 08 | 05 | 30 |
| Create |  |  |  |  |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
# First Year M.C.A.
# MC201: Computer Oriented Numerical and Statistical Methods

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | **CT1** | 15 |
| **Tutorial** | 1 Hr/week | **CT2** | 15 |
| **Total** | 4 | **TA** | 10 |
| **Credits** | | | |
| | | **ESE** | 60 |

**Course Objectives**

1. To make the students to understand the basic concepts and master the Numerical and Statistical techniques in scientific computing.
2. To develop mathematical skills and enhance logical thinking power of students.
3. To understand the applications of Numerical and Statistical techniques in scientific computing.

| **Course Contents** | | **Hours** |
|---|---|---|
| **Unit I** | **Solution of transcendental polynomial equations and** | |
| | **Linear Equation:** Bisection method, False-position Method, N-R method. (Implementation of these methods using ‑Cø language),Linear Equation- Cramerøs rule, Gauss elimination method, Gauss Jordon method, Gauss-seidel iterative method (Implementation of these methods using ‑Cø language) | 8 |
| **Unit II** | **Interpolation and Numerical Integration**: Lagrangeøs method, Newtonøs forward and backward formulae, sterling interpolation. (Implementation of these methods using ‑Cø language) Trapezoidal, Simpsonøs Rule 1/3, Simpsonøs Rule 3/8, Rombergøs method Implementation of these methods using ‑Cølanguage) . | 8 |
| **Unit III** | **Ordinary differential equations:** Eulerøs method, Taylor series method, Runge-Kutta method (Implementation of these methods using ‑Cølanguage) | 6 |
| **Unit IV** | **Frequency distributions, Sampling and Test:** Mathematical expectations, moment generating and cumulative functions discrete probability distribution, least square co-relation and regression method. Sampling and test-Introduction, types of sampling, sampling distribution, standard error, test of significance, null hypothesis, test of significance for large samples, test for difference of proportions, test for single mean and difference of standard deviation, CHI square distribution, CHI square variate, test for population variats. | 10 |
| **Unit V** | **Data validation and information abstraction:** Method of collecting data, efficiently gathering information from data, charting, decides between alternatives, estimating cost of uncertainty, forecasting technique. | 8 |

**Course Outcomes (CO):**

1. Students will able to define the mathematical and statistical techniques
2. Students will able to solve Numerical Methods for real life problems.

3    Students will able to design the computer algorithms for solving Numerical Methods for problem solving

**Text Books**

1    Computer oriented Numerical methods by V. Rajaraman, PHI.

2    Introductory methods of Numerical Analysis by S.S. Sastry, PHI .

**References**

1    Numerical Methods for engineers by S.C. Chapra, TMH

2    Fundamentals of mathematical statistics by S.C. Gupta, V.K Kapoor, S. Chand

**Useful Links**

1    http://www.ac.in, Numerical methods of Ordinary and Partial Differential Equations, Numerical Analysis.

2    www.ocw.mit.edu

Mapping of CO and PO

|      | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|------|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1  | ç   |     |     | ç   | ç   |     | ç   | √    |      |      |
| CO2  | ç   |     |     | ç   | ç   | ç   |     |      | √    |      |
| CO3  | ç   |     |     | ç   | ç   |     | ç   |      | √    | √    |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|-----------------|-----|-----|-----|-----|
| Remember        | 02  | 02  | 02  | 10  |
| Understand      |     |     |     |     |
| Apply           | 05  | 05  | 03  | 20  |
| Analyze         |     |     |     |     |
| Evaluate        | 08  | 08  | 05  | 30  |
| Create          |     |     |     |     |
| Total           | 15  | 15  | 10  | 60  |

# Government College of Engineering, Karad
# First Year M.C.A.
# MC202:Principles of Management

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/Week | CT1 | 15 |
| **Total Credits** | 3 | CT2 | 15 |
| | | TA | 10 |
| | | ESE | 60 |

## Course Objectives
1   To study the concept and practices of management.
2   To help the students gain understanding of the functions and responsibilities of the manager.
3   To provide them tools and techniques to be used in the performance of managerial job.
4   To enable them to analyze and understand the environment of the organization.

## Course Contents

| | | Hours |
|---|---|---|
| **Unit I** | **Nature and Functions Management:** Importance and Definition of management, functions and the process of management, Roles of a manager, Level of management, Managerial skills, Management and administration, Management-a science or an art?, Management-a profession?, Professional management vs. family management. | 8 |
| **Unit II** | **Planning:** Nature and importance of planning, Forms and types of plans, steps in planning, Limitation of planning, Making Planning effective, strategic planning in Indian industry.<br>**Decision Making:** Meaning and types of decision, Steps and rationality in decision-making, Environment in decision-making, Common difficulties in decision-making. | 8 |
| **Unit III** | **Organization:** Meaning, Process and span of Management, Principles of Organization, Departmentalization, Organization Structure. Committees, Teams.<br><br>**Coordination:** Distinction between coordination and cooperation, Need and Requisites for coordination, Types and techniques of coordination, Difficulty of coordination, System approach and coordination | 8 |
| **Unit IV** | **Staffing and Training and Development:** Importance of Staffing, Manpower Planning, Recruitment, Selection, Placement, Induction.<br>Difference between Training, Education and Development, Necessity of Training Programme, Training Types and Methods. | 6 |
| **Unit V** | **Performance Appraisal:** Purpose of appraisal, Essentials of a good appraisal system, Criteria of performance appraisal, Performance appraisal methods, Appraisal interview, Appraisal of management, Limitations of appraisal methods, Performance appraisal in Indian industries, Need fo0r an appraisal system to suit Indian behaviour.<br>**Human Resource Management:** Meaning of Human Resources, Meaning & Definition of HRM, Nature of HRM, Scope of HRM, Importance of HRM, Role of RM, Objectives of HRM, HR Manager | 10 |

## Course Outcomes (CO)
4          Apply the practices of management skills.

5        Analyse the electiveness of planning in software industry.
6        Understand the components and the goals of training and development.
7        Evaluate the performance appraisal of staff.

**Text Books**
1    Principles Of Management by P.C. Tripathi and P. N. Reddy

**References**
1    Principles of Management by Heinz Weihrich
2    Principles of Management by R M Gupta, S. Chand and Co.
3    Essential of Management by Koontz, Weihrich, Tata McGraw Hill
4    Personal and Human Resource Management by P. Subha Rao, Himalaya Publications

**Mapping of CO with PO**

|     | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | ç   |     |     |     |     | ç   |     | ç    | ç    |      |
| CO2 |     |     | ç   |     |     |     | ç   |      |      | ç    |
| CO3 |     | ç   |     |     | ç   |     |     |      | ç    |      |
| CO4 |     |     |     | ç   |     | ç   |     |      |      |      |

**Assessment Tools**

| Assessment Tool | K1 | K2 | K3 | K4 | K5 | K6 |
|-----------------|----|----|----|----|----|----|
|                 |    | CO1 | CO2 | CO3 | CO4 |    |
| Class Test I – 15 Marks | | 02 | 05 | 05 | 03 | |
| Class Test II- 15 Marks | | 02 | 05 | 05 | 03 | |
| Teachers Assessment – 10 Marks | | 02 | 03 | 03 | 02 | |
| ESE Assessment – 60 Marks | | 08 | 20 | 20 | 12 | |

**Recommended Assessment Pattern**

| Recommended Assessment Pattern Level No. | Knowledge Level | Class Test I | Class Test II | Teachers Assessment | End Semester Examination Marks |
|------------------------------------------|-----------------|--------------|---------------|---------------------|-------------------------------|
| K1 | Remember |    |    |    |    |
| K2 | Understand | 02 | 02 | 02 | 08 |
| K3 | Apply | 05 | 05 | 03 | 20 |
| K4 | Analyze | 05 | 05 | 03 | 20 |
| K5 | Evaluate | 03 | 02 | 02 | 12 |
| K6 | Create |    |    |    |    |
| Total |  | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
## First Year M.C.A.
## MC203: Object Oriented Programming

| Teaching Scheme | | Examination Scheme | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | CT1 | 15 |
| | | CT2 | 15 |
| **Total Credits** | 3 | TA | 10 |
| | | ESE | 60 |

## Course Objectives

1. To learn Object Oriented principles such as abstraction, polymorphism etc

2. To understand and apply the principles hiding, localization and modularity in software development.

3. Use the generic programming features of Object Oriented Concepts

4. Design and implement reliable and maintainable object-oriented applications of moderate complexity composed of several classes

## Course Contents                                                    Hours

**Unit I     NET Architecture**

Block diagram of .net framework, The Common Language Runtime, Advantages of Managed Code, A Closer Look at Intermediate Language & Assemblies, Support for Object Orientation and Interfaces, Distinct Value and Reference Types, Strong Data Typing, Garbage Collection          8

**Unit II     C# Basics**

Compiling and Running the Program, Variables, Data Types, Flow Control, Enumerations, Namespaces, The using Statement, Namespace Aliases, The Main() Method, Multiple Main() Methods, defining & using functions & its scope, Passing Arguments to Main(),Parameter passing technique, Console I/O ..          8

**Unit III     Objects and Types**

Classes and Structures, Class Members, Data Members, Function Members, read-only Fields, properties and indexer, The Object Class, System. Object Methods, The To String() Method

6

**Unit IV     Inheritance and Polymorphism and Exception Handling**

Introduction Types      of      Inheritance, Implementation Inheritance, Abstract      Classes and      Functions, Sealed      Classes and Functions, Constructors in Derived Classes, Interfaces, Defining and Implementing Interfaces, Derived Interfaces, Polymorphism, Method overloading, Operator overloading, Try, catch, throw, finally, Nested try, Custom exception          10

**Unit V**    **Windows base application ,LINQ, Crystal Reports:** Working with Drives, Directories, and Files, The Drive Info Class, The Directory and Directory Info Classes, File and File Info, Working with Paths, File and Directory Properties, Attributes, and Access Control Lists, Creating a Windows Form Application, Standard Controls and Components, Properties and Events of the controls, Forms, Form Class, Multiple Document Interface (MDI),Custom Controls (user Controls

8

**Course Outcomes (CO):**

1. Analyse and design solution to a problem using object-oriented programming concepts.

2. Understanding the proper class protection mechanism to provide security.

3. Applying knowledge to demonstrate the use of virtual functions to implement polymorphism

4. Evaluate and implement the features of Object Oriented Concepts including templates, exceptions and file handling for providing programmed solutions to complex problems.

**Text Books**

1. Programming in C#: A Primer.By E Balgurusamy

2. Professional C# ó Wrox Publication**.** BySimon Robinson, Christain Nagel,Karli Watson, Jay Glynn, Morgan Skinner, Bill Evjen

**Useful Links**

1. http://www.nptel.iitm.ac.in

2. www.ocw.mit.edu

Mapping of CO and PO

| Course Outcomes | Program Outcomes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
| 1 | ç | | | | | ç | ç | | ç | |
| 2 | | | ç | | ç | | | ç | | |
| 3 | ç | | | | | | | | ç | |
| 4 | | ç | | ç | | | | ç | ç | |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | | | | |
| Understand | 03 | 03 | 03 | 15 |
| Apply | 04 | 04 | 03 | 20 |
| Analyze | 04 | 04 | 03 | 15 |
| Evaluate | 04 | 04 | 01 | 10 |
| Create | | | | |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
## First Year M.C.A.
## MC204: System Software

**Teaching Scheme**

**Lectures**  3 Hrs/week

**Total**  3
**Credits**

**Examination Scheme**

| | |
|---|---|
| CT1 | 15 |
| CT2 | 15 |
| TA | 10 |
| ESE | 60 |

## Course Objectives

1  To understand essential elements and theoretical foundations of System Software (operating system, networks, the Web, the Internet, and databases etc.)

2  To understand and apply the architectures of System Software in the Software development

3  To understand the designing of Assembler, Compiler and Loader.

| Course Contents | Hours |
|---|---|
| **Unit I   Assemblers**<br>General design procedure ódesign assembler, statement of problem, data structure, format of database, algorithm and flowchart of various passes of assembler. | 8 |
| **Unit II   Macro-processor**<br>Macro-instruction, features of macro facility-Macro instruction argument, conditional macro expansion, macro calls within macros, macro instruction defining macros, implementation. | 8 |
| **Unit III   Loader**<br>Loading schemes-compile and go ,general loader ,absolute loader ,subroutine linkages ,reloading loaders ,direct linking loaders ,blinders ,linking loaders ,overlays ,dynamic blinders ,design of an absolute loader and designing of direct linking loader | 10 |
| **Unit IV   Compilers:**<br>Statement of problem, phases of compiler. | 6 |
| **Unit V   Compiler**<br>Data structures, recursion call and return statement, storage classes, implementation, block structure compiler writing tools. | 8 |

## Course Outcomes (CO):

1  Students will be able to understand the components of Assembler, Compiler and Macro-processor.

2  Students will be able to understand and apply the functions of Assembler, Compiler and Macro-processor

| 3 | Students will be able to understand and familiar with the formal system and software tools components |
|---|---|

**Text Books**

| 1 | System Programming by J.J.Donavan , TMH |
|---|---|

**References**

| 2 | Introduction to system software by D.M.Dhamdhere, TMH |
|---|---|
| 3 | System programming and operating system by D.M. Dhamdhere, TMH |

**Useful Links**

| 1 | http://www.nptel.iitm.ac.in, Principles of Compiler Design |
|---|---|
| 2 | www.ocw.mit.edu |

Mapping of CO and PO

| Course Outcomes | Program Outcomes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
| 1 | ç | ç | | | ç | | | ç | | |
| 2 | | ç | ç | ç | ç | | ç | ç | ç | |
| 3 | ç | | | | ç | ç | ç | | ç | ç |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | 05 | 05 | | 10 |
| Understand | 05 | 05 | 02 | 10 |
| Apply | 05 | 05 | 03 | 20 |
| Analyze | | | | |
| Evaluate | | | 02 | 20 |
| Create | | | 03 | |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
# First Year M.C.A.
# MC205: Database Management System

| **Teaching Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| **Lectures** | 3 Hrs/week | CT1 | 15 |
| **Total Credits** | 3 | CT2 | 15 |
| | | TA | 10 |
| | | ESE | 60 |

**Course Objectives**

1 Understand basic database concepts, including the structure and operation of the relational data model.
2 Construct simple and moderately advanced database queries using Structured Query Language (SQL).
3 Understand and successfully apply logical database design principles, including E-R diagrams and database normalization
4 Understand the concept of a database transaction and related database facilities, including concurrency control, backup and recovery, data object locking and protocols, database security

**Course Contents**

| | | Hours |
|---|---|---|
| Unit I | **Introduction: Database-**System Applications, Purpose of Database Systems, Database Users and Administrators **Overview of the Design Process**- The Entity-Relationship Model, Constraints Removing Redundant Attributes in Entity Sets, Entity-Relationship Diagrams, Extended ER features | 6 |
| Unit II | **Introduction to the Relational Model** Structure of Relational Databases, Database Schema, Schema Diagrams, Relational Query Languages**,** Relational Operations, Database Design ó ER to Relational, Functional dependencies, Normalization, Normal forms based on primary keys (1 NF, 2 NF, 3 NF, BCNF, 4 NF, 5 NF), Loss less joins and dependency preserving decomposition **Relational Algebra –** Fundamental Operations | 10 |
| Unit III | **Introduction to SQL-**Overview of the SQL Query Language **-** SQL Data Definition, Basic Structure of SQL Queries, Additional Basic Operations, Set Operations, Null Values, Aggregate Functions, Nested Sub queries, Modification of the Database **Intermediate SQL-** Join Expressions, Views, Transactions, Integrity Constraints **Advanced SQL-** Functions and procedures, Triggers | 8 |

| | Unit IV | **Storage and File Structure** Overview of physical storage media, Magnetic disk RAID, Tertiary storage, File organization, Organization of records in files, Data dictionary storage | |
|---|---|---|---|
| | | **Transaction And Concurrency control**- Concept of transaction, ACID properties, Serializibility, States of transaction, Concurrency control, Locking techniques, Time stamp based protocols, Multiple Granularity, Deadlock handling | 8 |
| | Unit V | **Crash Recovery and Backup**- Failure classifications, storage structure, Recovery & atomicity, Recovery Algorithm, Failure with loss of Nonvolatile, Remote Backup System | |
| | | **Security and privacy** Database security issues, Discretionary access control based on grant & revoking privilege, Mandatory access control, Encryption, Additional issues related to security | 8 |

**Course Outcomes (CO)**

1   Students will be able to understand basic database concepts, structure and operation of the relational data model.
2   Students will be able to construct simple and moderately advanced database queries using SQL.
3   Students will be able to apply logical database design principles, E-R diagrams and database normalization.
4   Students will be able to know the concept of a database transaction, concurrency control, backup and recovery, data object locking and protocols and database security

**Text Books**

1.   Korth, Sudarshan , õDatabase System Conceptö, Mc Graw Hill
2.   Ramakrishnan & Gehrke , õDatabase Management Systemsö, Mc Graw Hill

**References**

1.   C.J.Date, õIntroduction to database systemsö, Pearson Education
2.   Elmasri Navathe, õFundamentals of Database Systemsö, Addison Wesley
3.   Nilesh Shah, õDatabase Systems using Oracleö, PHI
4.   Ramon A. Mata-Toledo, P.K.Cushman õFundamentals of SQL Programmingö, Tata Mc Graw Hill

**Useful Links**

http://www.nptel.ac.in,
www.ocw.mit.edu

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | ç | | | | | | ç | ç | | |
| CO2 | | | ç | ç | ç | ç | | ç | ç | ç |
| CO3 | | | | ç | | ç | | | ç | |
| CO4 | ç | | | | | | | | ç | ç |

Assessment Pattern

| Knowledge Level | CT1 | CT2 | TA | ESE |
|---|---|---|---|---|
| Remember | 05 | 05 | | 10 |
| Understand | 05 | 05 | 02 | 10 |
| Apply | 05 | 05 | 03 | 20 |
| Analyze | | | | |

| | | | | |
|---|---|---|---|---|
| Evaluate | | | 02 | 20 |
| Create | | | 03 | |
| Total | 15 | 15 | 10 | 60 |

# Government College of Engineering Karad
# First Year M.C.A.
# MCA206: Object Oriented Programming Lab

**Laboratory Scheme**                               **Examination Scheme**

**Practical**    4 Hrs/week                    **CA**      25

**Total Credits**    2                            **ESE**      50

**Course Objectives**
1. To get clear understanding of object oriented programming concepts.
2. To understand the logic and skill in object oriented programming.
3. To apply object oriented concepts to solve the real world problems..

**Sample List of Experiments**

**Experiment 1**    Write a program to produce the following output

```
1
2    3
4    5    6
7    8    9    0
```

**Experiment 2**    Write a program that takes values from user and then arrange in ascending & descending order

**Experiment 3**    Write a program that takes values from user and sorts them using Bubble sort.

**Experiment 4**    Write a program that takes values in an array then search for a value in the array using any search method.

**Experiment 5**    Write a program that copies the values of one array to a second array in reverse order.

**Experiment 6**    Write a program to illustrate multiple inheritance with virtual methods.

**Experiment 7**    Write a function that takes two values, num1 and num2 as command line arguments and return multiplication of these two numbers.

**Experiment 8**    Write a program to generate the mark sheet of the student

**Experiment 9**    Write a program of operator overloading.

**Experiment 10**    Write a program to count number of Vowels and Consonants from a given String

**Experiment 11**    Write a program to demonstrate exception handling for stack overflow.

**Experiment 12**    Write a program to perform text operation in a file.

**Experiment 13**    Write a program to convert a given number of days in term of years, weeks and days.

**Experiment 14**    Write a program to find sum of the elements of each row of the given matrix.

**Experiment 12**    Write a program to display the name of the current thread

**List of Submission**

1    Total number of Experiments : 10

**Course Outcomes(CO):**
1    Apply and implement major object oriented concepts. .
2    Understand and use major Object Oriented features.
3    Analyse design and development solution to real world problems applying OOP Concepts.

Mapping of CO and PO

|  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | ç | ç | ç | ç | ç |  |  | ç |  |  |
| CO2 | ç |  |  |  |  |  |  |  | ç |  |
| CO3 | ç | ç |  |  |  | ç | ç |  | ç |  |

Assessment Pattern

| Skill Level | Exp 1 | Exp 2 | Exp 3 | Exp 4 | Exp 5 | Exp 6 | Exp 7 | Exp 8 | Exp 9 | Exp 10 | CA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Assembling | ç |  | ç |  |  |  |  |  |  |  |  |
| Testing |  |  |  | ç |  | ç |  |  | ç |  |  |
| Observing/ implementing | ç | ç | ç | ç | ç | ç | ç | ç |  | ç | ç |
| Analyzing | ç | ç | ç | ç | ç | ç | ç | ç |  | ç | ç |
| Interpreting |  |  |  |  |  |  |  |  |  |  |  |
| Designing |  |  |  |  | ç |  |  | ç | ç |  |  |
| Creating | ç |  |  |  |  | ç |  |  |  |  |  |
| Deducing conclusions |  | ç |  |  |  |  | ç |  |  | ç |  |

# Government College of Engineering Karad
## First Year M.C.A.
## MC207: Database Management Systems Lab

| **Laboratory Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| **Practical** | 4  Hrs/week | **CA** | 25 |
| **Total Credits** | 2 | **ESE** | 50 |

## Course Objectives

1      To educate students with fundamental concepts of relational databases

2      To understand view, index, exceptions, joins in RDBMS

3      To construct simple and moderately advanced database queries using Structured Query Language (SQL).

4      To apply  triggers, functions, procedures, cursors in RDBMS

## Course Contents

**Experiment 1**      **A. Table**

Basic Data Types- Char, varchar/varchar2, long, number, Fixed

Commands to create table

Commands for table handling- Alter table, Drop table, Insert records

**B. Commands for record handling**

Update, Delete

Select with operators like arithmetic, comparison, logical

Query Expression operators

Ordering the records with orderby

Grouping the records

**C. SQL functions**

Date, Numeric, Character, conversion

Group functions avg, max, min, sum, count

Set operations- Union, Union all, intersect, minus

**Experiment 2**      **Exceptions**-Predefined and User-defined exceptions

**Experiment 3**      **Join concept**- Simple, equi, non equi, self, outer join

**Experiment 4**      **Nested queries and Sub-queries**

**Experiment 5**      **View** - Intro, create, update, drop

     **Index** -Introduction, create

**Experiment 6**      **Primary introduction to DBA**

User create, granting privileges (Grant, Revoke, Commit, Rollback, Savepoint)

**Experiment 7**      To demonstrate the use of package in PL/SQL.

**Experiment 8**      **Database Triggers**- Definition, syntax, parts of triggers, Types of triggers, enabling & disabling triggers

**Experiment 9**      **Sub programs**- Cursors

**Experiment 10**      **Procedures**- Definition, creating, Parameter

**Experiment 11**      **Function-** Definition & implementation

**Experiment 12**      To demonstrate the use of ODBC connection.

**List of Submission**

| | 1 | Minimum 10 experiments to be performed and evaluated Journal |

**Course Outcomes (CO):**

1. Students will be able to demonstrate fundamental concepts of relational databases
2. Students will be able to understand view, index, exceptions, joins in RDBMS
3. Students will be able to construct simple and moderately advanced database queries using SQL
4. Students will be able to apply triggers, functions, procedures, cursors in RDBMS

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| CO1 | ç | ç | | | ç | ç | ç | ç | | |
| CO2 | | ç | ç | ç | ç | | ç | ç | ç | |
| CO3 | ç | | | | ç | ç | | | ç | |
| CO4 | | | ç | ç | | | ç | ç | ç | |

Assessment Pattern

| Skill Level | Exp 1 | Exp 2 | Exp 3 | Exp 4 | Exp 5 | Exp 6 | Exp 7 | Exp 8 | Exp 9 | Exp 10 | Exp 11 | Exp 12 | CA |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|----|
| Assembling | | ç | ç | ç | ç | ç | ç | ç | | | | | |
| Testing | | | | | | ç | | ç | | | ç | ç | |
| Observing | ç | ç | ç | ç | ç | ç | ç | ç | ç | ç | ç | ç | |
| Analyzing | ç | ç | ç | ç | ç | ç | ç | | | ç | | | |
| Interpreting | | ç | ç | ç | ç | ç | ç | | ç | | ç | ç | |
| Designing | | ç | | | | ç | ç | | | | | | |
| Creating | | | ç | ç | ç | ç | ç | ç | | | ç | ç | |
| Deducing conclusions | | ç | ç | ç | ç | ç | ç | ç | ç | ç | ç | ç | |

# Government College of Engineering Karad
## First Year M.C.A.
## MC208: Seminar

| Laboratory Scheme | | Examination Scheme | |
|---|---|---|---|
| **Practical** | - | **CA** | 50 |
| **Tutorial** | 2 Hrs/Week | | |
| **Total Credits** | - | | |

## Course Objectives

1 To survey selected topics addressing issues of Computer Science and Engineering in society today.
2 To collect information on each topic (as in Objective 1) and organize the information on each topic into an analysis structured manner.
3 To develop your own opinions, particularly on controversial issues, based on a critical and reasoned approach to the information available.
4 To write your own analyses of the information and present your work in a variety of formats (written, oral, formal presentation, poster).

## Course Contents

The aim of the seminar is to make the students study something extra other than curriculum. They are expected to go through the latest trend pertaining to computer and allied fields and deliver the seminar by preparing report.
The other important aim of the seminar is to encourage and develop the faculties of personality, aptitude and knowledge of the students.

## Tutorial

Seminar presentation and report writing by individual student.

## Course Outcomes (CO)

1 Students will develop and support a relevant and informed thesis, or point of view, that is appropriate for its audience, purpose, discipline, and theme.
2 Students will be able to demonstrate effective writing skills and processes by employing the rhetorical techniques of academic writing, including invention, research, critical analysis and evaluation, and revision.
3 Students will be able to incorporate and document appropriate sources in accordance with the formatting style proper for the discipline and effectively utilize the conventions of standard written English.

Mapping of CO and PO

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|
| CO1 | ç | ç | ç | ç | | | | | ç | |
| CO2 | | ç | ç | ç | ç | ç | ç | | | ç |
| CO3 | ç | ç | ç | ç | | ç | ç | | ç | ç |

# Government College of Engineering Karad
## First Year M.C.A.
## MC208: Soft Skills

| **Laboratory Scheme** | | **Examination Scheme** | |
|---|---|---|---|
| **Tutorial** | 2 Hrs/week | **CA** | 50 |
| **Practical** | 2 Hrs/week | **Total Credits** | 4 |

## Course Objectives

1. To produce various genre of oral and written discourses.
2. To confidently & effectively communicate
3. To develop positive thoughts, positive language & positive expression leading to holistic outlook towards life

## Course Contents

**Unit I**    **Description:** The module description is transacted based on the theme Fashion and style. There are five modules under this topic. Each module has a specific outcome. Each module is dealt with the help of a linguistic tool that is interaction

**Module 1**                                                                     **Duration: 3 hrs**

**Objective: To produce speech**

A trigger ( picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a common theme. Groups in the class produce speech on this common theme.

**Module 2**                                                                     **Duration: 3 hrs**

**Objective: Reading a biographical sketch**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given to process reading. The text given here is a biographical sketch. Through this learners understand the features of biographical sketch, learn to read a text critically & track their own reading process. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 3**                                                                     **Duration: 3 hrs**

**Objective: Writing a description**

This module focuses on describing an event. The learners understand how to organize their ideas while writing a description. Develop insight into well formed expressions and finally edit their own description by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)

**Module 4**                                                                     **Duration: 3 hrs**

**Objective: Reading a news report.**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given to process reading. The text given here is a news report. Through this learners understand the features of  news report , learn to read a text critically & track their own reading process. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 5**                                                           **Duration: 3 hrs**

**Objective: Writing a Narrative**

This module focuses on understanding the features of a narrative. The learners understand how to organize their ideas while writing a narrative. Develop insight into well formed expressions and finally edit their own narrative by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)


**Unit II**   **Conversation:**

The domain conversation is transacted based on the theme Love and Romance. There are five modules under this domain. Each module has a specific outcome. Each module is dealt with the help of a linguistic tool that is interaction

**Module 1**                                                           **Duration: 3 hrs**

**Objective: To produce debate**

A trigger (picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a common theme. A debatable preposition is brought out on the common theme. The class debates by understanding the features of a debate.

**Module 2**                                                           **Duration: 3 hrs**

**Objective: Reading a description**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given to process reading. The text given here is a description. Through this learners understand how to read a text effectively & understand the sensory perceptions and emotions involved. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 3**                                                           **Duration: 3 hrs**

**Objective: Writing a Conversation**

Based on the trigger (picture/Image/video/ Audio/ Script) conversation is evolved through interaction among the characters seen in the trigger. The features of conversation are highlighted. The learners understand how to organize their ideas while writing a conversation. Develop insight into well formed expressions and finally edit their own

conversation by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)

**Module 4**                                                                 **Duration: 3 hrs**

**Objective: Reading an article.**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given to process reading. The text given here is a news an article. Through this learners understand the features of article, learn to read a text critically & track their own reading process. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 5**                                                                 **Duration: 3 hrs**

**Objective: Writing a Narrative**

This module focuses on understanding the features of a narrative. The learners understand how to organize their ideas while writing a narrative. Develop insight into well formed expressions and finally edit their own narrative by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)


**Unit III**   **Narrative:**

The domain narrative is transacted based on the theme Love and Entertainment. There are five modules under this domain . Each module has a specific outcome. Each module is dealt with the help of a linguistic tool that is interaction.

**Module 1**                                                                 **Duration: 3 hrs**

**Objective: To produce speech**

A trigger ( picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a common theme. Groups in the class produce a short speech on this common theme by understanding the features of speech.

**Module 2**                                                                 **Duration: 3 hrs**

**Objective: Reading a Narrative**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given to process reading. The text given here is a narrative. Through this learners understand how to read a text effectively & understand the sensory perceptions and emotions involved. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 3**                                                                 **Duration: 3 hrs**

**Objective: Writing a Narrative in groups**

A narrative is evolved based on the events that has occurred in the trigger (picture/Image/video/ Audio/ Script). The features of writing a narrative are highlighted. The learners understand how to organize their ideas while writing a narrative in groups. Develop insight into well formed expressions and finally edit group narratives by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)

**Module 4**                                                         **Duration: 3 hrs**

**Objective: To produce discussion**

A trigger (picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a line of discussion. The groups discuss on the line of discussion and present their views to the class.

**Module 5**                                                         **Duration: 3 hrs**

**Objective: Writing a Narrative individually**

This module focuses on understanding the features of a narrative. The learners understand how to organize their ideas while writing a narrative. Develop insight into well formed expressions and finally edit their own narrative by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)


**Unit IV**     **Attitude building**

The domain attitude is transacted based on the theme curriculum vitae. There are five modules under this domain . Each module has a specific outcome. Each module is dealt with the help of a linguistic tool that is interaction

**Module 1**                                                         **Duration: 3 hrs**

**Objective: To produce speech**

A trigger ( picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a common theme. Groups in the class produce a short speech on this common theme by understanding the features of speech.

**Module 2**                                                         **Duration: 3 hrs**

**Objective: Reading a biography**

Based on the trigger (picture/Image/video/ Audio/ Script) related to the theme a text is given on õAttitude is Altitudeö to process reading. Through this learners understand how to read a text effectively & understand the sensory perceptions and emotions involved. At the end of this process the learners come out with graphical organizers and there by construct multiple texts out of it.

**Module 3**                                                         **Duration: 3 hrs**

**Objective: Writing an essay**

Based on the trigger (picture/Image/video/ Audio/ Script)the learners are asked to write an essay on õIs disability the state of mindö. The features of writing an essay are highlighted. The learners understand how to organize their ideas while writing an essay in groups. Develop insight into well formed expressions and finally edit group it by identifying different errors (Morphological, Syntactic, Word order, punctuation etc)

**Module 4**                                                                 **Duration: 3 hrs**

**Objective: To produce speech**

A trigger ( picture/Image/video/ Audio/ Script) is used to initiate interaction through this the class arrives at a common theme. Groups in the class produce a short speech on õTurning their limitations into strengthsö by understanding the features of speech.

**Module 5**                                                                 **Duration: 3 hrs**

**Objective: To present their curriculum vitae'**
A trigger ( picture/Image/video/ Audio/ Script) is used to initiate interaction the class arrives at writing their comprehensive CV. They make a convincing presentation on their CV.

**Course Outcomes (CO):**
**After completing this course students will be able:**

1. To produce various genres of discourses such as conversations, descriptions, narratives, reports, essays, letters, biographical sketches, news reports, etc. both orally and in writing.
2. To participate in debates, discussions, seminars and speak effectively, fluently and forcefully
3. To read critically different genres of written English
4. To understand the differences between positive and negative attitude
5. To learn scientific methods of developing positive attitude towards self & others
6. To develop positive thoughts, positive language and positive expressions