

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(24+15)
Total Credits		139(74+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
1 st Year Class	2
2 nd and 3 rd 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	I	2(T)+2(P)	3	
Business Communication	II	2(T)+2(P)	3	
Professional Communication	III	2(T)+2(P)	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	4	2	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. A.Y. 2018-19)
Semester – I

SR. NO.	COURSE CODE	COURSE TITLE	L	T	P	CONTACT HRS /WK	CREDITS	EXAM SCHEME				
								CT1	CT2	TA/CA	ESE	TOTAL
1	MC1101	Digital Electronics & Microprocessor	3	-	-	3	3	15	15	10	60	100
2	MC1102	Principle of Management	3	-	-	3	3	15	15	10	60	100
3	MC1103	Mathematical Foundations for Computer Science	3		-	3	3	15	15	10	60	100
4	MC1104	Data Structures	3	-	-	3	3	15	15	10	60	100
5	MC1105	Software Engineering	3	1	-	4	4	15	15	10	60	100
6	MC1106	Digital Electronics & Microprocessor Lab.	-	-	2	2	1	-	-	50	-	50
7	MC1107	C Programming Lab	-	2	4	6	4	-	-	25	50	75
8	MC1108	Data Structure Lab	-	-	2	2	1	-	-	25	50	75
9	MC1109	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

CT2- Class Test 2

TA/CA- Teacher Assessment for theory courses / Continuous Assessment for lab courses

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 2018-19)
Semester – II

Sr. No.	Course Code	Course Title	L	T	P	Contact Hrs/Wk	Credits	EXAM SCHEME				
								CT1	CT2	TA/CA	ESE	TOTAL
1	MC1201	Computer Oriented Numerical and Statistical Methods	3	-	-	3	3	15	15	10	60	100
2	MC1202	Computer Organisation	3	-	-	3	3	15	15	10	60	100
3	MC1203	Object Oriented Programming	3	-	-	3	3	15	15	10	60	100
4	MC1204	System Software	3	-	-	3	3	15	15	10	60	100
5	MC1205	Database Management System	3	-	-	3	3	15	15	10	60	100
6	MC1206	Object Oriented Programming Lab	-	-	2	2	1	-	-	25	50	75
7	MC1207	Database Management System Lab	-	-	2	2	1	-	-	25	50	75
8	MC1208	Seminar	-	2	-	2	2	-	-	50	-	50
9	MC1209	Web Programming Lab.	-	1	4	5	3	-	-	25	-	25
10	MC1210	Business Communication	-	2	2	4	3	-	-	25	-	25
		Total	15	5	10	30	25	75	75	200	400	750

L- Lecture T-Tutorial P-Practical

CT1- Class Test 1

CT2- Class Test 2

TA/CA- Teacher Assessment for theory courses / Continuous Assessment for lab course

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.

MC1101: 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: Introduction , Digital Signal, Basic Digital Circuits, The NAND,NOR Operations, EXOR Operation, Introduction to number system, Number Systems, Binary Number Systems, signed binary numbers, binary arithmetic, 2's complement arithmetic, Octal Number Systems, Hexadecimal Number Systems.	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, Demultiplexer.	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, 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.	8
Unit V Instruction Set of Intel 8085: 8085 instructions Group-Data transfer groups-Arithmetic group, logical group, branch group, and Stack, I/O and machine group.	8

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

Text Books

- 1 Modern Digital Electronics By R P Jain TMH ISBN- 0070494924
- 2 Fundamental Of Microprocessor And Microcomputer By B Ram Dhanpat Rai Publication
- 3 Microprocessor Architecture, Programming and Application by Gaonkar, Wiley Eastern Publication.

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

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
Analyse				
Evaluate			02	20
Create			03	
Total	15	15	10	60

Government College of Engineering, Karad
First Year M.C.A.

MC1102:Principles of Management

Teaching Scheme

Lectures 3 Hrs/Week

Total Credits 3

Examination Scheme

CT1 15

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. 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. 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. 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. 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)

- 1 Apply the practices of management skills.
- 2 Analyse the electiveness of planning in software industry.
- 3 Understand the components and the goals of training and development.
- 4 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 Wehrich
- 2 Principles of Management by R M Gupta, S. Chand and Co.
- 3 Essential of Management by Koontz, Wehrich, 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	√					√		√	√	
CO2			√				√			√
CO3		√			√				√	
CO4				√		√				

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

MC1103: Mathematical Foundations of Computer Science

Teaching Scheme

Lectures 3 Hrs/week

Total Credits 3

Examination Scheme

CT1 15

CT2 15

TA 10

ESE 60

Course Objectives:

At the end of the course, the student should be able to:

- 1 Construct simple mathematical proofs and possess the ability to verify them
- 2 Formulate logic expressions for a variety of applications; convert a logic expression into a Boolean circuit, and vice versa
- 3 Design relational databases; design finite automata to recognize string patterns and use trees and graphs to formulate computational problems.
- 4 Analyze the running time of non-recursive algorithms with loops by means of counting
- 5 Analyze the running time of divide-and-conquer recursive algorithms by means of recurrence equations.

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	9
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 and Weighted Graphs, Complete, Regular, and Bipartite Graphs, Tree Graphs, Planar Graphs, Graph Colorings, Representing Graphs in Computer Memory, Graph Algorithms, Traveling-Salesman Problem	6
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 Implicants, Logic Gates and Circuits, Truth Tables, Boolean Functions, Karnaugh Maps, Solved Problems, Supplementary Problems	6

Unit IV	Theory of Automata & Regular Sets and Regular Automata, Grammars and Languages: Regular languages and finite automata, Context-free languages and pushdown automata, Turing machines, Some other computing models and formalisms, their equivalence with Turing machines, Undecidability.	10
Unit V	Probability– Sample space, Distributions, Random Variables, Expectation, Tail Inequalities - Chernoff Bound, Chebyshev inequality, Functions of random variables, Applications.	8
Unit VI	Linear Algebra– Fields, Vector Spaces, Basis, Matrices and Linear Transformations, Eigen values, Orthogonality, Vector and Matrix Norms - Applications to optimization problems and graph theory.	6

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 Dannie I.A.Cohen, John Wiley and Sons
- 5 W. Feller, An Introduction to Probability Theory and Its Applications, Wiley; vol. 1 & 2, 1971.
- 6 Jean Gallier, Discrete mathematics, Springer, 2011.
- 7 John Hopcroft, Rajeev Motowani and Jeffrey Ullman, Automata Theory, Languages, and Computation, 3rd edition, 1974.
- 8 Gilbert Strang, Introduction to Linear Algebra, 4th Edition, Wellesley-Cambridge Press, Wellesley, MA, 2009.

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.
MC1104: Data Structures

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: Data, Data representation and types, Notation of Data Structure, Linear, Non-linear Types data structure operations, Array, Records, Pointers	5
Unit II	Linked Lists: Linked Representation in memory, traversing and searching a linked list, insertion and deletion from a linked list, singly and doubly linked list.	5
Unit III	Stacks and Queues: Definitions, array representation of stacks, arithmetic expression: polish notation, application of stack, queues, Dequeues, priority queues.	7
Unit IV	Trees: 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, path lengths, Huffman's algorithm, general trees.	10
Unit V	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.	6
Unit VI	Searching and sorting: Searching techniques, sorting - insertion, selection, merge, radix sort, searching and data modification.	7

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 analyze and design notation of algorithm

Text Books

- 1 Data structure by Lipschutz, MGH
- 2 Data and file structure by A. Tanenbaum by PHI

References

- 1 Data structure using C++ by Tremblay

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	√	√			√		√	√		
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.

MC1105: 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, 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, Agile View Of Process.	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. Software Building the Analysis Models: Requirement Analysis, Analysis Modeling Approaches, Data Modeling Concepts, Object-Oriented Analysis, Scenario-Based Modeling, Flow Oriented Modeling, Class-Based Modeling, Creating Behavioral Model.	06
Unit IV Software Design Engineering: 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.	06
Unit V Software Modeling Component-Level Design: What is Component, Designing Class-Based Components, Conducting Component-Level Design, Object Constraint Language, Designing Conventional Components, The Golden Rules, User Interface Analysis and Design, Interface analysis, Interface Design Steps, Design Evolution.	06

Unit VI 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.

06

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 cases and automation t scripts for projects as required and design.

Text Books

- 1 Software Engineering – a practitioner’s 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.

MC1106: Digital Electronics and Microprocessor Lab

Laboratory Scheme

Practical 2 Hrs/week

Total Credits 1

Examination Scheme

CA 50

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

Course Contents:

Based on syllabus of Digital Electronics & Microprocessor having course code: MC101

Sample List of Experiments(Not restricted to, only for reference)

- Experiment 1** Study of Basic gates.
Experiment 2 Study of Universal gates.
Experiment 3 Study of De Morgan's 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 to 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 Implementation of 8085 microprocessor instruction set

List of Submission

- 1 Total number of Experiments based on syllabus : 10

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		√			√		√	√		
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	Exp 11	Exp 12	CA
Assembling		√	√									√	
Testing											√	√	
Observing/ implementing	√			√	√				√	√		√	
Analyzing	√			√	√				√	√	√	√	
Interpreting													
Designing					√	√					√	√	
Creating	√	√										√	
Deducing conclusions									√	√	√	√	

Government College of Engineering Karad
First Year M.C.A.

MC1107: 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.

Course Contents:

Unit I Overview:

History of C, Importance of C, Basic Structure of C Programs, Executing a C Program, Constants, Variables, and Data Types:

Character Set, C Tokens, Keywords and Identifiers, Constants Variables, Data Types, Declaration of Storage classes. Operators and Expressions: Arithmetic Operators , Relational Operators , Logical Operators , Assignment Operators , Increment and Decrement Operators , Conditional Operator , Bitwise Operators , Special Operators , Operator Precedence and Associativity

Managing Input and Output Operations : Formatted Input ,Formatted Output 98

Unit II Decision Making and Branching:

Decision Making with IF Statement, Simple IF Statement, The IF....ELSE Statement, Nesting of IF...ELSE Statements, The ELSE IF Ladder, The Switch Statement, The? : Operator, The GOTO Statement.

Looping: WHILE ,DO, FOR LOOPS

Unit III Arrays:

One-dimensional Arrays, Two-dimensional Arrays, Multi-dimensional Arrays, Dynamic Arrays

Character Arrays and Strings: Declaring and Initializing String Variables, Reading Strings from Terminal , Writing Strings to Screen ,String-handling Functions

Unit IV Function: Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, Recursion, Passing Arrays to Functions, Passing Strings to Functions

Structure: Defining a Structure, Arrays of Structures, Arrays within Structures, Structures and Functions, Structures within Structures, Size of Structures

Pointer: Pointer Expressions, Pointers and Arrays, Array of Pointers, Pointers to Functions, Pointers and Structures.

File Management in C :

Unit V Introduction , Defining and Opening a File, Closing a File, Input/output Operations on Files ,Error Handling During I/O Operations , Random Access to Files , Command Line Arguments

Text Book 1. Ansi C By E Balagurusamy , Tata McGraw-Hill Education 7th Edition

References 1. Let us C - Y.Kanetkar, BPB Publications.14th Edition

2 C: The Complete Reference - by Herbert Schildt Tata McGraw-Hill Education 4th Edition

Sample List of Experiments (Not restricted to, only for reference)

- 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 'n' number's.
- 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 on syllabus: 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		√	√								
Testing											
Observing/ implementing	√			√	√				√	√	√
Analyzing	√			√	√				√	√	√
Interpreting											
Designing					√	√					
Creating	√	√									
Deducing conclusions									√	√	

Government College of Engineering, Karad

First Year M.C.A.

MC1108: Data Structures Lab

Laboratory Scheme

Practical 2 Hrs/week

Examination Scheme

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.

Course Contents:

Sample List of Experiments: **(Not restricted to, only for reference)**

- 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 queue.
- Experiment 11** Program for traversing of a binary tree (Preorder, Inorder, Postorder).
- Experiment 12** Program to implement binary search tree.
- Experiment 13** Program to sort an array using insertion & selection sort.
- Experiment 14** Program to sort an array using merge sort.
- Experiment 15** Program to sort an array using radix sort method.

List of Submission

- 1 Total number of experiment based on syllabus: 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 nonlinear 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		√	√			√		√			
Testing							√				
Observing	√			√	√			√	√	√	√
Analysing	√			√	√		√		√	√	√
Interpreting			√								
Designing					√	√		√			
Creating	√	√					√				
Deducing conclusions							√		√	√	

Government College of Engineering Karad
First Year M.C.A.
MC1109: Soft Skills

Laboratory Scheme

Tutorial	2 Hrs/week
Practical	2 Hrs/week

Examination Scheme

CA	50
Total Credits	3

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 **hrs**

Duration: 3

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 proposition 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 “Attitude is Altitude” 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 “Is disability the state of mind”. 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 “Turning their limitations into strengths” 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

Government College of Engineering Karad
First Year M.C.A.
MC1201: Computer Oriented Numerical and Statistical
Methods

Teaching Scheme		Examination Scheme	
Lectures	3 Hrs/week	CT1	15
		CT2	15
Total	3	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 'C' language), Linear Equation-Cramer's rule, Gauss elimination method, Gauss Jordon method, Gauss-seidel iterative method (Implementation of these methods using 'C' language)	8
Unit II Interpolation and Numerical Integration: Lagrange's method, Newton's forward and backward formulae, sterling interpolation. (Implementation of these methods using 'C' language) Trapezoidal, Simpson's Rule 1/3, Simpson's Rule 3/8, Romberg's method Implementation of these methods using 'C' language) .	8
Unit III Ordinary differential equations: Euler's method, Taylor series method, Runge-Kutta method (Implementation of these methods using 'C' language)	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	√			√	√		√	√		
CO2	√			√	√	√			√	
CO3	√			√	√		√		√	√

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.

MC1202:Computer Organisation

Teaching Scheme

Lectures 3 Hrs/Week

Total Credits 3

Examination Scheme

CT1 15

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: Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Performance – 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: 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: Accessing I/O Devices, Interrupts, Direct Memory Access, Buses, Interface Circuits, Standard I/O Interfaces.	8
Unit IV The Memory System: Read Only Memories, Speed, Size and Cost, Cache Memories, Performance consideration, Virtual Memories, Memory Management Requirements, Secondary Storage.	8
Unit V Basic Processing Unit: 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.

MC1203: Object Oriented Programming

Teaching Scheme		Examination Scheme	
Lectures	3 Hrs/week	CT1	15
		CT2	15
Total	3	TA	10
Credits		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	8
Unit II C# Basics Compiling and Running the Program, Variables, Data Types, Flow Control, Enumerations, Namespaces, The Main() Method, Multiple Main() Methods, defining & using functions & its scope, Passing Arguments to Main(),Parameter passing technique, Array.	8
Unit III Classes and Objects Classes and Structures, Class Members, Data Members, Function Members, Methods, Member Access Modifiers, Creating Object, Constructors, Constructor Overloading, static Constructor, private Constructor, Destructors	6
Unit IV Inheritance and Polymorphism Introduction Types of Inheritance, Implementation Inheritance, Abstract Classes and Functions, Sealed Classes and Functions, Constructors in Derived Classes, Abstract class, Abstract methods, Sealed method and class, Polymorphism	10
Unit V Operator Overloading, Exception Handling, Windows Base Applications : Method overloading, Operator overloading, Try, catch, throw, finally, Nested try, Custom exception , Windows Forms, Control, MDI	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 programming language to implement inheritance, polymorphism etc.
- 4 Evaluate and implement the features of Object Oriented Concepts for providing programmed solutions to complex problems.

Text Books

- 1 Programming in C#: A Primer. By E Balgurusamy ISBN 9551343189

Reference Books

- 1 Professional C# – Wrox Publication. By Simon Robinson, Christain Nagel, Karli Watson, Jay Glynn, Morgan Skinner, Bill Evjen
- 2 .Net Programming Black book

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	√					√	√		√	
2			√		√			√		
3	√								√	
4		√		√				√	√	

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.

MC1204: System Software

Teaching Scheme		Examination Scheme	
Lectures	3 Hrs/week	CT1	15
		CT2	15
Total	3	TA	10
Credits		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 General design procedure –design assembler, statement of problem, data structure, format of database, algorithm and flowchart of various passes of assembler.	8
Unit II Macro-processor 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 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: Introduction to design of compiler, phases of compiler.	6
Unit V Compiler 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	√	√			√			√		
2		√	√	√	√		√	√	√	
3	√				√	√	√		√	√

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.

MC1205: 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 – 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, Serializability, 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 , “Database System Concept”, Mc Graw Hill
2. Ramakrishnan & Gehrke , “Database Management Systems”, Mc Graw Hill

References

1. C.J.Date, “Introduction to database systems”, Pearson Education
2. Elmasri Navathe, “Fundamentals of Database Systems”, Addison Wesley
3. Nilesh Shah, “Database Systems using Oracle”, PHI
4. Ramon A. Mata-Toledo, P.K.Cushman “Fundamentals of SQL Programming”, 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	√						√	√		
CO2			√	√	√	√		√	√	√
CO3				√		√			√	
CO4	√								√	√

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.

MC1206: Object Oriented Programming Lab

Laboratory Scheme		Examination Scheme	
Practical	2 Hrs/week	CA	25
Total Credits	1	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 and implement using windows based applications using c#.
- 3 To apply object oriented concepts to solve the real world problems.

Sample List of Experiments (Not restricted to, only for reference)

- Experiment 1** Write a program in windows form application using c# to produce the following output.
- ```
1
2 3
4 5 6
7 8 9 10
```
- Experiment 2** Write a function that takes two values, num1 and num2 as command line arguments and return multiplication of these two numbers.
- Experiment 3** Write a program to find sum of the elements of each row of the given matrix.
- Experiment 4** Write a program to generate the mark sheet of the student using class
- Experiment 5** Write a program to implement constructor.
- Experiment 6** Write a program to illustrate multiple inheritances with virtual methods.
- Experiment 7** Write a program of operator overloading.
- Experiment 8** Write a program to demonstrate exception handling for stack overflow.
- Experiment 9** Write a program to implement abstract class.
- Experiment 10** Write a program to illustrate polymorphism technique.

#### List of Submission

- 1 Total number of Experiments based on syllabus : 10

#### Course Outcomes(CO):

- 1 Apply and implement major object oriented concepts.
- 2 Understand and implement windows based applications using c# programming concepts.
- 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 | √   | √   | √   | √   | √   |     |     | √    |      |      |
| 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                 | √     |       | √     |       |       |       |       |       |       |        |    |
| Testing                    |       |       |       | √     |       | √     |       |       | √     |        |    |
| Observing/<br>implementing | √     | √     | √     | √     | √     | √     | √     | √     |       | √      | √  |
| Analyzing                  | √     | √     | √     | √     | √     | √     | √     | √     |       | √      | √  |
| Interpreting               |       |       |       |       |       |       |       |       |       |        |    |
| Designing                  |       |       |       |       | √     |       |       | √     | √     |        |    |
| Creating                   | √     |       |       |       |       | √     |       |       |       |        |    |
| Deducing<br>conclusions    |       | √     |       |       |       |       | √     |       |       | √      |    |

**Government College of Engineering Karad**  
**First Year M.C.A.**

**MC1207: Database Management Systems Lab**

|                          |            |                           |    |
|--------------------------|------------|---------------------------|----|
| <b>Laboratory Scheme</b> |            | <b>Examination Scheme</b> |    |
| <b>Practical</b>         | 2 Hrs/week | <b>CA</b>                 | 25 |
| <b>Total Credits</b>     | 1          | <b>ESE</b>                | 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**

**Sample List of Experiments: (Not restricted to, only for reference)**

- 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 based on syllabus:



**Government College of Engineering Karad**  
**First Year M.C.A.**  
**MC1208: Seminar**

**Laboratory Scheme**

|                      |            |
|----------------------|------------|
| <b>Practical</b>     | -          |
| <b>Tutorial</b>      | 2 Hrs/Week |
| <b>Total Credits</b> | 2          |

**Examination Scheme**

|           |    |
|-----------|----|
| <b>CA</b> | 50 |
|-----------|----|

**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**

- i. It is expected that student should undergo for an internship (in industry/ reputed academy institute/ research organization) of duration 6-8 weeks during the vacation after completion of semester I. The student should obtain a certificate on successful completion of internship, and submit the same to the dept. along with the report of the work done.
- ii. The seminar should be delivered based on the work done during the internship.
- iii. In case the student is unable to identify and do the internship, he/she may be allowed (by the head of the dept. as exceptional case to b(i)) to perceive the internship by preparing a survey paper on the topic of his interest/prescribed by guide, and present the same to the dept.

**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 | √   | √   | √   | √   |     |     |     |      | √    |      |
| CO2 |     | √   | √   | √   | √   | √   | √   |      |      | √    |
| CO3 | √   | √   | √   | √   |     | √   | √   |      | √    | √    |

**Government College of Engineering Karad**  
**First Year M.C.A.**

**MC1209: Web Programming Lab**

**Laboratory Scheme**

|                      |            |
|----------------------|------------|
| <b>Practical</b>     | 4 Hrs/week |
| <b>Tutorial</b>      | 1          |
| <b>Total Credits</b> | 3          |

**Examination Scheme**

|           |    |
|-----------|----|
| <b>CA</b> | 25 |
|-----------|----|

**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 URL's, 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 (Not restricted to, only for reference)**

- 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 | √   |     |     | √   | √   |     | √   | √    |      |      |
| CO2 | √   |     |     | √   | √   | √   |     |      | √    |      |
| CO3 | √   |     |     | √   | √   |     | √   |      | √    | √    |

## 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.**

**MC1210: Business Communication**

|                          |            |                           |    |
|--------------------------|------------|---------------------------|----|
| <b>Laboratory Scheme</b> |            | <b>Examination Scheme</b> |    |
| <b>Tutorial</b>          | 2 Hrs/week | <b>CA</b>                 | 25 |
| <b>Practical</b>         | 2 Hrs/week |                           |    |
| <b>Total Credits</b>     | 3          |                           |    |

**Course Objectives:**

- 1 To identify latent talents and sharpen them into effective tools for success in career.
- 2 To apply practical knowledge for self-development focusing upon various skill sets as per industry requirement.
- 3 To live up to the popular saying "the first impression is the last impression", the focus is on building a pleasing personality leading to positive branding of oneself.
- 4 To keep oneself abreast with the social & professional etiquette by working on power dressing, elegant presentation & one's brand management.

**Course Contents**

|                 |                                                                                                                                                                       | <b>Hours</b> |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Unit I</b>   | <b>Self-Awareness:</b><br>Personality Assessment, Competency Mapping, Self-Concept.                                                                                   | <b>6</b>     |
| <b>Unit II</b>  | <b>Communication Skills:</b><br>Interpersonal Behavioural Styles, Assertive Communication                                                                             | <b>6</b>     |
| <b>Unit III</b> | <b>Self-management:</b><br>Response Able Behaviour, Beginning with End in Mind                                                                                        | <b>6</b>     |
| <b>Unit IV</b>  | <b>Image Management:</b> Presentation Skills, Grooming and Etiquette                                                                                                  | <b>6</b>     |
| <b>Unit V</b>   | <b>Aptitude:</b><br>Percentages, Profit and loss, Time and work, Time and distance, Problems on trains, Puzzle test, Directions, Blood relations, Coding and Decoding | <b>21</b>    |
| <b>Unit VI</b>  | <b>Language:</b><br>Special Package for Acquiring Competency in English (SPACE)                                                                                       | <b>15</b>    |

| Sr. No. | Domain         | Theme               | Oral Outcome               | Written Outcome              |
|---------|----------------|---------------------|----------------------------|------------------------------|
| 1       | Letter Writing | Material Possession | Conversation & Description | Letter Writing & News Report |

**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