Programme : Diploma in Computer Engineering

Programme Code : 06/26

Name of Course : Computing Essentials

Course Code : CM281

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**03**	**48**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	**Two class tests each of 60 minutes.**	**02 Hrs.**	–	–	–
Marks	**10**	**40**	**25**	–	**25**

Course Rationale:

In this world of high speed computing, it is essential for diploma in computer engineering students to know about basics of computer. This course is designed for basic perspective for first year diploma students.

Course Outcomes:

Students should be able to

1. Use Word processing, spreadsheets, and presentations applications effectively.
2. Identify and Recognize computer hardware components.
3. Describe evolution of programming Languages.
4. Classify and recognize various software.
5. Demonstrate the basic functions of an operating system.
6. Browse internet sites and use of specific URLs to search information.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain)	**Topics and subtopics**	**Hrs.**
Units 1 : Classification and Components of Computer		
1.State the components of PC. 2 Enlist the characteristics of computer. 3. Recognize the application of computer.	1.1 Introduction 1.2. Components of PC , Characteristics of computer, 1.3 What can Computer do , Applications of,Computer	4
Unit 2: I/O Media and Algorithms		
1. Memorize the characteristics of algorithms. 2. Demonstrate algorithm for different problem statements. 3. Describe procedure and programs	2.1 Introduction to Hardware and,Software, Input, Process, Output 2.2 Algorithms: Introduction,Three basic operations, Procedures and Programs.	8
Unit 3: Main Memory		
1.List the different types of memory, 2. Describe the use of storage devices. 3. Define the main memory.	3.1 Introduction , Main memory , Load and store instructions 3.2 Transferring data items and records, Cache memory, memory capacity,	10
Unit 4: Computer Architecture		
1. Details of language generations. 2. Demonstrate the different language generations program.	4.1 Introduction , A 4GL (User level) Program , A 3GL (High Level) Program, 4.2 A 2GL Assembly level) Program , A 1GL (Machine level) Program , 0GL (Hardware level)Program	10
Unit 5: Operating System		
1.Define the different services of operating system. 2.Describe the operations performed by the operating system	5.1 Introduction , What is OS , Different Services of OS, 5.2 Information Management (IM) , Process Management (PM) , Memory management (MM)	8
Unit 6: Internet and Principles of Programming Language		
1.,Describe the concept Internet. 2.Enlist the principle of programming languages. 3. Memorize the concept of data types and modules.	6.1 Introduction, History of Internet, Use of Internet, and Internet related concepts.Define the term Network, 6.2 Introduction to Principles of Programming Language: Classification of Languages, Thinking Models,History of Languages, 6.3 Basic Concepts,Data Types, Modules and Separate Compilation	8
	Total Hrs	**48**

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	Specific Learning Outcomes (Psychomotor Domain)	Units	Hrs.
1	Practice of basic commands in command window: Ex: dir, md, copy, cd, move, rmdir, rd etc.		02
2	Various operations on Window based operating system. Windows Operations: Minimizing, Maximizing, Resizing		02
3	Using Windows Help Creating, copying, moving files and folders. Creating shortcuts.		02
4	Creating and Removing/Deleting User Accounts, Setting window views using Add /Remove Programs Utility.		04
5	Using Add Hardware Utility Adding Fonts.Viewing Computer configuration..		04
6	Desktop settings: Display properties, time and date setting, Screen Saver, Appearance		02
7	MS WORD 2010:Various options and its use in creating/ updating/ printing.(Perform at least 2 assignments)		02
8	MS EXCEL 2010: Assignments based on use of Spreadsheets &Various menu items and its use in worksheets to solve problems. (Perform at least 2 assignments)		04
9	MS office PowerPoint: Preparation of Various slides (Perform at least 3 assignments covering Presentation Graphics like objects grouping, Customizing Slide transition, Embedding Links)		04
10	Introduction to Internet and WWW: Internet and Web, like creating mail accounts, using web based applications (eg. Google drive), browsing internet sites to fetch relevant information, etc.	Internet and Principles of Programming Language	04
11	Introduction to e-Commerce and related web sites. Example Railway Reservations, Air Ticket Reservations etc.		02
		Total Hrs	32

Specification Table for Theory Paper:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	**Comprehension**	**Application**	
1	Classification and Components of Computer	02	02	00	04
2	I/O Media and Algorithms	05	03	00	08
3	Main Memory	03	03	02	08
4	Computer Architecture	02	02	02	06
5	Operating System	04	02	02	08
6	Internet and Principles of Programming Language	02	02	02	06
Total		**18**	**14**	**08**	**40**

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment	ST	Students	Two PT (average of two tests)	10	–	Test Answer sheets	1,2,3
						–		1,2,3
				TOTAL	20	10		
	(Term End Examination)	End Exam		End Of the Course	80	28	Theory Answer sheets	1,2,3
Direct Assessment Practical	Continuous Assesment	ST	Students	One skill test at end of term	10	–	Practical Answer sheets	
		Journal Writing		Assignments	15	–	Journal	4,5,6,
				TOTAL	25	10		
	(Term End Examination)	End Exam		End Of the Course	50	20	Practical Answer Sheets	4,5,6
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3 4,5,6
	End exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	**Description**	**Max. Marks**
1	Demonstration	10
2	Result	05
3	Viva voce	10
	TOTAL	**25**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	**Program Outcomes (POs)**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	03	03	–	01	01	–	–	–	–	01
2	03	03	–	01	01	–	–	–	–	01
3	03	03	–	01	01	–	–	–	–	01
4	03	03	–	01	01	01	–	01	–	01
5	03	03	–	01	01	–	–	–	–	01
6	03	03	–	01	01	–	–	–	–	01

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	Author	Title	Publication
1	AchyutGodbole	Demystifying computer	—
2	Timothy O'Leary &x Linda O'Leary	Computing Essential 2015	McGraw Hill
3	Kadar Seema	Principles of Programming language	Technical Publications

E-References:www.howstuffworks.com

1. http://www.tutorialspoint.com/computer_fundamentals
2. http://ecomputernotes.com/fundamental/introduction-to-computer/what-are-characteristic-of-a-computer
3. https://www.tutorialspoint.com/data_structures_algorithms/algorithms_basics.htm
4. http://www.officetutorials.com

Programme : Diploma in Computer Engineering / Information Technology

Programme Code : 06/07/26

Name of Course : Programming in C

Course Code : CM282

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**01**	**16**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	**Two class tests of 60 min. duration**	**2 Hrs**			
Marks	**20**	**80**	**50**	–	**25**

Course Rationale:

In this era of high speed computing, it is necessary to program computers with the help of structured dynamic languages like 'C' to study programming is useful in solving problems/tasks related to various domains. Now days almost every setup in software engineering domain chooses 'C' as a basic tool to develop software.

Course Outcomes:

After completing this course students will be able to

1. Represent the solution to problem with procedure oriented methodology.
2. Form Expression using data elements character set and operators in C.
3. Write a program Using Decision Making and looping statement.
4. Represent data with arrays,String,Structures,Unions as applicable.
5. Write User defined Function in C Program.
6. Implement C programs with pointers.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain) Marks	**Topics and subtopics**	**Hrs.**
SECTION – I		
Units 1: Overview of 'C'		
1. State importance of 'C'. 2. Describe Basic structure of 'C' programs. 3. Demonstrate sample C program 4. Execute sample C program.	1.1 1Introduction: development of 'C' 1.2.Importance of 'C', 1.3 Basic structure of 'C' programs, programming style, sample 'C' programs, execution of 'C' program	02
Unit 2:Data Types & Character Set		
1. Describe Character set. 2. 2. Define keywords, identifiers, constants, variables, symbolic constants 3. Describe data types	2.1 Character set, C tokens, keywords & identifiers, constants, variables. Data types, declaration of variables, assigning values to variables, defining symbolic constants	04
Unit 3: Operators & Expressions		
1. Describe different types of operators. 2. State different types of Expressions. 3. Demonstrate input and output operators.	3.1 Operators: Arithmetic, relational, logical, increment & decrement, conditional, bit-wise special operator. 3.2 Expressions:Arithmetic expressions, evaluation of expressions, procedure of arithmetic operators, type conversions in expressions, operator precedence associativity, mathematical functions. 3.3 Managing input output operators: Introduction, reading a character, writing a character, formatted input, formatted output.	06
Unit 4: Decision Making		
1. Understand and demonstrate branching and looping statements. 2. Understand and demonstrate decision making with if statement, simple if statement, the if-else statement The else if ladder, The switch statement and The?: operator,	4.1 Branching & looping introduction, decision making with if statement, simple if statement, the if-else statement, The else if ladder, The switch statement, The?: operator, the go to statement, looping, introduction, the while statement, jumps in the loop, break statement	04
Unit 5: Arrays		
1. List different types of Arrays. 2. Distinguish between one- dimensional, two-dimensional and multidimensional arrays, 3. Demonstrate initialization of arrays	5.1 Introduction, one- dimensional arrays, two-dimensional arrays, multidimensional arrays, Initialization of arrays	04
Unit 6: Strings		
1. Understand declaring and initializing string variables. 2. Describe String functions. 3. Understand table of Strings.	6.1 Introduction, declaring & initializing string variables, reading string, writing strings, arithmetic operations on string , putting strings together, comparison of two strings, string handling functions, table of strings	04

Unit 7: User defined functions.		
1. Define Function. 2. Identify different categories of function. 3. Understand nesting of functions, recursion 4. Demonstrate function with arrays	7.1 Need of user defined function, the types of C functions, return values their types, calling a function. 7.2 Category of functions: No argument-No return value,Argument-No return value, No argument-return value No argument- return value. 7.3 Handling non-integer functions, nesting of functions, recursion, and function with arrays.	10
Unit 8: Structures and Unions		
1. Define Structure. 2. Understand Structure initialization 3. Demonstrate arrays of structure, arrays within structure 4. Identify use of structure in functions 5. Compare structure and Union.	8.1 1 Structure definition, giving values to members, structure initialization and comparison of structure variables. 8.2 Arrays of structures, arrays within the structure, structure and functions, Unions, size of structures, bit fields bit operations	08
Unit 9: Introduction to Pointers		
1. Define Pointer 2. Understand declaration of pointers, initialization of pointers and pointer Expressions 3. Describe application of pointers 4. Demonstrate function returning pointer and passing address to functions	9.1 Pointer Concept,& and * operators, Declaration of Pointers, Initialisation of pointers, Pointer Expressions, Application of pointers, Array of Pointers, Pointer to array, function, structure, Function returning pointer and passing addresses to functions.	06
Total Hrs.		48

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	Specific Learning Outcomes (Psycho-motor Domain)	Units	Tutorial	Hrs.
1	Demonstration of GCC Compiler, Creating a program Compiling & linking executing programs	Overview of 'C'	01	02
2	Write 'C' programs based on declaring variables & assigning values to variables.(Minimum 3).	Data Types & Character Set	01	02
3	Write programs based on expressions and operators. Programs using scanf(), printf(), getch(), putch().(Minimum 4)	Operators & Expressions	02	02
4	Programs using following control statements: If statement,Switch statements,?: operator, go to statements. Programs using following loop controls,while loop, do.. while loop, for loop(Minimum 5)	Decision Making	02	06
5	Write programs based on arrays. (Minimum 4)	Arrays	02	04
6	Write programs using strings operations such as comparison, concatenation, copying etc.(Minimum 3)	Strings	02	04
7	Examples on User defined functions, demonstration of return data types. Write programs demonstrating four categories of functions. Programs based on recursion & nesting of functions.(Minimum 5)	User defined functions	02	04
8	Write programs based on structure definition and initialization. Write programs based on structure within structure. Write programs based on bitwise operations.(Minimum 3)	Structures and Unions	02	04
9	Write programs based on Pointers and pointer applications. (Minimum 3)	Introduction to Pointers	02	04
		Total Hrs	16	32

Note :

- All Practicals should be performed on GCC compiler.
- Minimum 30 Programs as specified in practical coverage section should be executed.
- Actual program statements on practical topics should be framed by the respective teachers.
- During Tutorial session various examples should be taken as per the concepts of Theory.

Instructional Strategy:

Sr.No	Topic	Instructional Strategy
1	Overview of 'C'	Demonstration of GCC Compiler, Create simple program
2	Data types & character set	Write 'C' programs based on declaring variables & assigning values to variables
3	Operators & Expressions	Explanation of operators, expressions & managing i/p & o/p operators
4	Decision Making	Theoretical explanation, writing program using different control statements
5	Arrays	Theoretical explanation & implementation of arrays.
6	Security & Permissions, Application Deployment	Explanation on security and App development and deployment. Demonstrate App deployment and publishing App. Hands-on practice on App deployment.
7	Strings	Theoretical explanation & implementation of strings.
8	User defined functions	Explanation & implementation of examples on user defined functions.
9	Structures and Unions	Theoretical explanation & implementation of structures & Unions.

Specification Table for Theory Paper:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge (R)	Comprehension (U)	Application (A)	
1	Overview of 'C'	01	01	02	04
2	Data types & character set	02	01	03	06
3	Operators & Expressions	03	03	04	10
4	Decision Making	02	04	02	08
5	Arrays	03	04	05	12
6	Strings	02	02	02	06
7	User defined functions	04	04	04	12
8	Structures and Unions	05	04	03	12
9	Pointers	03	02	05	10
Total		**25**	**25**	**30**	**80**

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment (Theory)	CA (Continuous Assessment)	PT	STUDENTS	Two PT (average of two tests will be computed)	20	–	Test answer sheets	1,2,3,4,5,6
					–	–		
				TOTAL	20	–	–	–
	TEE (Term End Exam)	End exam		End of the course	80	28	Theory Answer Sheets	1,2,3,4,5,6
Direct Assessment (Practical)	Continuous Assessment	Journal Writing	Students	Assignments	25	–	Journal	1,2,3,4,5,6
				TOTAL ->	25			
	TEE(Term End Exam)	End Exam	Students	End of the Course	50	20	Practical Answer Sheets	1,2,3,4,5,6
Indirect Assessment	Student Feedback on course		Students	After first PT	Student feedback form			1,2,3,4,5,6
	End of Course			End of the course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	Description	Max. Marks
1	Demonstration	10
2	Practical Performance	20
3	Viva voice	20
	TOTAL	**50**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	Program Outcomes (POs)									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	–	3	3	3	–	–	–	–	–	–
2	–	3	3	3	–	–	–	–	–	–
3	–	3	3	3	–	–	–	–	–	–
4	–	3	3	3	–	–	–	–	–	–
5	–	2	3	3	–	–	–	–	–	–

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	**Author**	**Title**	**Publication**
1	E. Balagurusamy Tata-McGraw Hill pub.(Second Edition)	Programming in ANSI 'C'	
2	Yeshwant Kanetkar, BPB Publication	Let us 'C'	
3	MadhusudhanMothe SPD Publication	C for Beginners	

E-References:

1. https://www.tutorialspoint.com/cprogramming

Programme : Diploma in Computer Engineering/Information Technology

Programme Code : 06/07/26

Name of Course : Computer Workshop

Course Code : CM283

Teaching Scheme:

	Hours /Week	Total Hours
Theory	–	–
Practical	**04**	**64**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration		–	–	–	–
Marks	–	–	–	**25**	**50**

Course Rationale:

The Subject is intended to teach the student conversant with use of various PC components and devices which will enable him to apply for connecting different components of Computer system.. This subject serves as the base for understanding the principles and procedures of External Interfaces of Laptop such as Memory card reader, USB connectors.

Course Outcomes:

Students should be able to

1. Identify various components of Computer System.
2. Assemble and dissemble Computer system
3. Mount and Un-mount different expansion cards/memory cards on Motherboard.
4. Identify various types of i/o ports for any computer system.
5. Connect different types of external devices to computer.

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	**Specific Learning Outcomes (Psychomotor Domain)**	**Hrs.**
1	Demonstration of Parts of Computer System	02
2	Practice I/O devices : Keyboard, Mouse, Monitors, Speakers	04
3	Practice I/O devices: Web Camera, Printers, and Scanner	04
4	Demonstration of Switching on and Turn off , Log Off the Computer and its modes	02
5	Demonstration of Front Panel View and its use.	02
6	Implementation of Rear Panel View, I/O Serial and Parallel Ports.	02
7	Demonstration of opening and closing of the Computer.	02
8	Installing Keyboards and Mouse Interface	02
9	Setting up CRT Monitor, Installing LCD Monitors. Demonstration of settings on monitor.	04
10	Connections inside CPU and its demonstration	02
11	Setting up the Cabinet.	04
12	Identify and Demonstration of different slots on motherboard. Mounting and Unmounting of RAM, Graphics card and Network card.	04
13	Connecting motherboard connections to Front Panel , Mouse , Keyboard , and Monitor.	04
14	Connecting the Optical Drives.	02
15	Connecting Printer to the machine and network and studying configurations.	04
16	Connecting Scanner and scan the document.	02
17	Connecting Speakers and Microphone and it's usage.	02
18	Connecting Web Camera and it's usage.	02
19	Demonstration of RJ45 connector and its use.	04
20	Demonstration of Bluetooth as an external interface.	02
21	Connecting External hard disk.	02
22	Identify and Demonstration of External Interfaces of Laptop such as Memory card reader, USB connectors.	02
23	Study of Laptop: Replacing Laptop Battery, Dismantling Laptop.	04
	Total Hrs	64

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment	ST	Students		–	–		
				–	–	–	–	
				–	–	=	–	
	(Term End Examination)	End Exam			–	–		–
Direct Assessment Practical	Continuous Assesment		Students		–	–		
		Journal Writing		–	–	–	–	
				TOTAL	25	10		
	(Term End Examination)	End Exam		End Of the Course	50	20		1,2,3,4,5
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3,4,5
	End exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	**Description**	**Max. Marks**
1	Demonstration	05
2	Result	15
3	Viva voce	05
	TOTAL	**25**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	**Program Outcomes (POs)**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	–	2	–	–	–	–	–	–	–	–
2	–	3	2	–	–	–	–	2	3	–
3	–	2	2	–	–	–	–	2	2	–
4	–	3	1					2	2	–
5	–	2	3	2	–	–	–	2	2	–

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	Author	Title	Publication
1	K.L. James	The computer hardware installation, interfacing, troubleshooting and maintenance	PHI,Kindle Edition
2	M. David Stone and Alfred Poor	Troubleshooting your PC	PHI,2nd Edition
3	Govindrajalu	IBM PC clones	Tata McGraw-Hill Education,2nd edition

E-References:www.howstuffworks.com

1. https://sumdho2013.wordpress.com/computer-fundamental-tutorial/
2. https://www.cs.utah.edu/ swalton/Documents/Computer-Fundamentals.p
3. www.tutorialspoint.com/computer$_{f}undamentals/$

Programme : Diploma in Computer Engineering/Information Technology

Programme Code : 06/26/07

Name of Course : LINUX Basics

Course Code : CM284

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**01**	**16**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration		–	–	–	–
Marks	–	–	**50**	–	**25**

Course Rationale:

Linux Operating System is Open source and freely distributed O.S. Apart from the fact that it's freely distributed, Linux's functionality, adaptability and robustness makes it highly suitable for server platform. The course aims at providing knowledge of shell and command line essentials

Course Outcomes:

Students should be able to

1. Install and Configure Linux O.S..
2. Use and implement various commands of Linux Operating System.
3. Write and execute programs using shell scripting.
4. Use vi editor to handle files.
5. Compress and archive files in Linux OS.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain) Marks	**Topics and subtopics**	**Hrs.**
Units 1 : Introduction to Linux Operating system		
1.Describe History of Linux. 2. Identify different types of shells. 3. Compare Linux file systems.	1.1.Operating system and Linux 1.2. History, Overview of Linux. 1.3. Shell: Bourne, Korn, Cshell 1.4.Linux releases,Linux File Systems(ext) and versions.	03
Unit 2:The Linux File Structure		
1.Describe Linux file structure. 2. Use file name arguments, absolute and relative pathnames. 3.Execute file related commands. 4.Execute commands using pipes and I/O redirection	2.1 Linux Files, The File Structure: Directories and files. 2.2 Absolute and Relative Pathnames. 2.3.Listing, Displaying and Printing Files: ls, cat, more and Managing Directories: mkdir, rmdir, ls, cd and pwd, File and Directory Operations:find, cp, mv, rm. 2.4.File Name Arguments: *, ?, [ ], Standard Input/ Output and Redirection. 2.5.Pipes, invoking command history.	04
Unit 3: File Management Operations		
1.Change file and directory permissions. 2. Compress and archive files.	3.1.File and Directory Permissions: chmod. 3.2 Archive :tar 3.3.File Compression: gzip, gunzip	02
Unit 4: Editors and Utilities		
1.Create and modify files using vi editor. 2. Apply line editing command.	4.1.The vi Editor: vi Command, Input, and Line Editing Modes. 4.2 Creating, Saving and Quitting a File in vi, Managing Editing Modes in vi. 4.3.vi Editing Commands:Common Operations.	03
Unit 5:Shells		
1.Execute Linux filters. 2.Execute commands using regular expressions. 3.Execute shell script programs	5.1 Filters and Regular Expressions: Using Redirection and Pipes with Filters: cat, tee, head and tail. 5.2 Types of Filter Output :wc, spell and sort. 5.3.Configuring Your Login Shell with Special Shell Variables. 5.4.Introduction to BASH Shell Programming, Variables and Scripts.	04
	Total Hrs	**16**

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	**Specific Learning Outcomes (Psychomotor Domain)**	**Units**	**Hrs.**
1	• Installing Linux:Hardware, Software ,Requirements, Opening Disk space for Linux partitions. • Virtual Consoles • Configuring GRUB / LILO Boot Loader	Introduction to Linux Operating system	04
2	• Executing commands related to Login into user accounts, start up and shutdown commands, command line editing commands, man, who, who am i ,info , pwd. • Practicing Absolute and Relative Pathnames.	The Linux File Structure	04
3	• Executing various file Related commands –cat, more,ls, cd, cp, mv , rm, touch, mkdir,rmdir, find • Executing Commands I/O redirection and pipes.	The Linux File Structure	04
4	• Practicing File Name Arguments: *, ?, [ ] • Creating User Defined commands.	The Linux File Structure	04
5	• Setting/Changing file and directory related permissions chmod .	File Management Operations	02
6	• Executing commands related to archive and file compression	File Management Operations	02
7	• Executing various commands related to vi Editor. • Practicing editing with vi editor • Practicing vi editing commands.	Editors and Utilities	04
8	• Executing various Shell commands: cat, tee, head and tail. • Creating shell variables	Shells	02
9	• Configuring Login Shell with Special Shell Variables. • Practicing filter output : wc, spell and sort.	Shells	02
10	• BASH Shell Programming (any 4 basic programs without looping)	Shells	04
		Total Hrs	32

Instructional Strategy:

Sr.No	**Topic**	**Instructional Strategy**
1	Basic concepts and principles of Communication	Classroom teaching and demo sessions
2	Organizational communication	Classroom teaching and demo
3	Non-verbal communication	Classroom teaching and demo sessions
4	Business Correspondence and Office Drafting	Classroom teaching

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assessment	– –	– Students		–	–		
				–	–	–	–	
				–	–	=	–	
	(Term End Examination)	End Exam			–	–		–
Direct Assessment Practical	Continuous Assesment		Students		–	–		
		Journal Writing		–	–	–	–	
				TOTAL	25	10		
	(Term End Examination)	End Exam		End Of the Course	50	20	Practical Answer Sheets	1,2,3,4
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3,4
	End exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	Description	Max. Marks
1	Demonstration	20
2	Result	10
3	Viva voce	20
	TOTAL	**50**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	Program Outcomes (POs)									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	1	2	3	3	1	–	–	–	–	–
2	3	3	2	–	–	–	–	–	–	–
3	2	3	2	1	–	–	–	–	–	–
4	–	1	2	3	–	–	–	–	–	–
5	–	2	2 –	–	–	–	–	–	–	–

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	**Author**	**Title**	**Publication**
1	Peterson	The Complete Reference Linux (Second Edition)	Tata McGraw Hill
2	Richard Blum	Linux command line and shell scripting	Willey India

Reference Book

Sr. No	**Author**	**Title**	**Publication**
1	Prof. Dayanand Ambawade and Prof. Deven N.Shah	Linux Lab: Hands on Linux	Dreamtech publications
2	Kerry Cox	Red Hat Linux	PHI

E-References:www.howstuffworks.com

1. http://www.tutorialspoint.com/computer_fundamentals
2. http://ecomputernotes.com/fundamental/introduction-to-computer/what-are-characteristic-of-a-computer
3. https://www.tutorialspoint.com/data_structures_algorithms/algorithms_basics.htm
4. http://www.officetutorials.com

Programme : Diploma in Computer Engineering/ Information Technology

Programme Code : 06/07/26

Name of Course : Web Designing

Course Code : CM285

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**01**	**16**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	–	–	–	–	–
Marks	–	–	**50**	–	**25**

Course Rationale:

In the Era of Web technology it is essential for every Diploma Engineering students to understand the various steps for designing a creative and dynamic Web site and finally create good effective and customized websites. This course covers Web designing using HTML/DHTML , internet related technologies and systematic way of developing a Website.

Course Outcomes:

Students should be able to

1. Use HTML tags for information representation on Webpages.
2. Design HTML forms.
3. Format web pages using CSS.
4. Develop static web sites.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain)	**Topics and subtopics**	**Hrs.**
Units 1 :Introduction to Common HTML and Links and Addressing		
1.Define HTML. 2.State the Terminologies used in Web Design. 3. Describe Block Level Elements. 4.Define Components of HTML Tags. 5.Enlist Text Level Elements. 6.Create the different List. 7.Write a program for Linking HTML Documents.	1.1.Introduction to HTML. 1.2. Web Publishing. 1.3 Terminologies used in Web Design: Web, Web site, Web page, Web server, Web Browser,Search Engine. 1.4.Components of HTML: Tags – closed tags and open tags, Attributes, Elements. 1.5.Structure Tags : !DOCTYPE, HTML, HEAD, TITLE, BODY tags. 1.6.Block Level Elements : Headings, Paragraphs, Breaks, Divisions, Centered Text, Block Quotes, Preformatted text, Address. 1.7.Text Level Elements: Bold, Italic, Teletype, Underline, Strikethrough, Superscript, subscript. 1.8.Horizontal Rules, Special characters, Adding comments , The Meta tag. 1.9.Creating Lists: OrderedLists , Unordered Lists ,Definition Lists, Nested Lists. 1.10.Linking HTML DocumentsURL: Types of URLs, Absolute URLs, Relative URLs, The Anchor Tag.Linking : To document in the same folder, To document in the different folder, To document on the web, To specific section within the document, Inserting E-mail link.	04
Unit 2: IMAGES, COLORS AND BACKGROUNDS		
1.Define Image Formats, Inline Image. 2. Describe HSPACE and VSPACE. 3. Differentiate between Server side image maps and Client side image maps. 4.Describe Text Color. 5.Write a program for setting text color and background Color. 6.Write a program for setting background images. 7.Describe attribute of BODY tag.	2.1.Image: Image formats : gif, jpeg, png The inline image: an IMG tag, alternate text,image alignment, buffer space – HSPACE, VSPACE, wrapping text, height and width of images, Image as a link. Image maps :Server side image maps, Client side image map. 2.2.colors and Backgrounds: The text color: color attribute of FONT tag, text attribute of BODY tag. Background color: bgcolor attribute of BODY tag. Background images: background attribute of BODY tag. Changing link colors: link,alink, vlink attributes of BODY tag.	04

Unit 3: TABLES, FRAMES AND FORMS		
1.State Basic Tables Tags. 2. Describe how to add Captions. 3. Define Frames. 4.Enlist Advantages and Disadvantages of Frames. 5.Write a program to Create Frame using Frame Tag. 6.Define Forms. 7.Write a program to Create basic form using different form fields. 8.Describe Button s tag.	3.1.Tables: Creating basic tables: TABLE, TR, TH, TD tags. Formatting tables : border, cellspacing, cellpadding, width, align, bgcolor attributes. Adding captions : CAPTION tag. Formatting contents in the table cells: align, valign, bgcolor, height, width, nowrap attributes. Spanning rows and columns :rowspan and colspan attributes. 3.2.Frames: Introduction to frames : What is frame?, Advantages and disadvantages of using frames. Creating frames: FRAMESET tag – rows,cols attributes, FRAME tag – name, frame border, margin height, margin width,src, resize, scrolling attributes. Use of NOFRAMES tag , Frame targeting. 3.3.Forms: Creating basic form: FORM tag, action and method attributes. Form fields: Single line text field, password field, multiple line text area, radio buttons, check boxes. Pull down menus:SELECT and OPTION tags. Buttons:submit,reset and generalized buttons. Formatting technique: Using table to layout form.	04
Unit 4: STYLE SHEETS		
1.Define CSS. 2. Write a program for adding different Style to the Document. 3.Describe Selectors. 4.Describe Style Sheet Properties. 5.Write a Program displaying Style Sheet Properties.	4.1 Adding style to the document: Linking to style sheets, Embedding style sheets, Using inline style. 4.2 Selectors:CLASS rules, ID rules. 4.3.Style sheet properties: font, text, box, color and background properties.	04
	Total Hrs	**16**

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	Specific Learning Outcomes (Psychomotor Domain)	Units	Hrs.
1	Design Web page and apply some block level tags and some text level tags.	Introduction to Common HTML and Links and Addressing	04
2	Include Horizontal Rules and special characters in a Web page.	Introduction to Common HTML and Links and Addressing	04
3	Design web page and include different list.	Introduction to Common HTML and Links and Addressing	02
4	Implement various links in a Web page .	Introduction to Common HTML and Links and Addressing	02
5	Include images with different alignments and wrapped text in Web page. Also include image as a link in the Web page.	Images, Colors And Backgrounds	04
6	Design a web page and set background colour and document wide text colour.	Images, Colors And Backgrounds	02
7	HTML table, format contents in table cells and span the rows and columns. Create	Tables, Frames and Forms	02
8	Create basic frameset and format the frames within the frameset using different attributes. Also use frame targeting	Tables, Frames and Forms	04
9	Create a basic form using different input controls and pull down menu.	Tables, Frames and Forms	02
10	Use table to lay out form with different form controls and generalized buttons.	Tables, Frames and Forms	02
11	Create a web page and apply style sheet properties (font, text and box properties).	Style Sheets	02
12	Create a web page to get watermark effect using style rules.	Style Sheets	02
		Total Hrs	32

Instructional Strategy:

Sr.No	Topic	Instructional Strategy
1	Introduction to Common HTML and Links and Addressing.	Class room teaching, laboratory work
2	Images, Colors And Backgrounds	Class room teaching, laboratory work
3	Tables, Frames And Forms	Class room teaching, laboratory work
4	Style Sheets	Class room teaching, laboratory work

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment	ST	Students		–	–	Test Answer sheets	
	–	–		–	–	–	–	
	–	–		–	–	=	–	
	(Term End Examination)	End Exam			–	–		–
Direct Assessment Practical	Continuous Assesment		Students		–	–	Practical Answer sheets	
		Journal Writing		–	–	–	–	
				TOTAL	25	10		
	(Term End Examination)	End Exam		End Of the Course	50	20	Practical Answer Sheets	1,2,3,4
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3,4
	End exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	**Description**	**Max. Marks**
1	Demonstration	15
2	Result	15
3	Viva voce	20
	TOTAL	**50**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	**Program Outcomes (POs)**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	2	2	2	3	1	1	1	1	2	2
2										
3										
4										

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	Author	Title	Publication
1	Thomas A.Powell	The Complete Reference: HTML	Tata McGraw Hill,5th Edition
2	Deborah S. Ray, Eric J. Ray	Mastering HTML 4.0	BPB

E-References:

1. https://www.w3.org/TR/html401/struct/links.htm
2. www.w3schools.com/html/html-links.asp
3. www.w3schools.com/TAGs/att-body-bgcolor.asp
4. link.springer.com/chapter/10.1007
5. https://www.tutorialspoint.com/html/html-frames.htm
6. www.htmlhelp.com/reference/css/style-html.html

Programme : Diploma in Computer Engineering

Programme Code : 06

Name of Course : Computer Organization

Course Code : CM288

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**03**	**48**
Practical	–	–

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	**Two class tests each of 60 minutes.**	**03 Hrs.**	–	–	–
Marks	**20**	**80**	–	–	–

Course Rationale:

In this world of high speed computing and rapid innovations, it is essential for diploma in Computer engineering students to know about device of organization and Different architecture of the computers. This course is designed for basic perspective for students so that they should go hand in hand with the technological advances.

Course Outcomes:

Students should be able to

1. Describe the Organization of Pentium 4 Processor.
2. Distinguish different types of buses.
3. Represent control unit operations.
4. Identify I/O interrupts.
5. Differentiate serial and parallel processing.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain) Marks	**Topics and subtopics**	**Hrs.**
Units 1 :Introduction		
1.Define computer organization 2 Explain structure and function of each block. 3. Summarize history of computers.	1.1 Structure and Function. 1.2. Organization and Architecture. 1.3 A Brief History of Computers. 1.4.Designing for Performance. 1.5.The Evolution of the Intel x86 Architecture.	06
Unit 2: The Computer System		
1. Draw top level view of computer components. 2. Explain instruction cycle. 3. Define Bus. 4.Explain different types of Buses.	2.1.A Top-Level View of Computer Function and Interconnection 2.2 Computer Components. 2.3.Computer Function. 2.4.Interconnection Structures. 2.5.Bus Interconnection , PCI.	08
Unit 3: Cache Memory		
1.Justify the use of cache memory. 2.Explain memory hierarchy in Pentium 4.	3.1.Computer Memory System Overview 3.2 Cache Memory Principles. 3.3.Elements of Cache Design , Pentium 4 Cache Organization	10
Unit 4: Control Unit Operation		
1.Construct control unit. 2.Explore the use of micro-operations.	4.1.Control Unit Operation. 4.2 Micro-operations. 4.3.Control of the Processor.	10
Unit 5: Parallel Organization		
1.List importance of parallel processing. 2.Test software performance using multiple processors. 3.Explore hardware performance using parallel processing.	5.1 Parallel Processing 5.2T.he Use of Multiple Processors Hardware Performance Issues. 5.3.Software Performance Issues. 5.4. Multicore Organization.	08
Unit 6: Input / Output		
1.Explain generic I/O modules with diagram. 2.List importance of DMA controller. 3. Define Interrupt in I/O. 4.Elaborate on interrupt driven I/O	I/O Modules. 6.2.Programmed I/O Interrupt-Driven I/O. 6.3.Direct Memory Access.	06
Total Hrs	**48**	

Instructional Strategy:

Sr.No	**Topic**	**Instructional Strategy**
1	Introduction	Classroom teaching
2	The Computer System	Classroom teaching
3	Cache Memory	Classroom teaching
4	Control Unit Operation	Classroom teaching
5	Parallel Organization	Classroom teaching
6	Input / Output	Classroom teaching

Specification Table for Theory Paper:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1	Introduction	02	05	01	08
2	The Computer System	08	06	02	16
3	Cache Memory	06	06	04	16
4	Control Unit Operation	04	05	03	12
5	Parallel Organization	06	04	06	16
6	Input / Output	04	06	02	12
Total		**30**	**32**	**18**	**80**

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment	PT	Students	Two PT (average of two tests)	20	–	Test Answer sheets	1,2,3,4,5,6
						–		
				TOTAL	20	=		
	(Term End Examination)	End Exam		End Of the Course	80	28	Theory Answer sheets	1,2,3,4,5,6
Direct Assessment Practical	Continuous Assesment		Students		–	–		
				–		–	–	
	(Term End Examination)	End Exam						
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3 4,5,6
	End exam			End Of The Course	Questionnaires			

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	Program Outcomes (POs)									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	–	3	–	1	1	–	–	–	–	1
2	–	3	–	1	1	–	–	–	–	–
3	1	3	–	1	1	–	–	–	–	–
4	1	3	–	1	1	–	–	–	–	–
5	1	3	–	1	1	–	–	–	–	–
6	1	3	–	1	1	–	–	–	–	1

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Text Book

Sr. No	Author	Title	Publication
1	William Stallings	Computer Organization and Architecture	Pearson (8th Edition)

E-References:www.howstuffworks.com

1. http://www.seattlecentral.edu/ ymoh/history-of-computer/history-of-computer. /
2. http://ecomputernotes.com/fundamental/introduction-to-computer/what-are-characteristic -of-a-computer./
3. http://www.slideshare.net/sajidmarwatt/top-level-view-of-computer-function-and-interconnection
4. https://www.tutorialspoint.com/computer-fundamentals/computer-memory.html./
5. http://www.owchallie.com/systems/cache-design-elements.php
6. https://en.wikipedia.org/wiki/Direct-memory-access .

Programme : EE/ET/CM/IT Engineering

Programme Code : 02/03/06/07

Name of Course : ENGINEERING MAHEMATICS III

Course Code : SC282

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**02**	**32**
Practical	**01**	**16**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	**Two class tests each of 60 minutes.**	**02 Hrs.**	–	–	–
Marks	**20**	**80**	–	–	–

Course Rationale:

• The student shall learn various techniques in integration and differential equations and use these techniques to their related Engineering problems.

Course Outcomes:

After completing this course students will be able to

1. Apply the definition of integration as inverse of differentiation to solve problems
2. Apply various methods of integration
3. Apply Mathematical principle to solve engineering problems
4. Apply differential equation for solving problems in different engineering fields
5. Apply the knowledge of Laplace transform to solve engineering problems
6. Draw and come to a valid conclusion
7. Locate the exceptional and critical points in an engineering system

Course Contents: (Course Name: Applied Mathematics III - SC282)
A. Theory

Specific Learning Outcomes (Cognitive,Domain) Marks	**Topics and subtopics**	**Hrs.**
Units 1: Integration		
1.Define integration as anti derivative. 2. Integrate function using different methods.	1.1 Definitions, standard formulae, integration of algebraic sum of two or more functions, integration by substitutions and by trigonometric transformations, integration of 1/ax2+bx+c, 1 ax2+ bx+c, integration by parts, integration by partial fractions	10
Unit 2: Definite integrals		
1 Solve problems on definite integrals using the properties.	2.1 Definition and properties of definite integrals Example based on these properties.	04
Unit 3: Applications of integration		
1. Find mean and R.M.S.value	3.1Mean value and root mean square value.	04
Unit 4: Differential Equations		
1. Define order and degree of differential equation 2. Solve the differential equation of first order and first degree 3. Solve different engineering problems using differential equation	4.1 Definition, order and degree of differential equations. Formation of differential equations. Solution of differential equations:(using following methods) (i) Variable separable (ii) Reducible to variable separable. (iii) Homogeneous differential equations. (iv) Exact diff. equations. (v) Linear differential equations.	05
Unit 5: Complex number		
1. Define complex number 2. Define modulus and amplitude 3. Solve examples on complex number using De-Moivre's theorem 4.Find roots of complex number	5.1Definition and algebra of a complex numbers. Geometrical representation(Argand's diagram), modulus and amplitude of a complex number. De Moivre's theorem (without proof), roots of complex number.	05
Unit 6: Laplace Transform		
1.Define Laplace transform, inverse transform , and Convolution theorem. 2. Solve examples on L.T. and Inverse L.T. 3.Solve differential equation using L.T.	6.1Definition, Laplace Transforms of elementary functions, important properties of Laplace Transforms, Inverse of Laplace Transforms, Convolution Theorem and application of Laplace Transform for solving differential equations.	04
Total Hrs	**32**	

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	Specific Learning Outcomes (Psychomotor Domain)	Units	Hrs.
1	Integration based on standard formulae.	Integration	01
2	Integration by substitution method	Integration	01
3	Integration on the type 1/ax2+bx+c, 1 ax2+ bx+c ,1/asinx+bcosx+c , 1/ asin2 x +bcos2 x +c.	Integration	01
4	Integration using By Part Rule and integration by partial fraction method	Integration	01
5	Examples on Definite integral and it's properties.	Definite integrals.	01
6	Examples on Mean and R.M.S. value.	Applications of integration	01
7	Examples on order ,degree and formation of differential equation.	Differential Equation	01
8	Solution of first order first degree D.E. using various methods.	Differential Equation	01
9	Examples on algebra of complex number and determination of modulus and amplitude.	Complex Number	01
10	Examples on De Moivre's theorem and roots of complex number.	Complex Number	01
11	Examples on Laplace transform and inverse Laplace transform.	Laplace Transform	01
12	Examples on Convolution theorem and Solution of D.E. by Laplace transform.	Laplace Transform	01
	Skill Test		02
		Total Hrs	14

Instructional Strategy:

Sr No	Topic	Instructional Strategy
1	**Integration**	**Class room teaching, chalk board**
2	**Definite integration**	**Class room teaching, chalk board**
3	**Applications of integration**	**Class room teaching, chalk board**
4	**Differential equation**	**Class room teaching, chalk board**
5	**Complex number**	**Class room teaching, chalk board**
6	**Laplace transform**	**Class room teaching, chalk board**

Specification Table for Theory Paper:

Sr. No.	Topic	Levels from Cognition process dimension			Total
		R	**U**	**A**	
1	Integration	08(04)	16(08)	00(00)	24(12)
2	Definite Integrals	04(04)	04(00)	00(00)	24(12)
3	Applications of integration	00(00)	00(00)	08(04)	08(04)
4	Differential Equation	04(00)	08(04)	04(04)	16(08)
5	Complex number	04(04)	04(02)	04(00)	12(06)
6	Laplace transform	04(02)	04(00)	04(04)	12(04)
	Total	24(14)	36(18)	20(08)	80(40)

R: Remember U:Understand A:Apply

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment (Theory)	CA (Continuous Assessment)	PT	STUDENTS	Two PT (average of two tests will be computed)	20	–	Test answer sheets	1,2,3,4,5,6,7
		Class room Assignment		Assignments	–	–	Assignment Book	1,2,3,4,5,6,7
				TOTAL	20	–	–	–
	TEE (Term End Exam)	End exam		End of the course	80	28	Theory Answer Sheets	1,2,3,4,5,6,7
Direct Assessment (Practical)	–	–	–	–	–	–	–	–
Indirect Assessment	Student Feedback on course		STUDENTS	After first PT	Student feedback form			
	End of Course			End of the course	Questionnaires			

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	Program Outcomes (POs)									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	3	3	2	1	1	1	1	3	1	2
2	3	3	2	1	1	1	1	2	1	2
3	3	2	3	2	1	1	2	2	1	3
4	3	2	3	2	1	1	2	2	1	3
5	3	2	3	2	1	1	2	2	1	3
6	3	2	2	1	1	1	2	2	2	1
7	2	2	2	1	1	1	2	2	2	1

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Sr. No	Title	Author, Publisher, Edition and Year of publication	ISBN Number
1	Higher Engineering Mathematics	Khanna Publishers, New Delhi Grewal B.S	
2	Engineering Mathematics Vol.II	Satya Prakashan, New Delhi Vishwanath	
3	Mathematics for Polytechnic students	Pune Vidyarthi Griha Prakashan S.P. Deshpande	
4	Engineering Mathematics Part II	S. Chand & Co.Ltd. Delhi, H.K. Dass	

Programme : Diploma in ET/CM/IT

Programme Code :Diploma in ET/CM/IT 03/06/07/17/23/26

Name of Course : Fundamentals of Electrical Engineering

Course Code : EE283

Teaching Scheme:

	Hours /Week	**Total Hours**
Theory	**03**	**48**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	**Semester End Examination**			
		Theory	**Practical**	**Oral**	**Term work**
Duration	**Two class tests each of 60 minutes.**	**02 Hrs.**	–	–	–
Marks	**20**	**80**	–	**25**	**25**

Course Rationale:

Every branch of engineering is related with electrical engineering. Every student should know fundamentals of electrical engineering From this point of view this course is introduced.

Course Outcomes:

Students should be able to

1. Apply the concepts of Basic Electrical Engineering.
2. Analyze various electrical circuits.
3. Handle various electrical machines and equipment's.
4. Explore electrical safety.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain)	**Topics and subtopics**	**Hrs.**
Units 1 : Electrical Circuits:		
1.Explain the various types of supply. 2.Explain the effect of temperature rise on resistance. 3. Apply voltage division for series circuit And current division for parallel circuit.	1.1 Introduction to electric power supply system, AC supply single phase and three phase, DC supply. 1.2 Resistance, Effect of temperature on resistance (pure metals, insulators, alloys), temperature coefficient of Resistance. 1.3 Resistances in series, voltage division formula. 1.4 Resistances in parallel, current division formula.	04
Unit 2: Magnetic Circuit		
1.Understand various concept used for magnetic circuit. 2. Explain the comparison between electrical and magnetic circuit. 3.Explain leakage flux ,total flux useful flux,fringing. 4. Describe the significance of magnetization curve hysteresis loop	2.1 Introduction to magnetic circuit, M.M.F., absolute and relative permeability, reluctance, relation between M.M.F. and reluctance 2.2 Comparison of magnetic electrical circuits. 2.3 Simple series magnetic circuits, concept of useful flux, leakage flux, total flux fringing. 2.4 Magnetization curves. Concept of hysteresis, hysteresis loop loss	04
Unit 3: Electromagnetic Induction:		
1.State and apply faraday's laws of EMI 2.Differentiate between Statically and dynamically induced EMF 3. State and apply Lenz's laws and Fleming rules of EMI 4. Differentiate between Statically and dynamically induced EMF	3.1 Faradays laws of Electromagnetic Induction. 3.2 Types of induced e.m.f : Dynamically induced e.m.f and Statically induced e.m.f (self and mutually) 3.3Lenz's law, Fleming's right hand rule 3.4 Self and mutually induced inductance ,Coefficient of coupling.	04
Unit 4: Electrostatics:		
1.Explain the concept electrical field and define terms related to Electrostatics. 2.Explain the concept of capacitance. 3.Explain the construction and working of capacitor. 4.State the different types of dielectrics and capacitance. 5. Explain the process of charging and discharging capacitance.	4.1 Brief review of electric field, field density, permittivity, relative permittivity, charge and their relation 4.2 Capacitor and Capacitance, Dielectric constant, Capacitors in series and parallel 4.3 Capacitance of parallel plate capacitor with single dielectric and composite dielectric medium 4.4 Charging and discharging of capacitor to give idea of RC time constant (no derivation)	04

Unit 5: A.C. Fundamentals:		
1.Explain the concept of generation of AC Wave. 2. Define various terms related to A.C fundamentals. 3.Describe the concepts phase , Phase difference ,lagging and leading 4.Draw A.C wave 5.Draw Wave form for simple ac series circuit. 6.Draw phasor diagram form for simple ac series circuit. 7.Analyze the ac series circuit	5.1 Generation of single phase alternating voltage and current, Graphical representations of sinusoidal e.m.f and current. General Equation of Alternating quantity 5.2 Definitions of instantaneous value, cycle, period, frequency, amplitude. Peak value, average value, r.m.s. value of an alternating quantity, peak factor and form factor 5.3 Concept of phase and phase difference. Concept of lagging and leading. 5.4 Representation of an alternating quantity by phasor 5.5 Wave forms and Phase diagram for a Purely resistive AC circuit Purely capacitive AC circuit.(Voltage, Current, power, p.f. relations and phasor diagrams,). 5.6 RL Series circuit: Waveforms , phasor diagram, Impedance, Impedance triangle, power factor. 5.7 RC circuit: Waveforms, phasor diagram, Impedance, Impedance triangle, power factor.	08
Unit 6: Three Phase Circuits :		
1.Explain the concept of generation of AC Wave for 3 phase. 2.Describe the concepts phase , Phase sequence ,lagging and leading for 3 phase circuit. 3. Draw Wave form for 3 phase ac series circuit. 4.List types of connection of 3 phase load. 5. Know the relationship line voltage and phase voltage , line current and phase current of a) star connection b)delta connection	6.1 Generation of 3-phase voltage and its waveform. 6.2 Phase sequence, star and delta connection. 6.3 Concept of balanced load. Concept of balanced supply system. 6.4 Voltage, current, power relations in star and delta connected system and numerical ,Vector diagram.	06
Unit 7: Single phase Transformer:		
1.Explain the function of various parts and working of single phase transformer. 2.State the types of transformer according to construction and function 3.know an EMF equation. 4.understand the concept of voltage ratio and current ratio of single phase transformer. 5. Understand the concept efficiency and voltage of single phase transformer.	7.1 Definition, principal of working, construction. 7.2 Types of transformer on the basis of voltage, power and construction. 7.3 E.M.F. equation (No derivation). 7.4 Voltage, current ratio o f a transformer. 7.5 Losses in transformer, efficiency and regulation of transformer.(No Numericals)	06

Unit 8: Electrical Motors		
1.Explain the construction of DC motor, 3 phase induction motor and single phase induction motor. 2. Know reverse of direction of DC motor and induction motor. 3.List the application of DC motor and induction motor, servo motors.	8.1 D.C. Motors :Construction and Working principle of d .c. motor Types of motors Characteristics and applications of d. c. motors. Necessity of a starter for dc Motor. 8.2 Induction Motor: Construction and working principle of three phase Induction Motor Synchronous speed, slip Necessity of a starter , D.O.L starter for three phase induction motor. Change the direction of rotation Single Phase Induction Motors- Working principle and applications of following Motors I)Split Phase a)Resistance b)Capacitance II)Capacitor start capacitor run III) Shaded pole. Reversal of rotation of above motors. 8.3 Special Motors: Working principle and applications-stepper motor servo motor-AC servo motor and DC servo motor.	10
Unit 8: Electrical Safety :		
1.State the I .E rules for safety of person and equipment's 2.List the causes and remedies of electrical hazards. 3. Understand the procedure for rescuing a person who has receive and electric shock. 4. List the protective devices such as H.R.C fuse , MCB and ELCB.	9.1 I.E. rules for safety of person and equipment followed when working with electrical installation. Electrical Hazards : Causes and Remedies. 9.2 Electrical shock, Operational precautions necessary to avoid electrical shock , Procedure for rescuing a person who has received an electrical shock. 9.3 Necessity of Earthing 9.4 Introduction to circuit protective devices: Concept of overload, O.C.,S.C., leakage current, H.R.C. fuses, MCB, use of ELCB.	04
	Total Hrs	**48**

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	Specific Learning Outcomes (Psychomotor Domain)	Units	Hrs.
1	To determine temperature rise of resistance of metal	Electrical circuit	04
2	Verification of Right hand rule for solenoid.	Magnetic Circuit	02
3	Verification of Faraday's laws of Electromagnetic Induction.	Electromagnetic Induction	02
4	To plot the B-H curve of a magnetic material.	Electrostatics	02
5	To plot the charging and discharging curve of a capacitor.	AC Fundamental	02
6	To verify the relation between line and phase values of current and voltage in a balanced star and delta connected circuit	Three Phase Circuit	04
7	To determine voltage and current ratio of single-phase transformer and determine efficiency and voltage regulation of single phase transformer	Single phase transformer	04
8	Reversal of rotation of following motor I)D.C.Motor II)Three phase Induction motor	Electrical Motor	04
9	Demonstration o f use and tripping of MCB against overload and short Circuit.	Electrical Safety	04
10	Demonstration of use and tripping of ELCB against leakage current.	Electrical Safety	04
		Total Hrs	32

Instructional Strategy:

Sr.No	Topic	Instructional Strategy
1	Electrical Circuits	Lecture, Problem solving ,practical
2	Magnetic Circuits	Lecture, Q/A Technique
3	Electromagnetic Induction	Lecture, Problem solving
4	Electrostatics	Lecture, Problem solving ,practical
5	A.C. Fundamentals:	Lecture, Problem solving ,practical, Q/A Technique
6	Three Phase Circuits	Lecture, Problem solving ,practical
7	Single phase Transformer	Lecture, Problem solving ,practical
8	Electrical Motors	Lecture, Problem solving ,practical
4	Electrical Safety	Lecture, Demonstration and PPTs

Specification Table for Theory Paper:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1	Electrical Circuit	02	04	02	08
2	Magnetic Circuit	02	04	02	08
3	Electromagnetic Induction	02	04	00	06
4	Electrostatics	04	02	02	08
5	AC Fundamental	08	06	02	16
6	Three Phase Circuit	04	02	02	08
7	Single Phase Transformer	02	02	02	06
8	Electrical Motor	06	06	04	16
9	Electrical Safety	02	01	01	04
Total		**08**	**24**	**48**	**80**

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment	ST	Students	Two PT (average of two tests)	20	–	Test Answer sheets	1,2,3,4
						–		5,6,7,8,9
				TOTAL	20	=		
	(Term End Examination)	End Exam		End Of the Course	80	28	Theory Answer sheets	1,2,3,4
Direct Assessment Practical	Continuous Assesment	ST	Students	—–	–	–	–	
		Journal Writing		End of the course	15	–	Journal	1,2,3,4
				TOTAL	25	10		
	(Term End Examination)	End Exam		End Of the Course	25	10	oral	1,2,3,4
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			1,2,3,4, 5,6,7,8,9
	End exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	**Description**	**Max. Marks**
1	Presentations	10
2	Oral skills	10
3	Content	05
	TOTAL	**25**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	**Program Outcomes (POs)**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	03	01	01	01		01		01	01	01
2	03	01	01	01	01			01		
3	03	01	01	01	01			01		
4	01	01	01	01	01		01	01	01	01

Text Book

Sr. No	**Author**	**Title**	**Publication**
1	Edvard Hughes	Electrical Technology	Pearson Education
2	H.Cotton	Electrical Technology	CBC,Delhi
3	V.N.Mittle	Basic Electrical Engineering	Tata McGraw Hill
4	B.L.Theraja	Electrical Technology Vol. I and II.	S. Chand and Co.

Programme : Diploma in CM/IT

Programme Code : 06/07/26

Name of Course : Fundamental Of Electronics

Course Code : ET284

Teaching Scheme:

	Hours /Week	Total Hours
Theory	**03**	**48**
Practical	**02**	**32**

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	**Two class tests each of 60 minutes.**	**03 Hrs.**	**03 Hrs.**	–	–
Marks	**20**	**80**	–	**25**	**25**

Course Rationale:

This course will be useful in understanding of construction, working and applications of semiconductor devices and circuits.

Course Outcomes:

After completing this course students will be able to

1. Use of semiconductor in various electronic circuits.
2. Use oscillators and filters in different electronic circuits.
3. Use OP-AMPs indifferent arithmetic and logical operations.
4. Operate instruments in industries like CRO, DSO, Function generator etc.
5. Identify and use transducers / sensors in control applications.

Course Contents:
A. Theory

Specific Learning Outcomes (Cognitive,Domain)	**Topics and subtopics**	**Hrs.**
Unit 1: Semiconductor devices		
1. Plot V-I characteristics of PN Diode 2 Define and Measure parameters of diode 3. Implement Zener diode as voltage regulator 4. Differentiate between half wave , Full wave and Bridge rectifiers 5. Analyze and differentiate between CE, CB, CC configurations 6. Interpret construction and working of UJT, FET and SCR. 7. Plot V-I characteristics of FET, UJT and SCR.	1.1 Rectifying diode: Review of P - type and N - type semiconductor,PN junction, Barriervoltage, depletion region,Junction Capacitance, Forward biased and reversed biased junction.Diode symbol ,forward and reversed Characteristics of PN junction diode. Specifications : Forward voltage drop , Reverse saturation current, maximum forward current , power dissipation , Package view of diodes of different power ratings (to be shown during practical hours) 1.2Zener diode : Construction ,Symbol ,characteristics (forward and reversed) Avalanche and Zener breakdown Specifications : Zener voltage , power dissipation , break over current, dynamic resistance and maximum reverse current (to be shown during practical hours) 1.3Rectifier : Half wave and Full wave Rectifier, circuit diagram, working, comparison, merits and demerits. Filters, necessity, types, comparison, merits, demerits. 1.4 Transistor : construction, symbol, operating principle, characteristics, applications, rating and specifications, configurations, comparison between CB, CE, CC. 1.5 UJT : Construction, symbol, operating principle, characteristics, applications, rating and specifications. 1.6 FET: Construction, symbol, operating principle, characteristics, applications, rating and specifications, configurations, comparison. 1.7 SCR : Symbol, their construction, working, characteristics, applications.	16
Unit 2: Oscillator		
1.State Barkhausen criteria for oscillator. 2. Classify oscillators. 3.Draw circuit and explain working of RF, LF and tuned oscillator.	2.1Block diagram, Barkhausen Criteria for sustained oscillations 2.2classifications: LC and RC. Oscillations in LC tank circuit; Hartley; Colpitts. RC Wein Bridge and Phase shift, Oscillator. Crystal Oscillator.	08

Unit 3: Linear ICs		
1. Draw symbol and pin diagram of IC 741. 2. Define various parameters related to OP-AMP. 3. Derive expression for various mathematical operation of OP-AMP. 4. Draw and explain block diagram of Timer IC555. 5. Implementation of timer as Astable and Monostable multivibrator.	3.1OP AMP. IC 741, symbol, pin diagram, ideal and typical characteristics, Applications such as Inverting , Non Inverting amplifier, Difference amplifier, adder substractor , Integrator, differentiator. 3.2Timer IC 555: Block diagram, operating modes viz. Astable, Monostable.	09
Unit 4: Instrumentation		
1. Draw and explain blocks of CRO and Function generator. 2. State applications and specifications of CRO and Function generator.	4.1 CRO: Cathode Ray Tube, Oscilloscope Block diagram, operation, oscilloscope specifications, Applications. 4.2Function generator, Block diagram, operation, specifications, applications	07
Unit 5: Transducer		
1. Define and classify transducers. 2. State selection criteria of transducer. 3.Differentiate betweenActive- Passive, Primary- Secondary, and Analog-Digital transducers. 4. Interpret working principle and application of Resistive, Capacitive, Inductive, Transducers (LVDT), Photoelectric, Piezoelectric Transducers, proximity switch transducers.	5.1Definition, classification: Active, Passive, Primary, Secondary, Mechanical, Electronic, Analog, Digital, Selection criteria, Resistive, Capacitive, Inductive, Transducers(LVDT), Photoelectric, Piezoelectric Transducers, proximity switch,Construction, Operation, One example of each, Applications.	08
	Total Hrs	**48**

B. List of Practicals/Laboratory Experiences/Assignments:

Practical No.	**Specific Learning Outcomes (Psychomotor Domain)**	**Units**	**Hrs.**
1	Plot V-I characteristics of P-N junction diode.	Semiconductor Devices	02
2	Study of Half wave and Full wave rectifier with and without filter.	Semiconductor Devices	02
3	Plot the input and output characteristics in CE configurations.	Semiconductor Devices	04
4	Plot the characteristics of FET.	Semiconductor Devices	04
5	Plot the characteristics of UJT.	Semiconductor Devices	02
6	Plot the characteristics of SCR.	Semiconductor Devices	02
7	Study of Hartley and Colpitts oscillator.	Oscillator	02
8	Study of RC phase shift and Wein Bridge.	Oscillator	02
9	Study of Inverting and Non Inverting Amplifier.	Linear ICs	02
10	Study of Integrator and Differentiator.	Linear ICs	02
11	Study of astablemultivibrator using 555.	Linear ICs	02
12	Study of C.R.O.	Instrumentation	02
13	Study of Function generator.	Instrumentation	02
14	Study of Transducers.	Transducer	02
		Total Hrs	32

Instructional Strategy:

Sr.No	Topic	Instructional Strategy
1	Semiconductor Devices	Classroom teaching and laboratory work, assignments, PPTs,Videos and animation.
2	Oscillator	EClassroom teaching and laboratory work, assignments, PPTs, Videos and animation.
3	Linear ICs	Classroom teaching and laboratory work, assignments, PPTs.
4	Instrumentation	Classroom teaching and laboratory work, assignments, preparing charts.
5	Transducer	Classroom teaching and laboratory work, assignments, PPTs, Videos and animation, preparing charts.

Specification Table for Theory Paper:

Sr. No.	Topic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1	Semiconductor Devices	08(04)	08(04)	06(02)	22(10)
2	Oscillator	04(04)	08(04)	04(00)	16(08)
3	Linear ICs	04(00)	06(00)	04(06)	14(06)
4	Instrumentation	04(00)	04(06)	04(00)	12(06)
5	Transducer	04(02)	06(08)	06(00)	16(10)
Total		**24(10)**	**30(22)**	**26(08)**	**80(40)**

R-Remember U – Understand A – Analyze / Apply

Assessment and Evaluation Scheme:

	What		To Whom	Frequency	Max Marks	Min Marks	Evidence Collected	Course Outcomes
Direct Assessment Theory	Continuous Assesment (CA)	PT	Students	Two PT (average of two tests)	20	12	Test Answer sheets	ALL
		Class Room Assign ments		Assignments	–	–	Assign ment Book	ALL
				TOTAL	20	12		
	Term End Examination (TEE)	End Exam		End Of the Course	80	28	Theory Answer sheets	ALL
Direct Assessment Practical	Continuous Assesment (CA)	Oral	Students	Oral on study experiments and practical performance	10	–	Answer Sheets	All
		Journal Writing		Assignments	15	–	Journal	All
				TOTAL	25			
	Term End Examination (TEE)	End Exam		End Of the Course	25	10	Answer Sheets	All
Indirect Assessment	Student Feedback on course		Students	After First PT	Student Feedback Form			All
	End Exam			End Of The Course	Questionnaires			

Scheme Of Practical Evaluation:

S.N.	**Description**	**Max. Marks**
1	Observations	05
2	Calculations and Result	
3	Viva voce	20
	TOTAL	**25**

Mapping Course Outcomes With Program Outcomes:

Course Outcomes	**Program Outcomes (POs)**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	3	–	2	–	–	2	–	2	–	–
2	3	–	2	–	–	2	–	2	–	3
3	2	–	–	–	–	2	–	1	–	1
4	3	–	3	2	–	–	–	2	2	2
5	2	–	3	3	–	2	–	–	–	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Reference & Text Books:

Sr. No	Title	Author	PUBLISHER
1	Basic Electronics.	Albert Malvino	8th Edition,Tata McGraw Hill,2015
2	Basic Electronics.	J.S.Katre.	Techmax Publishers
3	Basic Electronics.	B.L.Theraja	S Chand Publishing
4	Linear Integrated Circuits	Ramakant Gaikwad	PHI Publication
5	Modern Digital Electronics	R P Jain	McGraw Hill Education Pvt. Ltd
6	Instrumentation	A K Sawheny	DhanpatRai Publication

E-References:

1. http://www.nptel.ac.in
2. http://www.electronics-tutorials.com
3. https://learn.sparkfun.com/tutorials/transistors
4.http://faculty.cord.edu/luther/physics225/Handouts/transistors$_h$*andout.pdf*
5.http://www.technologystudent.com/elec16.http://www.slideshare.net/manash234/classification-of-trans