ACADEMIC CALENDAR

Session: 2017-2018

part I			
	Topic	**Assigned Faculty**	**Month**
	Unit I		
	Introduction to Computer and Problem Solving: Information and Data. Hardware: CPU, Primary and Secondary storage, I/O devices, Bus structure Software: Systems and Application.	**DG**	**July- August**
	Generation of Computers: Super, Mainframe, Mini and Personal Computer. Introduction to Programming Languages: Machine Language, Assembly Language, High Level Language. Problem Solving: Flow Charts, Decision Tables and Pseudocodes.	**DG**	**July- August**
	Number Systems and Codes: Number representation: Weighted Codes, Non-weighted codes, Positional, Binary, Octal, Hexadecimal, Binary Coded Decimal(BCD), Conversion of bases. Complement notions. Binary Arithmetic, Binary Codes: Gray, Alphanumeric, ASCII, EBCDIC; Single Error-Detecting and Correcting Codes, Hamming Codes	**DG**	**August- September**
	Unit II		

	Elementarycircuit theory: Kirchoff's Laws with simple applications, Statement and illustration of Thevenin's & Norton's theorems(without proof) in resistive network only& its simple applicatons. Elementary Physics of semi-conductors: Intrinsic and Extrinsic semiconductors, P & N type, Diode & its applications: P-N Junction diodes, Biasing of a junction diode, Depletion region & its effect, Zener diodes & its applications, Diode as a rectifier, Types of diodes, LED, LCD. Principle of junction transistor, Current components of transistor, Modes of a transistor (CB, CE and CC) and their properties, I/O characteristics of a transistor in CE mode. Relation between & -parameters of Transistor, Biasing of a transistor : Q point, load line, Self-bias, fixed bias & collector to base bias. Amplifiers: Concepts, Class A & B. Inverters using Transistors–transfer characteristics and threshold voltages. Switching characteristics of diodes and transistors-SCR & UJT. Principle of FET and MOSFET, Depletion and Enhanced modes of operations, Characteristics and definition of different parameters, Symbols and Application for switching functions. Concept of NMOS, PMOS and CMOS switch. Principle of Multivibrators, Applications of Multi-vibrators – Monostable and Astable Multivibrators Principle of differential amplifiers, CMRR of differential amplifiers, Properties of Ideal OP-AMP, Concept of virtual ground, Offset parameters and its uses as an inverting, non-inverting amplifiers, adder/subtractor/multiplier/divider, differentiator, integrator and scale changer, Schmitt trigger.	**DG**	**August- September**

	Data Converter: D/A Conversion principle using basic circuit, R-2R Ladder circuit, Counter based A/D converter, Successive approximation method for A/D conversion. DTL and TTL NAND gate circuits and its operations, Fan in & Fan out. SSI, MSI, LSI, and VLSI classifications. Group – D : Computer Organization – I (45 Periods) Basic Computer Organization – IAS Computer, Von Neumann Computer, System Bus. Instruction Cycle, Data Representation, Machine instruction and Assembly Language, CPU Organization, Arithmetic and Logic Unit, Control Unit, CPU Registers, Instruction Registers, Program Counter, Stack Pointer. CISC & RISC processors. Instruction: Operation Code and Operand. Zero, One, Two and Three address instruction. Instruction types. Addressing modes. Stack organization. Memory: Types of Memory, RAM, ROM, EPROM, DRAM, SRAM, SAM, PLA, Associative memory. Different storage technology. I/O system organization and interfacing, Bus: SCSI, PCI, USB; Tri State Devices, Bus Arbitration.	**S.K**	**December- January**

	Digital System Design (35 Periods) Combinational Circuits: Realization of AND and OR Gates using diodes and NOT Gate using transistors, Standard Gate Assemblies, IC chips packaging nomenclature, Half and Full Adder(3 & bit), Multi-bit adders – Ripple carry and Carry Look Ahead Adder, Adder/subtractor, BCD-Adder, Data selectors/multiplexers – expansions, reductions, function realization, universal function realization, multi-function realization, Decoders: function realization, Demultiplexer and function realization, Encoder, Priority Encoder, Parity bit Generator/checker, Gray Code Generator, Code Converters, Keyboard encoder, Seven segment display unit, Comparators. Sequential Circuits: Model of Sequential computing, Difference between Combinational and Sequential circuit, RSLatch: using NAND and NOR Gates, RS Latch as a Static RAM Cell, Problems of Basic Latch circuits, Digital Clock – Duty Cycle, Rising time, Falling time, Clocked Flip Flops - SR, JK, D, T, Level Trigger and Edge Trigger, Excitation Functions of each flip-flops, Flip-flops with Preset and Clear, Application of Flip-flops: Asynchronous Counter(UP/DOWN) upto 4 bit counter, Decade Counter, Mod – n Counter, Finite State machine Model – State Transition Diagram and Table, Synchronous Counters – different mod counters, Ring counter, Johnson's Counter, Registers, Registers with parallel load, Shift Registers.	**DG& DG**	**JAN TO FEB**
	Boolean Algebra: Fundamentals of Boolean Algebra, Switches and Inverters, Functionally Complete Gates (AND, OR, NOT), NAND. NOR, Switching function and Boolean Function. De Morgan's Theorem, Minterm, Truthtable and minimization of switching function upto four variables, Algebraic and K-map method of Logic circuit synthesis: Two level and Multi level.	**DG& DG**	**MAR-APRIL**

	Part-II Paper – III (Theoretical) : 100 MARKS		
	Group A1 : System Analysis and Design (20 Periods) Introduction : System definition, characteristics; real-time and distributed systems. System Life Cycle : Waterfall model, description of different phases. Planning : Data gathering techniques; feasibility study. Cost-benefit analysis	**DG**	**July-August**
	Design and Modelling : Logical and physical design; flowcharts and structured charts; DFD and ERD. Form design, User interface design Modularity : Module specification concepts; coupling and cohesion Maintenance : Evaluation, testing and validation. Maintenance issues Case Study : Accounting and Finance System, Personnel system	**DG**	**August- September**
	Group A2 : Database Management (40 Periods) Overview : Files and database. Data independence. 3-level DBMS architecture, Data Dictionary, Database Languages Traditional Models : Network, Hierarchical and Relational. Comparison Relational Model : Definition and properties, Keys of different types Relational Algebra : Operations – select, project, cross product, join, set. Relational Calculus : Concept of tuple and Domain Calculus. Query Language : SQL – basic concepts, Transaction Processing Design : ER diagram to relational scheme; Normalization (upto 3NF) File Organizations : Hashed, Sequential, heap, indexed sequential B-Tree. Related topics : Concurrency and recovery; security and integrity. Current trends in databases : Distributed, Client-Server, Object oriented	**DG**	**September- October**
	Group B (Practical) : Full Marks 50 Groups B1 & B2 together constitute Group B		

	Database Design : Data types, creating databases, adding records, edit, browse, delete, save. Application Design : Menu and screen design; data validation; report design and generation; use of GUI facilities. SQL : Constructs; insert, delete, update, view, temporary tables; nested queries, API types of call, native API, ODBC. Trouble shooting : Validation , correctness, integrity, Performance tuning and documentation.		**July-August**
	Students should get appropriate ideas reg the following : assembling a PC, upgradation of a PC, installation of different softwares, running diagnostic software for performance tuning and related topics.		**August- September**
	Part – III Paper IV		**September- October**
		DG	**November- December**

	Group A : Communication and Computer Networks (60 Periods) Communication Concepts : Analog and Digital communication – basic concept and comparison. Signal types frequency spectrum, strength, bandwidth, data rate, channel capacity. S/N ratio, modulation and demodulation FSK, ASK. Transmission media (brief idea, characteristics, comparison) : Guided (twisted pair, co-axial, optical fiber) and unguided (microwave, satellite-geo synchronous and low-orbit, VSAT). Audio and Video communication systems : Analog and digital telephone, AM & FM radio, cable TV network, IDGN, paging, cordless and cellular phones, ATM. Computer Networks : Distributed processing and resource sharing concepts. Classes – LAN, MAN, WAN Architecture – OSI , TCP/IP and http protocol – brief study. Basic idea of protocols, routing, congestion control. LAN : Ethernet and Token Ring topology (principle of operation, characteristics, comparison). High speed LANs Internetworking Modems, bridges and routers, connectivity concepts. Network security. The Internet : basic idea, DNS and URL, IP address, browsers E-mail : Architecture and services	**DG**	**November- December**

	Group B1 : Shell Programming (Minimum Laboratory Work 50 periods) Files & Directories : Copy, delete, rename, compare files, create, navigate, remove directories, access vi editor, status of users, background jobs; Pipes & filters; cutting, pastings and sorting of files, pattern searching in a string. Shell Programming : Concept and simple programming problems. Unix/Linux system administration-creation and maintenance of accounts, super user, disk management, backups, X-windows. Group B2 : Programming in GUI environment (Theoretical – 10 periods, minimum Lab. Work – 40 periods) Students should learn about programming on the following topics using one of the two languages, primarily through practical sessions, along with theoretical classes in between. Basic Features; building objects with classes, operations with objects, class libraries. Multitasking and multithreading applications; software design involving forms, objects, events, functions, procedure and methods (32 bit programming). ODBC driver; Front and development for database. Multimedia applications. Department of	**DG**	**December - MARCH**

ACADEMIC CALENDAR
Session: 2018-2019

DURATION	TOPIC	DETAILS SEM 1 CMSGCOR01T : Problem Solving with Computer	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
July to august	Computer Fundamentals:	Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. (3L) Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices	DG	3
	Planning the Computer Program	Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation	PD	3
	Techniques of Problem Solving	Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	DG	4
	Overview of Programming	Structure of a Python Program, Elements of Python	PD	8
Sept to oct	Introduction to Python	Python Interpreter, Using Python as calculator, Python shell,Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).	PD	10
Nov to dec	Creating Python Programs	Input and Output Statements, Control statements (LoopingwhileLoop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass). Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.	DG	10
	Introduction to Advanced Python	Objects and Classes, Inheritance, Regular Expressions,Event Driven Programming, GUI Programming.	DG	14

DURATION	TOPIC	**DETAILS** **SEM 2** **CMSGCOR02T: Database Management Systems**	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
JAN TO MID FEB	Introduction to Database Management Systems	Characteristics of database approach, datamodels, DBMS architecture and data independence.	DG	10
FEB TO MARCH	Entity Relationship and Enhanced ER Modeling	Entity types, relationships, SQL99: Schema Definition , constraints, and object modeling.	DG	15
APRIL	Relational Data Model	Basic concepts, relational constraints, relational algebra, SQLqueries	DG	15
MAY TO JUNE	Database design	ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.	DG	20

ACADEMIC CALENDAR

Session: 2018-2019

	Part-II Paper – III (Theoretical) : 100 MARKS		
	Group A1 : System Analysis and Design (20 Periods) Introduction : System definition, characteristics; real-time and distributed systems. System Life Cycle : Waterfall model, description of different phases. Planning : Data gathering techniques; feasibility study. Cost-benefit analysis	**DG**	**July-August**
	Design and Modelling : Logical and physical design; flowcharts and structured charts; DFD and ERD. Form design, User interface design Modularity : Module specification concepts; coupling and cohesion Maintenance : Evaluation, testing and validation. Maintenance issues Case Study : Accounting and Finance System, Personnel system	**DG**	**August- September**
	Group A2 : Database Management (40 Periods) Overview : Files and database. Data independence. 3-level DBMS architecture, Data Dictionary, Database Languages Traditional Models : Network, Hierarchical and Relational. Comparison Relational Model : Definition and properties, Keys of different types Relational Algebra : Operations – select, project, cross product, join, set. Relational Calculus : Concept of tuple and Domain Calculus. Query Language : SQL – basic concepts, Transaction Processing Design : ER diagram to relational scheme; Normalization (upto 3NF) File Organizations : Hashed, Sequential, heap, indexed sequential B-Tree. Related topics : Concurrency and recovery; security and integrity. Current trends in databases : Distributed, Client-Server, Object oriented	**DG**	**September- October**
	Group B (Practical) : Full Marks 50 Groups B1 & B2 together constitute Group B		

ACADEMIC CALENDAR
Session: 2018-2019

	Database Design : Data types, creating databases, adding records, edit, browse, delete, save. Application Design : Menu and screen design; data validation; report design and generation; use of GUI facilities. SQL : Constructs; insert, delete, update, view, temporary tables; nested queries, API types of call, native API, ODBC. Trouble shooting : Validation , correctness, integrity, Performance tuning and documentation.		**July-August**
	Students should get appropriate ideas reg the following : assembling a PC, upgradation of a PC, installation of different softwares, running diagnostic software for performance tuning and related topics.		**August- September**
	Part – III Paper IV		**September- October**
		DG	**November-December**

ACADEMIC CALENDAR
Session: 2018-2019

	Group A : Communication and Computer Networks (60 Periods) Communication Concepts : Analog and Digital communication – basic concept and comparison. Signal types frequency spectrum, strength, bandwidth, data rate, channel capacity. S/N ratio, modulation and demodulation FSK, ASK. Transmission media (brief idea, characteristics, comparison) : Guided (twisted pair, co-axial, optical fiber) and unguided (microwave, satellite-geo synchronous and low-orbit, VSAT). Audio and Video communication systems : Analog and digital telephone, AM & FM radio, cable TV network, IDGN, paging, cordless and cellular phones, ATM. Computer Networks : Distributed processing and resource sharing concepts. Classes – LAN, MAN, WAN Architecture – OSI , TCP/IP and http protocol – brief study. Basic idea of protocols, routing, congestion control. LAN : Ethernet and Token Ring topology (principle of operation, characteristics, comparison). High speed LANs Internetworking Modems, bridges and routers, connectivity concepts. Network security. The Internet : basic idea, DNS and URL, IP address, browsers E-mail : Architecture and services	**DG**	**November-December**

ACADEMIC CALENDAR
Session: 2018-2019

	Group B1 : Shell Programming (Minimum Laboratory Work 50 periods) Files & Directories : Copy, delete, rename, compare files, create, navigate, remove directories, access vi editor, status of users, background jobs; Pipes & filters; cutting, pastings and sorting of files, pattern searching in a string. Shell Programming : Concept and simple programming problems. Unix/Linux system administration-creation and maintenance of accounts, super user, disk management, backups, X-windows. Group B2 : Programming in GUI environment (Theoretical – 10 periods, minimum Lab. Work – 40 periods) Students should learn about programming on the following topics using one of the two languages, primarily through practical sessions, along with theoretical classes in between. Basic Features; building objects with classes, operations with objects, class libraries. Multitasking and multithreading applications; software design involving forms, objects, events, functions, procedure and methods (32 bit programming). ODBC driver; Front and development for database. Multimedia applications. Department of	**DG**	**December - MARCH**

Academic Calendar for the session of 2019 - 20
ODD Semester

SEM 1 - CMSGCOR01T : PROBLEM SOLVING WITH COMPUTER

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To September	Computer Fundamentals:	Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. (3L) Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices	DG	3
Mid-September to November	Planning the Computer Program	Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation	PD	3
	Techniques of Problem Solving	Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	DG	4
	Overview of Programming	Structure of a Python Program, Elements of Python	PD	8
November	Introduction to Python	Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).	PD	10
December	Creating Python Programs	Input and Output Statements, Control statements (Looping while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass). Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.	PD	10
	Introduction to Advanced Python	Objects and Classes, Inheritance, Regular Expressions ,Event Driven Programming, GUI Programming.	PD	14

DISCIPLINE SPECIFIC ELECTIVE PAPERS
SEM V CMSGDSE01T: PROGRAMMING IN JAVA

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
July To Mid-August	Introduction to Java:	Features of Java, JDK Environment	DG	2
	Object Oriented Programming Concept	Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA	DG	12
	Java Programming Fundamental	**:**Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting	DG	12
Mid-August To September	Classes and Objects	**:** Creating Classes and objects, Memory allocation for objects, Constructor Implementation of Inheritance, (12L) Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes	DG	12
	Arrays and Strings:	Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.	PD	8
	Abstract Class, Interface and Packages	**:** Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages	DG	10
November	Exception Handling:	Exception types, Using try catch and multiple (6L) catch, Nested try, throw, throws and finally, Creating User defined Exceptions.	PD	6
December	File Handling	**:** Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File	PD	6
	Applet Programming:	Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag	PD	7

SEM III CMSGCOR03T: OPERATING SYSTEMS

Class started from 20th September

DURTION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To Mid-September	0.	System Software, Resource Abstraction, OS strategies.	PD	2
	Types of operating systems	Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.	PD	2
	Operating System Organization	Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs	PD	10
Mid To End SEPTEMBER	Process Management	**:** System view of the process and resources, initiating the OS, processaddress space, process abstraction, resource abstraction, process hierarchy,	DG	12
November	THREAD	Thread model Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies	PD	12

December	Memory Management	Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory	PD	7
December	Scheduling	Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.	PD	15

ACADEMIC CALENDAR FOR THE SESSION OF 2019-2020

EVEN SEMESTER

DBMS

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction to Database Management Systems**	Characteristics of database approach, data models, DBMS architecture and data independence.	PD	3
Mid-February to March	**Entity Relationship and Enhanced ER Modelling**	Entity types, relationships, SQL- Schema Definition, constraints, and object modelling.	PD	3
	Relational Data Model	Basic concepts, relational constraints, relational algebra, SQL queries	PD	4
	Database design	ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.	PD	8
March	**CMSGCOR02P DBMS (Practical)**	**Note: MyAccess/MySQL may be used.** The following concepts must be introduced to the students: **DDL Commands** ● Create table, alter table, drop table **DML Commands** ● Select , update, delete, insert statements ● Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=) ● Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max) ● Multiple table queries (join on different and same tables) ● Nested select statements ● Set manipulation using (any, in, contains, all, not in, not contains.	PD	10

April		exists, not exists, union, intersect, minus, etc.) • Categorization using group by……..having • Arranging using order by As per syllabus question	DG	10
May – June	**CMSGCOR02P DBMS (Practical)**	**Questions to be performed on above schema** 1. Create tables with relevant foreign key constraints 2. Populate the tables with data 3. Perform the following queries on the database : 1. Display all the details of all employees working in the company. 2. Display ssn, lname, fname, address of employees who work in department no 7. 3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' 4. Retrieve the name and salary of every employee 5. Retrieve all distinct salary values.	PD,DG	6
June –July	**Internal Exam**	**Exam**	PD,DC	2

CMSGCOR04T: COMPUTER SYSTEM ARCHITECTURE

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.	**PD**	**12**

March	**Data Representation and basic Computer Arithmetic**	Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	**DC**	**8**
End-march to April	**Basic Computer Organization and Design**	Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt	**PD, DC**	**18**
June	**Central Processing Unit**	Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	**Programming the Basic Computer**	Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming	**PD**	**8**
Mid-July to end	**Input-output Organization**	Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	**DC**	**4**

CMSGDSE04:COMPUTER NETWORKS

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite	**DC**	**20**
Mid-March	**Physical Layer**	cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway	**DC**	**8**
End-march to April	**Data Link Layer**	Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.	**PD**	**18**
April end	**Central Processing Unit**	Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	Network Layer	Transport services, Transport Layer protocol of TCP and UDP	**PD**	**8**
Mid-July to end	**Application Layer**	Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP .	**DC**	**10**

July mid	**Network Security**	:Common Terms, Firewalls, Virtual Private Networks	**PD**	**7**

ACADEMIC CALENDAR FOR THE SESSION OF 2020 - 21

EVEN SEMESTER

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction to Database Management Systems**	Characteristics of database approach, data models, DBMS architecture and data independence.	PD	3
Mid-February to March	**Entity Relationship and Enhanced ER Modelling**	Entity types, relationships, SQL- Schema Definition, constraints, and object modelling.	PD	3
	Relational Data Model	Basic concepts, relational constraints, relational algebra, SQL queries	PD	4
	Database design	ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.	PD	8
March	**CMSGCOR02P DBMS (Practical)**	**Note: MyAccess/MySQL may be used.** The following concepts must be introduced to the students: **DDL Commands** ● Create table, alter table, drop table **DML Commands** ● Select , update, delete, insert statements ● Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=) ● Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max) ● Multiple table queries (join on different and same tables) ● Nested select statements ● Set manipulation using (any, in, contains, all, not in, not contains.	PD	10

April		exists, not exists, union, intersect, minus, etc.) • Categorization using group by……..having • Arranging using order by As per syllabus question	DG	10
May – June	**CMSGCOR02P DBMS (Practical)**	**Questions to be performed on above schema** 1. Create tables with relevant foreign key constraints 2. Populate the tables with data 3. Perform the following queries on the database : 1. Display all the details of all employees working in the company. 2. Display ssn, lname, fname, address of employees who work in department no 7. 3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' 4. Retrieve the name and salary of every employee 5. Retrieve all distinct salary values.	PD,DG	6
June –July	**Internal Exam**	**Exam**	PD,DC	2

CMSGCOR04T: COMPUTER SYSTEM ARCHITECTURE

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.	**PD**	**12**

March	**Data Representation and basic Computer Arithmetic**	Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	**DC**	**8**
End-march to April	**Basic Computer Organization and Design**	Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt	**PD, DC**	**18**
June	**Central Processing Unit**	Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	**Programming the Basic Computer**	Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming	**PD**	**8**
Mid-July to end	**Input-output Organization**	Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	**DC**	**4**

CMSGDSE04:COMPUTER NETWORKS

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite	**DC**	**20**
Mid-March	**Physical Layer**	cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway	**DC**	**8**
End-march to April	**Data Link Layer**	Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.	**PD**	**18**
April end	**Central Processing Unit**	Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	Network Layer	Transport services, Transport Layer protocol of TCP and UDP	**PD**	**8**
Mid-July to end	**Application Layer**	Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP .	**DC**	**10**

July mid	**Network Security**	:Common Terms, Firewalls, Virtual Private Networks	**PD**	**7**

Academic Calendar for the session of 2020 -21
ODD Semester

SEM 1 - CMSGCOR01T : PROBLEM SOLVING WITH COMPUTER

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To September	Computer Fundamentals:	Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. (3L) Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices	DG	3
Mid-September to November	Planning the Computer Program	Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation	PD	3
	Techniques of Problem Solving	Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	DG	4
	Overview of Programming	Structure of a Python Program, Elements of Python	PD	8
November	Introduction to Python	Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).	PD	10
December	Creating Python Programs	Input and Output Statements, Control statements (Looping while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass). Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.	DG	10
	Introduction to Advanced Python	Objects and Classes, Inheritance, Regular Expressions ,Event Driven Programming, GUI Programming.	DG	14

DISCIPLINE SPECIFIC ELECTIVE PAPERS
SEM V CMSGDSE01T: PROGRAMMING IN JAVA

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
July To Mid-August	Introduction to Java:	Features of Java, JDK Environment	DG	2
	Object Oriented Programming Concept	Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA	DG	12
	Java Programming Fundamental	**:**Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting	DG	12
Mid-August To September	Classes and Objects	**:** Creating Classes and objects, Memory allocation for objects, Constructor Implementation of Inheritance, (12L) Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes	DG	12
	Arrays and Strings:	Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.	PD	8
	Abstract Class, Interface and Packages	**:** Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages	DG	10
November	Exception Handling:	Exception types, Using try catch and multiple (6L) catch, Nested try, throw, throws and finally, Creating User defined Exceptions.	PD	6
December	File Handling	**:** Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File	DG	6
	Applet Programming:	Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag	PD	7

SEM III CMSGCOR03T: OPERATING SYSTEMS

Class started from 20th September

DURTION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To Mid-September	0.	System Software, Resource Abstraction, OS strategies.	PD	2
	Types of operating systems	Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.	PD	2
	Operating System Organization	Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs	PD	10
Mid To End SEPTEMBER	Process Management	**:** System view of the process and resources, initiating the OS, processaddress space, process abstraction, resource abstraction, process hierarchy,	DG	12
November	THREAD	Thread model Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies	PD	12

December	Memory Management	Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory	DG	7
December	Scheduling	Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.	PD	15

ACADEMIC CALENDAR FOR THE SESSION OF 2021-22

EVEN SEMESTER

Class Starts from 18th February (Online Exam and Offline Class)

DBMS

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction to Database Management Systems**	Characteristics of database approach, data models, DBMS architecture and data independence.	DG	3
Mid-February to March	**Entity Relationship and Enhanced ER Modelling**	Entity types, relationships, SQL- Schema Definition, constraints, and object modelling.	PD	3
	Relational Data Model	Basic concepts, relational constraints, relational algebra, SQL queries	DG	4
	Database design	ER and EER to relational mapping, functional dependencies, normal forms up to third normal form.	PD	8
March	**CMSGCOR02P DBMS (Practical)**	**Note: MyAccess/MySQL may be used.** The following concepts must be introduced to the students: **DDL Commands** ● Create table, alter table, drop table **DML Commands** ● Select , update, delete, insert statements ● Condition specification using Boolean and comparison operators (and, or, not,=,<>,>,<,>=,<=) ● Arithmetic operators and aggregate functions(Count, sum, avg, Min, Max) ● Multiple table queries (join on different and same tables) ● Nested select statements ● Set manipulation using (any, in, contains, all, not in, not contains.	PD	10

April		exists, not exists, union, intersect, minus, etc.) • Categorization using group by……..having • Arranging using order by As per syllabus question	DG	10
May – June	**CMSGCOR02P DBMS (Practical)**	**Questions to be performed on above schema** 1. Create tables with relevant foreign key constraints 2. Populate the tables with data 3. Perform the following queries on the database : 1. Display all the details of all employees working in the company. 2. Display ssn, lname, fname, address of employees who work in department no 7. 3. Retrieve the birthdate and address of the employee whose name is 'Franklin T. Wong' 4. Retrieve the name and salary of every employee 5. Retrieve all distinct salary values.		
June –July	**Internal Exam**	**Exam**	PD,DC	2

CMSGCOR04T: COMPUTER SYSTEM ARCHITECTURE

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexors, registers, counters and memory units.	**PD**	**12**

March	**Data Representation and basic Computer Arithmetic**	Number systems, complements, fixed and floating point representation, character representation, addition, subtraction, magnitude comparison.	**DC**	**8**
End-march to April	**Basic Computer Organization and Design**	Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output and interrupt	**PD, DC**	**18**
June	**Central Processing Unit**	Register organization, arithmetic and logical micro-operations, stack organization, micro programmed control.	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	**Programming the Basic Computer**	Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming	**PD**	**8**
Mid-July to end	**Input-output Organization**	Peripheral devices, I/O interface, Modes of data transfer, direct memory access.	**DC**	**4**

CMSGDSE04:COMPUTER NETWORKS

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
February	**Introduction**	Components of data communication, standards and organizations, Network Classification, Network Topologies ; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite	**DC**	**20**
Mid-March	**Physical Layer**	cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway	**DC**	**8**
End-march to April	**Data Link Layer**	Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.	**PD**	**18**
April end	**Central Processing Unit**	Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive	**DC**	**10**
June	Internal Exam	Exam	**PD,DC**	**2**
June to mid-July	Network Layer	Transport services, Transport Layer protocol of TCP and UDP	**PD**	**8**
Mid-July to end	**Application Layer**	Application layer protocols and services – Domain name system, HTTP, WWW, telnet, FTP, SMTP .	**DC**	**10**

July mid	**Network Security**	:Common Terms, Firewalls, Virtual Private Networks	**PD**	**7**

Academic Calendar for the session of 2021 -22
ODD Semester

SEM 1 - CMSGCOR01T : PROBLEM SOLVING WITH COMPUTER

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To September	Computer Fundamentals:	Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. (3L) Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices	DG	3
Mid-September to November	Planning the Computer Program	Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation	PD	3
	Techniques of Problem Solving	Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	DG	4
	Overview of Programming	Structure of a Python Program, Elements of Python	PD	8
November	Introduction to Python	Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).	PD	10
December	Creating Python Programs	Input and Output Statements, Control statements (Looping while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass). Structures: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments.	DG	10
	Introduction to Advanced Python	Objects and Classes, Inheritance, Regular Expressions ,Event Driven Programming, GUI Programming.	DG	14

DISCIPLINE SPECIFIC ELECTIVE PAPERS
SEM V CMSGDSE01T: PROGRAMMING IN JAVA

DURATION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
July To Mid-August	Introduction to Java:	Features of Java, JDK Environment	DG	2
	Object Oriented Programming Concept	Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA	DG	12
	Java Programming Fundamental	**:**Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting	DG	12
Mid-August To September	Classes and Objects	**:** Creating Classes and objects, Memory allocation for objects, Constructor Implementation of Inheritance, (12L) Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes	DG	12
	Arrays and Strings:	Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods.	PD	8
	Abstract Class, Interface and Packages	**:** Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages	DG	10
November	Exception Handling:	Exception types, Using try catch and multiple (6L) catch, Nested try, throw, throws and finally, Creating User defined Exceptions.	PD	6
December	File Handling	**:** Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File	DG	6
	Applet Programming:	Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag	PD	7

SEM III CMSGCOR03T: OPERATING SYSTEMS

Class started from 20th September

DURTION	TOPIC	DETAILS	LECTURES TO BE DELEVERD BY	NO. OF LECTURES
August To Mid-September	0.	System Software, Resource Abstraction, OS strategies.	PD	2
	Types of operating systems	Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.	PD	2
	Operating System Organization	Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs	PD	10
Mid To End SEPTEMBER	Process Management	**:** System view of the process and resources, initiating the OS, processaddress space, process abstraction, resource abstraction, process hierarchy,	DG	12
November	THREAD	Thread model Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies	PD	12

December	Memory Management	Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory	DG	7
December	Scheduling	Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.	PD	15

Academic Calendar for the session of 2022 -23
ODD Semester

SEM 1 - CMSGCOR01T : PROBLEM SOLVING WITH COMPUTER

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