Draft Syllabus of

Computer & Allied Branches

for
Diploma Engineering
1st Semester (w.e.f. 2024-25)

INDEX

Sr.No.	Name of Branches
1	Information & Communication Technology
2	Computer Engineering
3	Information Technology
4	Computer Science and Engineering (Same as Computer Engineering)

GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
Level: Diploma
Branch: Information & Communication Technology
Course / Subject Code:
Course / Subject Name: Fundamentals of Electronics

w. e. f. Academic Year:	2024-25
Semester:	1st
Category of the Course:	PCC

Prerequisite:	Basic of Power Supply & Electronics Components
Rationale:	The engineering diploma holders are required to use and maintain various types of electronically controlled equipment. The fundamental principles of electronics are to be applied in most of the situations to arrive at the probable solutions which is faced in the world of work, therefore the knowledge of the functions of various basic electronic devices and components and practical skills acquired through the laboratory experiments will help them, when they work with electronic equipment and its sub-circuits. This course is designed to develop the skills to use the basics electronic components and apply the knowledge to maintain the various types of electronic circuits.

Course Outcome:
After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
1	Use basic passive electronic components.	R, U, A
2	Develop different types of rectifiers using PN junction diode.	R, U, A
3	Use special purpose diodes for different applications.	R, U, A
4	Analyze various transistor configurations.	R, U, A
5	Design various IC 555 Timer circuits	R, U, A

Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	T	PR	C	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150

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Course Content:

Unit No.	Content	No. of Hours	% of Weightage marks
1.	Electronic Components & its measurements	10	14
2.	Introduction of Rectifiers & operation	10	26
3.	Special Purpose Diodes applications	10	20
4.	Introduction to Transistors	10	20
5.	Timer circuits and application	5	20
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
30	**40**	**30**	-	-	-

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

UNDERPINNING THEORY:

The major underpinning theory is given below based on the higher level UOs of Revised Bloom's taxonomy that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Major Learning Outcomes	Topics and sub-topics
Unit – I Electronic Components	1a. Define active and passive components. 1b. Explain the calculation of color coding technique for resistance calculation. 1c. Compare specifications of various types of capacitors. 1d. Differentiate various types of resistors, capacitors and Inductors on the basis of construction and working principle. 1e. Describe the applications of given type of passive component.	1.1 Introduction to electronics, Brief History of electronic components, active and passive components 1.2 Resistors: Concept of resistors, specification of resistor, classification of resistors, fixed type and variable type resistors with applications, color coding of resistors, Light dependent resistor (LDR) - symbol and working. 1.3 Capacitors: Concept of capacitor, Classification of capacitors, capacitors specifications, fixed capacitor, specification and application of ceramic

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		disk capacitor, polyester capacitor , mica capacitor ,aluminum electrolytic capacitor, Coding of capacitors using directly printed codes and color band system 1.4 Inductors: Faraday's laws of electromagnetic induction self-inductance, mutual inductance, inductor specifications, introduction to air core, iron core and ferrite core inductor, toroidal inductor, Color coding of inductors and it`s applications
Unit – II **Applications of Diodes and Rectifiers**	2a. Explain clipper and clamper circuits 2b. Compare performance of various types of rectifiers. 2c. Calculate ripple factor, ripple frequency, PIV and efficiency of the given type of rectifier. 2d. Justify the selection of specific type of rectifier for the given application. 2e. Discuss function of shunt capacitor and Pi – filter 2f. Block diagram of DC power supply and compare with AC power supply	2.1 Different types of Clipper Clamper circuits, Voltage Multiplier circuits. 2.2 Rectifier: Need of rectifier, definition, types of rectifiers 2.3 half wave rectifier, full wave centre tap and bridge rectifier, output voltage, current, ripple voltage, ripple factor, ripple frequency, PIV of a diode, transformer utilization factor, efficiency of half wave and full wave rectifiers 2.4 Filters: Need and applications of rectifier filters, types of filters: shunt capacitor & Pie filter 2.5 DC & AC Power supply analysis
Unit– III **Special Purpose Diodes**	3a. Draw and describe symbol, construction, characteristics and working of the various Diodes. 3b. Describe applications of various Diodes.	3.1 Zener diode: -Symbol, construction, characteristics and working and application as a voltage regulator 3.2 symbol, construction, characteristics and working of Varactor diode, Schottky barrier diode, Crystal diode , Photodiode, Light Emitting Diode(LED) and Multi color LED 3.3 Application of Varactor diode, Schottky barrier diode, Crystal diode , Photodiode, Light Emitting Diode(LED) and Multi color LED

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Unit– IV Introduction to Transistors	4a. Draw and describe symbol, construction, characteristics and working of NPN and PNP Transistor with sketch. 4b. Explain the operation of transistor Configuration with current gain ,voltage gain and power gain 4c. Calculate the current gain for the given transistor configuration and relation between them. 4d. Explain application of transistor as switch and amplifier.	4.1 Transistor NPN and PNP symbol, construction, working, characteristics and important specifications of transistor 4.2 Transistor Configuration and input output characteristics of NPN transistors in Common base (CB), Common emitter (CE) and Common collector (CC) configuration 4.3 Relation between current gain of CB, CE and CC configuration, alpha, beta and gama of transistor 4.4 Transistor as switch Transistor as single stage Common emitter amplifier
Unit– V Timer circuits and application	5a. Explain block diagram, Pin diagram and working of IC 555 timer 5b. Draw and explain Astable multivibrator 5c. Draw and explain mono stable multivibrator 5d. Draw and explain Bistable multivibrator	5.1 IC 555: block diagram, working , Pin diagram 5.2 Astable Multivibrator using 555 timer IC. 5.3 Mono stable Multivibrator using 555 timer IC. Bistable Multivibrator using 555 timer IC.

References/Suggested Learning Resources:

(a) Books:

Sr No.	Title of Book	Author	Publication with place, year and ISBN
1	Basic Electronics and Linear Circuits	N.N. Bhargava , D.C. Kulshreshtha , S.C. Gupta	McGraw Hill Education, ISBN: 9781259006463
2	Electronic Devices and Circuit: An Introduction	Mottershead, Allen	Goodyear Publishing Co., New Delhi, ISBN : 9780876202654
3	The Art of Electronics	Horowitz, Paul; Hill, Winfield	Cambridge University Press, New Delhi, 2015, ISBN : 9780521689175
4	Basic Electronic Engineering	Baru, V., Kaduskar, R., Gaikwad S.T.	Dreamtech Press, New Delhi, 2015 ISBN: 9789350040126
	Fundamentals of	Bell, David	Oxford University Press New Delhi,

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5	Electronic Devices and Circuits		2015, ISBN : 9780195425239
6	Electronic Devices and Circuit	Maini, Anil K.	Wiley India, New Delhi, ISBN : 9788126518951
7	Transistor Selector Handbook	TAB books	Tower's International Foulsham, London, 1974, ISBN: 9780572008888
8	Principles of Electronics	V.K.Metha, Rohit Mehta	S. Chand, New Delhi, 2014, ISBN: 978-8121924504
9	E-Waste: Management and Procurement of Environment	Suresh Kumar, Jatindra Kumar Pradhan	Authors press 2021, ASIN : B095PR6MVS
10	Solid and Liquid Waste Management Waste to Wealth	Rajaram Vasudevan, Siddiqui Faisal Zia , Agrawal Sanjeev	PHI Learning Pvt. Ltd. New Delhi ISBN: 9788120352452
11	Power Electronics	M.H. Rashid	PHI

(b) Open source software and website:

Software:
1. Electric Circuit Studio
2. Multisim for Analog and Electronics Circuit design and simulation.
3. Electronics Work bench
4. Power Simulator
5. Scilab

Websites:
1. https://www.multisim.com/
2. https://www.vlab.co.in/broad-area-electronics-and-communications
3. http://202.12.103.135/vlab/interface/index.html
4. www.nptel.iitm.ac.in
5. www.datasheetcafe.com
6. www.williamson-labs.com
7. www.learnerstv.com
8. www.cadsoft.io
9. https://lectures.gtu.ac.in/listview.aspx?br=11&course=DI

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10. www.nptel.iitm.ac.in
11. www.khanacademy
12. www.youtube.com
13. www.alldatasheet.com
14. www.electronics-tutorials.ws
15. www.instructables.com/Basic-Electronics
16. www.makerspaces.com/basic-electronics
17. https://robu.in/product-category/electronic-components/
18. https://in.rsdelivers.com/campaigns/microsites/electronics?cm_mmc=IN-PPC-DS3A-_-google-_- 0_IN_EN_Brand_RS+Components|Pure_BMM-_-RS_Components-_-%2Brs+%2Bcomponents&matchtype=b&kwd-296158955919&s_kwcid=AL!7457!3!360038397031!b!!g!!%2Brs%20%2Bcomponents&gclid=EAIaIQobChMIq9DAjuqb8gIVwRErCh2QaQvYEAAYASACEgKUgPD_BwE&gclsrc=aw.ds
19. https://www.digikey.in/?utm_adgroup=General&utm_source=google&utm_medium=cpc&utm_ca
mpaign=EN_Competitor_Mouser_E&utm_term=mouser&productid=&gclid=EAIaIQobChMIg8Kt qeqb8gIV7xxyCh2cUwbYEAAYAiAAEgKsovD_Bw
20. https://electronicscoach.com/category/basic-electronics

Suggested Course Practical List:

Sr No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	Use Digital Multimeter to measure basic electrical parameters like current, voltage and resistance.	I	02*
2	Use CRO to measure electrical parameters of different types of signals obtain from Function generator.	I	02*
3	Measure resistance, capacitances and inductances of different type of resistors, capacitors and inductors using LCR meter and verify it through color code and numerical code.	I	02*
4	Test the performance of LDR and measure the variation in resistance with the change in light intensity.	I	02
5	Build and test different types of clipper circuits.	II	02*
6	Build and test the half wave rectifier on a breadboard.	II	02*
7	Build and test the full wave rectifier (center tapping) on a breadboard.	II	02
8	Build and test the full wave bridge rectifier on a breadboard.	II	02*
9	Test the performance of half and full wave rectifier with shunt capacitor	II	02*

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	filter.		
10	Test the performance of the zener diode and obtain the Zener breakdown (Reverse) voltage and current.	III	02
11	Build and test zener voltage regulator for the given regulated voltage.	III	02*
12	Test the performance of LED in series and shunt connection and measure the current and voltage in both the connections.	III	02

13	Test common emitter transistor configuration and obtain the value of current gain and input impedance.	IV	04
14	Perform application of transistor as a switch	IV	02*
15	Build and test common emitter amplifier and obtain the value of voltage gain for given input signal.	IV	02*
16	Build and test monostable multivibrator using IC 555	V	02*
17	Build and test bistable multivibrator using IC 555	V	02
18	Build and test astable multivibrator using IC 555	V	02*
	Minimum 14 Practical Exercises	30 Hrs.	**Minimum 14 Practical Exercises**

Note:

i. More Practical Exercises can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.

ii. Care must be taken in assigning and assessing study report as it is a first year study report. Study report, data collection and analysis report must be assigned in a group. Teacher has to discuss about type of data (which and why) before group start their market survey. The following are some sample 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed Practical Exercises of this course required which are embedded in the COs and ultimately the competency.

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Sr no	Sample Performance Indicators for the PrOs	Weightage in %
1	Prepare of experimental setup	20
2	Operate the equipment setup or circuit	20
3	Follow safety measures and practices	10
4	Record and plot observations correctly	20
5	Interpret the result and conclude	30

List of Laboratory/Learning Resources Required:

These major equipments with broad specifications for the PrOs is a guide to procure them by the administrators to user in uniformity of practical's in all institutions across the state.

Sr No.	Equipment Name with Broad Specifications	PrO. No.
1	Dual variable DC power supply ,0- 30V, 2A, With Short circuit protection, separate display for voltage and current	4,5,6,7,8,9,10, 11,12,13,14, 15,16,17, 18
2	Cathode Ray Oscilloscope ,Dual Trace 20Mhz, 1MegaΩ Input Impedance	2,5,6,7,8,9,13, 14,15,16, 17,18
3	Function Generator 0-2 MHz with Sine, square and triangular output with variable frequency and amplitude.	2
4	Digital Multimeter : 3 1/2 digit display, 1999 count digital multimeter measures: Vac, Vdc (600V max) , Adc, Aac(10 amp max) , Resistance (0 – 2 Mega Ohm) , with diode and transistor tester	1,4,5,6,7,8,9, 10,11,12,13, 14,15,16,17,18
5	LCR meter bench top or hand-held type, 3 1/2 digit LCD /LED display , 1999 count , Resistance 0-20 Mega Ohm , Capacitance 0-200 micro Farad , Inductance 0 – 20 Henry	3
6	Electronic Workbench: Bread Board 840 -1000 contact points: Positive and Negative DC power rails on opposite sides of the board with , 0-30 V , 2 Amp Variable DC power supply, Function Generator 0-2MHz, CRO 0-30MHz , Digital Multimeter	1 to 17 & 18

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Suggested Project List:

Only one micro-project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project are group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of students in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16 (fourteen to sixteen) student engagement hours** during the

course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs. A suggestive list of micro-projects is given here. This has to match the competency and the COs.

Similar micro-projects could be added by the concerned course teacher:

Diode: Build a circuit on general purpose PCB or breadboard to obtain +12V unregulated DC power supply using full wave bridge rectifier and filter (Duration: 8- 10 hours)
a) **Photodiode**: Build a interruption detector circuit to blink an LED using LDR, and prepare a mini project report. ((Duration: 6-8 hours)
b) **Transistor Amplifier**: a common emitter amplifier using transistor and prepare a mini project report. (Duration: 6-8 hours)
c) **Transistor Application:** Build a transistorized water level indicator and prepare a mini project report. (Duration: 6-8 hours)
d) **Special Purpose Diodes:** Build basic applications using any one or combination of special purpose diodes , and prepare a mini project report. (Duration: 6-8 hours)
e) **555 Timer**: Build a circuit on a breadboad using 555 timer to generator square with variable duty cycle and frequency. (Duration: 6-8 hours)

Suggested Activities for Students:

Other than the classroom and laboratory learning, following are the suggested student-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:
a) Prepare a table and interpret the technical specification of various diodes and transistors using data sheet.
b) Prepare specifications of some electronic components.
c) Collect information and seminar on any relevant topic related with the course.

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d) Undertake a market survey of different semiconductor components.

e) Identify various types of transistor

f) Analysis of 555 Times circuits

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Level: Diploma

Branch: Information & Communication Technology

Course / Subject Code:

Course / Subject Name: Fundamentals of Information and Communication Technology (FICT)

w. e. f. Academic Year:	2024-25
Semester:	1st
Category of the Course:	ESC

Prerequisite:	Basic knowledge of computer
Rationale:	Nowadays, Information and Communication Technology (ICT) is used in all walks of life. The potential of ICT is widely used in science, business, industry, and education. This course envisages the development of basic skills in the use of information and communication technologies. It will provide students with hands-on experience with different office automation applications to create business documents and to develop programming skills from scratch to improve daily problem-solving skills.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Classify computer systems and their peripherals and create forms using Google applications.	R, U, A
02	Prepare professional documents, analyze data, and create presentations.	U, A
03	Use Scratch to solve simple problems.	R, U, A
04	Understand the use of different blocks in Scratch.	R, U, A
05	Apply decision, loop, and list concepts in Scratch.	U, A

Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	1	4	3	0	0	20	30	50

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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**COMPUTER SYSTEMS FUNDAMENTALS AND GOOGLE APPLICATIONS** 1.1. Computer system block diagram, Concept of Hardware, and Software 1.2. CPU, Control Unit, Arithmetic logic unit (ALU), Memory Unit, Power Unit, and Interfacing Ports. 1.3. Input-Output unit: Monitor, keyboard, External Hard disk, Mouse, Printers, Scanner, Projectors, etc. 1.4. Operating system concepts, purpose, functions, and characteristics. 1.5. Operations of Windows Linux Installation on PC and Basic Terminal Commands 1.6. Installation of various Application Software. 1.7. Gmail: Create an account; Adding Contacts; Composing an Email; Creating and Managing Labels, Filters, and Signature. 1.8. Drive: Create a folder, Upload and Download Files/folders, and Sharing Files/Folders. 1.9. Forms: Create a Form; Validate a Form; Share a Form, Managing Response.	8	14%
2.	**DOCUMENTATION AND PRESENTATION TOOLS** **MS Word:** 2.1 Basics of text formatting: font type, size, color, effects, typography, Paragraph tool, WordArt, and Drop Cap, Symbol, and Equations. 2.2 Insert Table, Pictures, Shapes Smart Art and Chart options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table. 2.3 Page settings and margins including header and footer in the word document. 2.4 Spelling and Grammatical checks (use: Grammarly Software) 2.5 Use of Mail merge tool 2.6 Google Docs sheet: creating and sharing	18	32%

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	MS Excel: 2.7 Introduction to data, Cell address, Excel Data Types, formatting 2.8 Understanding formulas, Operators, Common spreadsheet functions and Types of 2D charts. 2.9 Concept of print area, margins, header, footer, and other page setup options 2.10 Overview of Google Spreadsheets and how to create Spreadsheets **MS PowerPoint:** 2.11 Creating new Slides, Working with text boxes, fonts, tables, Layouts, themes, effects, background, and Colors 2.12 Selecting, deleting, moving, copying, resizing and arranging objects. 2.13 Working with drawing tools, Applying shape or picture styles, Applying object borders, object fill, object effects, clip art collection, and modifying clip art 2.14 Configuring a sound playback, Assigning sound to an object, Adding a digital music soundtrack, Transition effects and timings		
3.	**INTRODUCTION TO SCRATCH** 3.1 Scratch: A graphical programing language 3.2 Scratch Programming Environment: The stage, Sprite, Backdrop, Sprite list, Blocks tab, Scripts area, Costumes tab, Sounds tab, Sprite info, Scratch toolbar 3.3 Paint Editor: Create/edit costumes and backdrop, Setting center of a costume. 3.4 Arithmetic Operators and Functions: Arithmetic operators, Mathematical Functions, Random Numbers. 3.5 Data types in Scratch: Boolean, Number, String. 3.6 Variables: What is a variable? Creating a variable, scope of a variable, and use of a variable.	8	14%
4.	**DIFFERENT BLOCKS IN SCRATCH** 4.1 Scratch blocks: Command blocks, Function blocks, Trigger blocks, and Control blocks. 4.2 Motion blocks: go to, glide to, set x to, set y to, point in the direction, point towards, move, turn, change x by, change y by, set rotation style. 4.3 Pen blocks: stamp, pen down, set pen color to, set pen size to, and erase all.	12	22%

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	4.4 Looks blocks: say, think, switch costume to, next costume, switch backdrop to, next backdrop, change the size by, set size to, change different effects, set different effects, clear graphic effects, show, hide. 4.5 Sound blocks: play sound until done, start sound, stop sound, change pitch effect by, set pitch effect to, clear sound effect, change volume by, set volume to.		
5.	**PROCEDURES, DECISION MAKING, LOOPING AND CONCEPT OF LISTS IN SCRATCH** 5.1 Concept of structured programming: Procedures, Custom blocks, passing parameters to custom blocks, recursive procedure. 5.2 Event Blocks: when the key is pressed, when this sprite is clicked, broadcast, broadcast, and wait when I receive. 5.3 Comparison operators: less than, greater than, equal to. 5.4 Logical operators: and, or, not 5.5 Control blocks: wait, repeat, forever, if, if-else, wait until, repeat until stop. 5.6 Lists: Creating lists, List commands (Add, Delete, Insert, and Replace), Accessing list elements, and the Contains block.	10	18%
	Total		**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
NA					

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:
1. Fundamentals of Computers by Rajaraman V, Adabala N (Sixth Edition)
2. MS-Office for Dummies by Wallace Wang
3. Learn to program with Scratch: A Visual Introduction to Programming with Games, Art, Science and Math by Majed Marji
4. Scratch Programming for Teens by Jerry Lee Ford, Jr.

(b) Open source software and website:
1. https://support.microsoft.com/en-us/training

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2. https://www.coursera.org/search?query=MS%20office&
3. https://www.udemy.com/courses/search/?src=ukw&q=MS+office
4. https://scratch.mit.edu
5. https://en.scratch-wiki.info
6. https://nptel.ac.in/courses/106106182 (contents of Week 1)

Suggested Course Practical List:

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required.
1	Identify parts of computer systems and peripherals.	I	02
2	Learn about various operating systems (OS) and install Windows/Linux operating systems.	I	04
3	Use the various tools/utilities provided in the Windows/Linux operating system accessories.	I	04
4	Install printer, scanner, and projector with the computer system	I	02
5	Create, share and Manage Files and Folders in Google Drive	I	02
6	Create and design admissions/inquiries google form for students	I	02
7	Create text documents with different formatting features, insert shapes, SmartArt, images, tables, set page layout and background according to the given examples.	II	04
8	Use the mail merge feature for sending invitation letters for an expert lecture to 10 industries.	II	02
9	Create spreadsheets, analyze data using formulas and functions, and present them in charts.	II	04
10	Create Pay bills/ Pay slips/ Electricity bills/student mark sheets using a spreadsheet and take a printout.	II	04
11	Create professional presentations with various formatting features, insert tables and charts, use drawing tools, apply shape and picture styles, apply object borders, the object fills, and object effects.	ii	04
12	Explore Scratch's project editor interface.	III	02
13	Write a script to perform basic arithmetic operations.	III	02
14	Write a script to simulate dice.	III	02

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15	According to Ohm's law, When a current I flows through a resistance R, voltage across R is given by V=IR. Write a script that reads I and R and calculates V.	III	02
16	Write a script to find the value of V using the expression $V = A \sin\theta$ for a given value of A, Ɵ (take the value of Ɵ in degree).	III	02
17	Write a script that asks the user to enter a temperature in degrees Celsius. The script will convert the temperature to degrees Fahrenheit and display the result to the user with an appropriate message. (Hint: F° = (1.8 × C°) + 32.)	III	02
18	Write a script to draw a rectangle of given width and height.	IV	02
19	Write a script to connect each of the following sets of points in order to reveal the final shape: (20,-40), (-160,-40), (20,160), (140,-40), (20,-40), (20,-60), (-120,-60),(-80,-100), (80,-100), (120,-60), (20,-60).	IV	02
20	Write a script for pattern draw application with the following instruction. a) Move the sprite 10 step forward when 'Up Arrow Key' is pressed b) Move the sprite 10 step backward when 'Down Arrow Key' is pressed c) Turn the sprite clockwise when 'Right Arrow Key' is pressed d) Turn the sprite anticlockwise when 'Left Arrow Key' is pressed	IV, V	02
21	Write a script to draw a polygon for a given number of sides and side length.	IV, V	02
22	Write a script that asks the user to enter three numbers. The script will then determine and print the largest of the three numbers.	V	02
23	Write a script that calculates and displays the sum of all odd integers between 1 and 20.	V	02
24	Write a script to check whether the given number is prime or not and display an appropriate message.	V	02
25	Write a script to display the Fibonacci Series of 0 to N numbers.	V	02
26	Write a script to find the factorial of a given number.	V	02
27	Write a script to count the number of vowels in a given string.	V	02

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Information & Communication Technology

Course / Subject Code:

Course / Subject Name: Fundamentals of Information and Communication Technology (FICT)

28	Write a script to check whether the given number/string is palindrome or not and display an appropriate message.	V	02
29	Write a script to display days of a week using a list.	V	02
30	Write a script to check whether a given string/number is in a list or not and display an appropriate message.	V	02
31	Write a script to find the maximum number in a list of numbers.	V	02
32	Write a script to find the average value of a list of numbers.	V	03
33	Write a script to perform a linear search in a list of strings.	V	03
34	Write a script to count how many times an item appears in a list.	V	03
35	Write a script to perform bubble sort in a list.	V	03
Total		**60 Hours**	

List of Laboratory/Learning Resources Required:

Sr. No.	Equipment Name with Broad Specifications	PrO. No.
1	Computer with basic configuration and Internet Facility	All
2	Window/ Linux as operating system	All
3	Word, Excel, and PowerPoint Software	7-11
4	Scratch Software (open source)	12-35

Suggested Project List:

A suggestive list of micro-projects is given here. This has to match the competency and the COs.
Similar micro-projects could be added by the concerned course teacher:

1. Use the Google app to prepare any feedback form on any topic given by the subject teacher, covering all the main features of Google Forms.
2. Prepare an MS word document on any subject given by the subject teacher, covering all the main features of MS word.
3. Use spreadsheets to prepare salary statements, tax statements, student assessment records, student expense systems, company income, and expense statements to determine profit and loss, covering all major features of MS Excel.
4. Prepare 15-20 slide presentations with department and institute information covering key features of MS PowerPoint.
5. Develop a small story and animation in scratch.
6. Develop a small game, simulation in scratch.

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Information & Communication Technology

Course / Subject Code:

Course / Subject Name: Fundamentals of Information and Communication Technology (FICT)

Suggested Activities for Students: If any

Other than the classroom and laboratory learning, the following are the suggested student-related *co-curricular* activities that can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform the following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidence for their (student's) portfolio which may be useful for their placement interviews:

a) Undertake micro-projects in team/individually.
b) Encourage Students for creating and designing forms related to Departmental work.
c) Encourage students to participate in the Microsoft Office Specialist World Championship.
d) Students are encouraged to register themselves in various MOOCs such as Swayam, edx, Coursera, Udemy, etc. to further enhance their learning.
e) Undertake a survey of different graphical programming languages used to develop animations, mobile apps, games etc.

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GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
Level: Diploma
Branch: Information And Communication Technology
Course / Subject Code:
Course / Subject Name: Web Development Practice

w. e. f. Academic Year:	2024-25
Semester:	1st
Category of the Course:	ESC

Prerequisite:	COMPUTER BASICS
Rationale:	Internet is widely used in different areas such as banking, e-commerce, education and many others. Different technologies are used to develop web applications but HTML is the core component in all types of applications for formatting and presenting the web content. This course will impart skill sets related to designing HTML web pages, using cascading style sheets and embedding Java script using open-source compiler. This course will also serve as a pre- requisite for the advanced web development technologies, which students will learn in the upcoming semester.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Create structured webpages using Hypertext Markup Language.	R, U
02	Apply CSS to style and define the layout of the web pages.	R, U, A
03	Use JavaScript to develop interactive simple webpages.	R, U, A
04	Develop a professional web page using JavaScript and CSS	R, U, A

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

Teaching and Examination Scheme:

Teaching Scheme (In Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	1	4	3	0	0	20	30	50

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Information And Communication Technology

Course / Subject Code:

Course / Subject Name: Web Development Practice

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1. Web Development Basics	1.1 Overview of Web Design Concepts 1.2 Web Development Teams 1.3 Web Project Management Fundamentals 1.4 Web Site Development Process 1.5 Web Page Layout and Elements 1.6 Web Site Usability and Accessibility 1.7 Configure Browsers Setting 1.8 Navigation Concepts 1.9 Web Graphics 1.10 Multimedia and the Web	6	8
2. Hyper Text Markup Language (HTML)	2.1 HTML and the Evolution of Markup languages 2.2 HTML formatting tags 2.3 Create Hyperlink, Tables 2.4 Create Web Forms 2.5 Multimedia Inserting Techniques 2.6 Create Frames 2.7 GUI HTML Editors 2.8 Site Content and Metadata	22	32
3. Cascading Style Sheets	3.1 Cascading Style Sheets for Web page design 3.2 Creating CSS rules in Dreamweaver 3.3 Format Text with CSS 3.4 Use of CSS Selectors 3.5 Embed Style Sheets 3.6 Attach External Style Sheets	10	14
4. Introduction to JavaScript	4.1 Introduction to JavaScript 4.2 Basic Syntax - Statements, Comments, Data types, Variables 4.3 Operators- Arithmetic, logical, comparison 4.4 Working with built-in functions alert (), prompt (), parsing functions, eval ().	08	11
5. User Defined Function and decision making in JavaScript	5.1 Conditional statements 5.2 Loop statements 5.3 Working with user defined functions 5.4 Document Object Model – Accessing HTML elements into JavaScript (Window, Document, Form, Input elements,	24	35

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Course / Subject Name: Web Development Practice

	no script tag) HTML Events (on change, on click, on mouse over, on mouse out, on key down, on load).		

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
------NOT APPLICABLE-----					

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:
1. **HTML 5 Blackbook** By *DT Editorial services*, Dreamtech press, New Delhi
2. **HTML & CSS**: The Complete Reference by *Thomas Powell*, Tata McGrew Hills, New Delhi, 2010
3. **JavaScript the Complete Reference** by *Thomas Powell*, Tata McGrew Hills, New Delhi, 2004

(b) Open-source software and website:

1. www.w3schools.com/html/
2. www.csstutorial.net/
3. https://www.w3schools.com/css/default.asp
4. https://www.w3schools.com/js/default.asp
5. https://www.thesitewizard.com/kompozer/index.shtml
6. https://www.tutorials4u.com/editors/using-komposer-web-editor.htm

Suggested Course Practical List:

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx.Hrs. required
1	Write various web terminologies	I	02
2	Use and configure different web browsers and navigate different websites through it.	I	02
3	Use formatting tags to create web page as per given sample.	II	02
4	Use hyper link tag to navigate through different web pages as pergiven sample.	II	02

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Course / Subject Code:

Course / Subject Name: Web Development Practice

5	Use sorted & unsorted list to create web page as per given sample page.	II	02
6	Design a web page and embed various multimedia features in the page.	II	02
7	Use semantic tags to organize web page contents as per given sample.	II	02
8	Use table tag to format web page. Also create the Time Table of your class using table tag.	II	02
9	a. Create a registration webpage using different HTML form elements. b. Create a feedback form using different HTML form elements.	II	02+02
10	Use inline, internal and external style sheets for the student registration form and bank account form created in previous practical.	III	02+02
11	a. Use different CSS elements to create and format your Profile Page (Note: use CSS Background, Text, Font, Tables, Links, Images, Margin etc) b. Create and format your class time table Page Using Different CSS Elements (Note: use CSS Background, Text, Font, Tables, Links, Images, Margin etc)	III	02+02
12	Use JavaScript to perform the following operations: a. find roots of quadratic equation b. find the highest from given three values	IV	02+02
13	Use built in JavaScript functions to perform various operations.	IV	02
14	Use JavaScript to check whether given character is vowel or consonant using switch case.	V	04
15	Use JavaScript to print first 10 even numbers.	V	02
16	Use JavaScript to calculate power of given number.	V	02
17	Use JavaScript to print multiplication table of given number.	V	04
18	Use JavaScript to perform the following operations: a. takes input of student name and address and display in a dialog box. b. change background color of webpage as selected by user from a list of colors given in combo box.	V	02+02

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19	Use JavaScript to perform the following operations: a. Calculate the factorial of a given number entered into a textbox. Display the result in another textbox. b. Perform arithmetic operations on two numbers entered into textboxes. Use Radio buttons to select arithmetic operations (Addition, Subtraction, Multiplication and Division). Display the result in another textbox	V	02+02
20	Use JavaScript to perform the following operations: a. Calculate the factorial of a given number entered into a textbox. Display the result in another textbox. b. Perform arithmetic operations on two numbers entered into textboxes. Use Radio buttons to select arithmetic operations (Addition, Subtraction, Multiplication and Division). Display the result in another textbox.	V	02+02
TOTAL			**60**

List of Laboratory/Learning Resources Required:

Suggested Project List:

a) Construct departmental website
b) Develop any domain specific website (Food, Automobiles, Educational, Business etc.)
c) Develop a website showcasing information about electronic wastes and its dumpingprocess.

Suggested Activities for Students:

Other than the classroom and laboratory learning, following are the suggestedstudent-related *co-curricular* activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform followingactivities in group and prepare reports of about 5 pages for each activity. They shouldalso collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Identify tools used for web page development and present its features.
b) Undertake course "HTML" available on Swayam online platform. (https://onlinecourses.swayam2.ac.in/aic20_sp11/preview)
c) Undertake course "JavaScript for Beginners Specialization" available on coursera online platform. (https://www.coursera.org/specializations/javascript-beginner) or any other such site.
d) Undertake course "HTML, CSS, and Javascript for Web Developers" available on

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Course / Subject Name: Web Development Practice

coursera online platform. (https://www.coursera.org/learn/html-css-javascript-for-web-developers) or any other such site.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Diploma Computer Engineering
Diploma Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Programming Fundamentals

w. e. f. Academic Year:	2024-2025
Semester:	1st
Category of the Course:	PCC

Prerequisite:	---
Rationale:	In today's digital era, digitization and automation connect gadgets, home appliances, and even the human body. The key to these connections is programming. Students need to learn the basics of computer programming. This introductory Computer Programming Course focuses on developing logical thinking and programming skills using the C language. These skills can be applied to scientific, research, and business purposes.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Write Simple C programs to input and output data in the prescribed formats.	Understand
02	Create C programs using control structures.	Apply
03	Design C programs using arrays and pointers.	Apply
04	Implement user-defined functions.	Apply
05	Execute file and I/O operations in C.	Apply

Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	**ESE (E)**	**PA / CA (M)**	**PA/CA (I)**	**ESE (V)**	
3	0	2	4	70	30	20	30	150

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Diploma Computer Engineering

Diploma Computer Science and Engineering

Course / Subject Code :

Course / Subject Name : Computer Programming Fundamentals

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Flowchart and Algorithm: Flowchart :** Definition, Symbols of flowchart, Advantages and Disadvantages and Examples **Algorithm:** Developing and writing algorithm using pseudo codes, Advantages and Disadvantages and Examples **Overview of C:** History and importance of C, Basic structure of C program, executing a C program **Constants, Variable and Data Types:** Introduction, Character Set, C Tokens, Keywords and Identifiers, Constants, Variables, Data Types, Declaration of Variables, Assigning Values to Variables, Defining Symbolic Constants **Managing Input and Output Operations:** Reading a Character, Writing a Character, Formatted Input, Formatted Output, **Operators and Expressions:** Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operator, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation Of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions, Operator Precedence and Associatively, Evaluation of Expressions. Program Solving practice on the above concepts	08	20
2.	**Decision Making and Branching:** Introduction, Decision Making with IF Statement, Simple IF Statement, The IF-ELSE Statement, Nesting of IF-ELSE Statements, The ELSE IF Ladder, The Switch statement, The goto statement. **Decision Making and Looping:** Introduction, The while Statement, The do statement, The for statement, Break and continue statements Program Solving practice on the above concepts	10	22

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Diploma Computer Engineering
Diploma Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Programming Fundamentals

3.	**Arrays:** One-dimensional Arrays, Declaration of One-dimensional Arrays, Initialization of One-dimensional Arrays, Two-dimensional Arrays, Declaration of Two-dimensional Arrays, Initialization of Two-dimensional Arrays **Pointer:** Introduction to Pointers, Characteristics of Pointers, Address of Operator and Indirection operator, Declaration and initialization of Pointers, Types of Pointers: void and null Program Solving practice on the above concepts	08	20
4.	**User-defined Functions:** Need for functions, Elements of User-defined Functions, Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return values, Arguments with Return Values, No Arguments but Returns a Value, Passing Arrays to Functions, Recursion, The Scope, Visibility and Lifetime of variables. Program Solving practice on the above concepts	10	24
5	**Character Arrays and Strings:** Declaring and Initializing String Variables, Reading Strings from Terminal, Writing Strings to Screen, String-handling Functions, Command Line Arguments **Files:** Introduction to text Files, Opening & Closing Files in text mode, Reading From and writing into Files in text mode only Program Solving practice on the above concepts	09	14
	Total	45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10	15	15	5	10	15

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Diploma Computer Engineering
Diploma Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Programming Fundamentals

References/Suggested Learning Resources:

(a) Books:
1. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Pearson Education, Latest Edition
2. E. Balagurusamy, "Programming in ANSI C", McGraw Hills Education, New Delhi; Latest Edition
3. Yashavant Kanetkar, "Let us 'C'", BPB Publication, New Delhi; Latest Edition
4. Reema Thareja, "Introduction to C Programming", Oxford University Press, New Delhi; Latest Edition

(b) Open source software and website:
1. C Compiler for windows/linux
2. https://www.programiz.com/c-programming
3. Online DB : GDB online Debugger | Compiler - Code, Compile, Run, Debug online C, C++ (onlinegdb.com)
4. Compiler Explorer (Godbolt): Compiler Explorer (godbolt.org)
5. JDoodle: JDoodle - Free online cloud coding platform IDE to practice, teach and learn programming
6. https://pll.harvard.edu/course/cs50-introduction-computer-science , refer part Programming in C
7. https://www.youtube.com/watch?v=ywg7cW0Txs4

Suggested Course Practical List: (30 Hours)

1. Practice using scratch programming/snap programming.
2. Design and develop various problem statement using flowchart and Algorithm.
3. Design and test C programs using constants, variables, data types and different operators.
4. Design and test C programs to show formatted and unformatted input and output.
5. Design and test at least one C programs using below given decision making statements: (1) Simple if (2) if…else (3) Nested if (4) if…else ladder (5) switch (6) goto
6. Design and test C programs using the for, while and do. While loop.
7. Design and test a C program using break and continue statements.
8. Design and test C programs using one dimensional array and two dimensional arrays.
9. Design and test C programs using pointers.
10. Design and C programs using user defined Functions.
11. Design and test recursion function.
12. Design and test a C program to test various inbuilt string functions.
13. Design and test C programs using file operations.

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Diploma Computer Engineering
    Diploma Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Programming Fundamentals

14. Design and test C programs using Command line arguments.

List of Laboratory/Learning Resources Required:

1. Computer with basic configuration with windows or unix os
2. C Compilers

Suggested Project List:

1. Develop a C program to represent a bank account. Create a structure Customer having fields name of the depositor, account number, type of account and balance amount in the account. Perform different operations:

    (1) To assign initial values

    (2) To deposit an amount

    (3) To withdraw an amount after checking the balance

    (4) To display name and balance. Write a menu driven program to handle N number of customers.

2. Develop a menu driven C program to perform basic arithmetic operations/mathematical operations like calculators on user inputted data.

3. Develop a C program to generate results for students. Admin enters component wise marks for each subject. After entering the marks, students will know his/her SPI as well as total backlogs.

4. Develop a C program to display a minimum number of currency notes required based on the entered amount. Output will also display the total number of notes required for each currency note. Valid currency notes are 1, 2, 5, 10, 20, 50, 100, 200, 500, and 2000. E.g. if the user enters 140 then the output will be "3 currency notes are required. $1*100 + 2*20 = 140$".

5. Develop a C program that allows the names of 100 candidates in a local election and the number of votes received by each candidate. The program should then output each candidate's name, the number of votes received, and the percentage of the total votes received by the candidate. Your program should also display the winner of the election.

GUJARAT TECHNOLOGICAL UNIVERSITY

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6. Develop a C program to find and replace all occurrences of a word in file. For example: Suppose file contains: "I like programming. I am learning programming and programming with files is fun. Learning programming is simple and easy." Find occurrences of "programming" and replace it with "C language".

7. Please refer some problem set of CS 50 course of Harvard and practice it.

Suggested Activities for Students:

a) Design algorithm and construct a flowchart for at least 6 problems

b) Students are encouraged to learn Visual Language programming like scratch, snap etc.

c) Undertake micro-projects in teams.

d) Prepare charts to explain use/process of the identified topic.

e) https://www.codechef.com/ , in this website very elementary programs are available, students are expected to solve those programs

f) https://code.org/, an hour of coding event may be organized and students are encouraged to participate.

g) Students are encouraged to register themselves in various MOOCs such as: Swayam, edx, Coursera, Udemy etc to further enhance their learning.

h) Encourage students to participate in different coding competitions like Hackathon, online competitions on code chef etc.

i) Encourage students to form a coding club at institute level.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Computer Engineering
Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Basics and Static Web Page Designing

w. e. f. Academic Year:	2024-25
Semester:	1ˢᵗ
Category of the Course:	Engineering Sciences (ECS)

Prerequisite:	Basic understanding of operating systems and computers is beneficial.
Rationale:	In any business organization the work of documentation, data analysis and presentation are typically carried out in an office set-up. Therefore it is necessary for students to learn various software tools to carry out these activities accurately. The aim of this course is to develop students' fundamental IT skills and develop skills in using various components of MS-office, Internet and Google applications. It will enable them not only to carry out these tasks in their profession in future, but equally useful for making their project reports and presentations during their progression in the diploma programmer. The Internet is widely used in different areas such as banking, e-commerce, education and many others. Different technologies are used to develop web applications but HTML is the core component in all types of applications for formatting and presenting the web content. This course will impart skill sets related to designing HTML web pages, using cascading style sheets and embedding Java script. This course will also serve as a prerequisite for the advanced web development technologies, which students will learn in the upcoming semester.

Course Outcome:
After Completion of the Course, Student will able to:

Sr.No	Course Outcomes	RBT Level
01	Explain basics of computers and the internet.	Understand
02	Use Microsoft Word, Excel, PowerPoint and Excel for word-processing, data Analysis and preparing a presentation.	Apply
03	Design webpage using formatting, image and table tags.	Apply
04	Use advanced HTML tags and CSS for designing interactive and semantic web pages.	Apply
05	Write client-side script using Java Script.	Apply

Revised Bloom's Taxonomy (RBT)

GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
Level: Diploma
Branch: Computer Engineering
Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Basics and Static Web Page Designing

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	**ESE (E)**	**PA / CA (M)**	**PA/CA (I)**	**ESE (V)**	
0	**1**	**4**	**3**	**0**	**0**	**20**	**30**	**50**

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Basics of Computer and internet :** ● Introduction to a Computer, Generations of Computer, Operating system concepts, purpose and functions Operations of OS ● Window Basic: Creating folder, Deleting, Renaming, Searching files/Folders, Overview of Control Panel and Taskbar, Installation of MS-office/any application software ● Introduction to internet, Basic Internet Terminologies: Browser, Webpage, Website, URL, WWW, Introduction to Email ● Gmail: Create an account; Adding Contacts; Composing an Email; Creating and Managing Labels, Filters and Signature, ● Google Drive: Create a folder, Upload and Download Files/folders, Sharing Files/Folders, Forms: Create a Form; Validate a Form; Share a Form; Managing Response	**08**	**10%**

GUJARAT TECHNOLOGICAL UNIVERSITY

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Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Basics and Static Web Page Designing

2.	**Microsoft office tools - Word, Excel, Power point** **MS Word:** - Functions and features of Word processor, Text Basics: Typing the text, Alignment of text, Editing Text: Cut, Copy, Paste, Select All, Clear, Find & Replace - Text Formatting and saving file: New, Open, Close, Save, Save As, Formatting Text: Font Size, Font Style, Font Color, Use the Bold, Italic, and Underline, Change the Text Case, Line spacing, Paragraph spacing, Shading text and paragraph, Working with Tabs and Indents - Table and its options, Inserting rows or columns, merging and splitting cells, Arithmetic Calculations in a Table. - Working with pictures, Inserting Pictures from Files. - Mail Merge **MS Excel:** - Introduction to Excel interface, understanding rows and columns, Naming Cells, working with excel workbook and sheets - Perform Calculations with Functions: Creating Simple Formulas, Setting up your own formula, Date and Time Functions - date, today, now, date, dif, Logical Functions -and, or, xor, not, if, Lookup and Reference Functions- Vlookup, Mathematical Functions - sum, sumif, rand, round, floor, ceiling, Statistical Functions - min, max, average, small, large, count, countif, counta, Text Functions - text, concatenate, trim,value,upper,lower,exact. - Sort and Filter Data with Excel: Sort and filtering data, using number filter, Text filter, Custom filtering, Removing filters from columns, Conditional formatting - Create Effective pie and bar Charts to Present Data Visually - Pivot table **MS Power point:** - Introduction to PowerPoint interface, Creating slides and applying themes: Inserting new slide, changing layout of slides, duplicating slides, Copying and pasting slide, applying themes to the slide layout, changing theme color, Slide background, Formatting slide background, Using slide views - Using slide Master: Using slide master, inserting layout option, creating custom layout, Inserting placeholders, Formatting placeholders - Slide show option: Start slide show, Start shows from the current slide, rehearse timing, Creating custom slide show	**16**	**30%**

GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
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Branch: Computer Engineering
Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Computer Basics and Static Web Page Designing

3.	**Basics of HTML:** ● Introduction to HTML ● Syntax - Tags and Attributes, Formatting Tags (Body, Heading Styles, Paragraph, sub, sup, head, title) ● Image Tags (img, figure, figcaption), Hyperlink - a tag ● Tables (table, th, tr, td, col, colgroup, caption)	**08**	**15%**
4.	**Advanced HTML and CSS** ● Lists : Sorted List, Unsorted List, Definition List ● Semantic Elements (header, nav, section, article, aside, footer) ● Media Tags (audio, video, embed,svg) ● HTML Form: Form Object, Form Elements and its, properties and events (Input types-Text, Date, email etc., Datalist, fieldset, legend, select, option, option group) ● Introduction to CSS, CSS Types (inline Style, Embedded Style, Linked Style) ● Applying CSS styles to web page elements, div Tag, CSS Selectors (Class and ID)	**16**	**30%**
5	**JavaScript** ● Introduction to Javascript,Basic Syntax - Statements, Comments, Data types, Variables , Operators- Arithmetic, logical, comparison ● Working with built-in functions (alert(), prompt(), parsing functions, eval()) ● Conditional statements, Loop statements ● Working with user defined functions ● Document Object Model – Accessing HTML elements into JavaScript (Window, Document, Form, Input elements , no script tag) ● HTML Events (on change, on click, onmouseover, onmouseout, onkeydown, onload)	**8**	**15%**
Total		**56**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
NA	**NA**	**NA**	**NA**	**NA**	**NA**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

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Program Name: Diploma in Engineering
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Course / Subject Code :
Course / Subject Name : Computer Basics and Static Web Page Designing

(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Fundamentals of Computers, Sixth Edition	Rajaraman V, Adabala N	Prentice Hall India Learning Private Limited, ISBN: 8120350677
2	MS-Office for Dummies	Wallace Wang	Wiley India, New Delhi, ISBN: 9788126578559
3	Sams Teach Yourself Internet and Web Basics All in One	Ned Snell, Bob Temple, Michael Clark	Sams Publishing, Indiana, USA, ISBN:0672325330
4	HTML 5 Blackbook	DT Editorial services	Dreamtech press, New Delhi, ISBN : 9789351199076
5	HTML & CSS: The Complete Reference	Thomas Powell	Tata McGrew Hills, New Delhi, 2010 ISBN : 9780070701946
6	JavaScript the Complete Reference	Thomas Powell	Tata McGrew Hills, New Delhi, 2004 ISBN : 9780070590274

(b) Open source software and website:
1. www.w3schools.com/html/
2. www.csstutorial.net/
3. https://www.w3schools.com/css/default.asp
4. https://www.w3schools.com/js/default.asp
5. https://www.tutorialspoint.com
6. https://edu.google.com/intl/ALL_in/teacher-enter/products/forms/?modal_active=none
7. https://support.microsoft.com/en-us/training
8. https://edu.gcfglobal.org/en/topics/googleapps/
9. https://www.udemy.com
10. https://www.coursera.org/

Suggested Course Practical List:

The following practical outcomes (PrOs) are the subcomponents of the COs. These PrOs need to be attained to achieve the COs.

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Sr.No	Practical Outcomes (PrOs)	Unit No	Approx. Hrs. required
1	Create a Gmail Account and use its Features like adding contacts. Compose mail, create and manage labels, filters and signatures	I	2
2	Create folder name semester_1 in D drive. Add any text and any photo file (.Jpeg, .png) in that folder. Upload that folder in goggle drive and manage it.	I	3
3	Create an online form for registration of students (for any activity) and download its response.	I	3
4	Create a text document incorporating different formatting features, inserting images and tables as per given sample.	II	4
5	Use mail merge feature for sending invitation letters for expert lectures to 10 industries.	II	4
6	Create spreadsheet, Analyze data using formulas and functions and present it through charts. Also apply a pivot table to analyze data.	II	4
7	Create a professional presentation incorporating various formatting features, inserting media and action buttons.	II	4
8	Develop HTML/Web page using various formatting tags as per given sample.	III	2
9	Use image tags to create a web page and Use hyperlink tag to navigate through different web pages as per given sample.	III	4
10	Use HTML table tags to create web pages as per given sample.	III	2
11	Use a sorted, Unsorted, Definition list to create a web page as per given sample page.	IV	4
12	Use semantic tags to organize web page contents as per given sample.	IV	2
13	Create a student registration webpage using different HTML form elements.	IV	4
14	Use inline, internal and external style sheets for the student registration form and bank account form created in previous practical.	IV	4
15	Use different CSS elements to create and format your Profile Page (Note: use CSS Background, Text, Font, Tables, Links, Images, Margin etc)	IV	2

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16	Use JavaScript to perform the following operations: a. find roots of quadratic equation B. find the highest from given three values.	V	3

17	Use JavaScript to
	    a. Check whether the given character is a vowel or consonant using a switch case.
	    b. Print first 10 even numbers.
		V	3

18	Use JavaScript to change the background color of a webpage as selected by the user from a list of colors given in the combo box.	V	3
19	Use JavaScript to perform arithmetic operations on two numbers entered into textboxes. Use Radio buttons to select arithmetic operations (Addition, Subtraction, Multiplication and Division). Display the result in another textbox.	V	3
	TOTAL		**60**

Note

    i.   *More Practical Exercises can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*

   ii.   *Care must be taken in assigning and assessing practicals as it is a first-year study practicals.*

  iii.   *The following are some sample 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed Practical Exercises of this course required which are embedded in the COs and ultimately the competency.*

List of Laboratory/Learning Resources Required:

The major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practicals in all institutions across the state.

Sr.No	Equipment Name with Broad Specifications	PrO. No.
1	Computer with basic configuration and Internet Facility	ALL
2	MS-OFFICE	1,2
3	Computer system with operating system and browser that supports javascript.	ALL
4	HTML IDEs and Code Editors	ALL

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Suggested Project List:

Only one project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain a dated work diary consisting of individual contributions in the project work and give a seminar presentation of it before submission. The duration of the micro project should be about **14-16 (fourteen to sixteen) student engagement hours** during the course. The students ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the COs. Similar micro-projects could be added by the concerned course teacher:

1) Word documents: Prepare Subject teacher shall assign documents/Reports to be prepared by each student covering all the major features of MS word.

2) Slide Presentations: Prepare slideshow with all Presentation features such as: classroom presentation, presentation about department, presentation about institute, presentation of report. (Subject teacher shall assign a presentation to be prepared by each student).

3) Spreadsheets: Prepare Pay bills/salary statements, tax statement, student's assessment record, and Students fees system, earning and expenditure statement of a company to ascertain profit-loss etc. using spreadsheet. (Teacher shall assign a spreadsheet to be prepared by each student).

4) Micro project problems can be designed by the teachers by combining the features of multiple s/w tools. For e.g. data can be collected through Google form, can be organized and analyzed using excel and finally presented using a presentation/ document.

5) Construct departmental website

6) Develop any domain specific website (Food, Automobiles, Educational, and Business etc.

7) Develop a website showcasing information about electronic wastes and its dumping process.

Suggested Activities for Students:

Other than the classroom and laboratory learning, following are the suggested student-related co-curricular activities which can be undertaken to accelerate the attainment of the various outcomes

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in this course: Students should perform following activities in groups and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

- Undertake micro-projects in team/individually.
- Encourage Students for creating and designing forms related to Departmental work.
- Encourage students to participate in the Microsoft-Office Specialist World Championship.
- Identify tools used for web page development and present its features.
- Undertake course "HTML" available on Swayam online platform. (https://onlinecourses.swayam2.ac.in/aic20_sp11/preview)
- Undertake course "JavaScript for Beginners Specialization" available on coursera online platform. (https://www.coursera.org/specializations/javascript-beginner) or any other such site.
- Undertake course "HTML, CSS, and JavaScript for Web Developers" available on coursera online platform. (https://www.coursera.org/learn/html-css-javascript-for- web-developers) or any other such site.
- https://cs50.harvard.edu/college/2023/fall/weeks/8/
- https://cs50.harvard.edu/x/2024/weeks/8/
- CS50x 2024 - HTML, CSS, JavaScript https://www.youtube.com/watch?v=ciz2UaifaNM
- https://www.w3schools.com/
- https://www.w3schools.com/w3css/default.asp
- https://www.w3schools.com/js/default.asp

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GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
Level: Diploma
Branch: Computer Engineering
Computer Science and Engineering
Course / Subject Code :
Course / Subject Name : Basics of Electronics

w. e. f. Academic Year:	2024-25
Semester:	1st
Category of the Course:	ESC

Prerequisite:	--
Rationale:	Engineering technologists, such as those holding engineering diplomas, often work with a variety of electronically operated and controlled equipment. To use and maintain such equipment effectively, they need to apply fundamental principles of electronics and electrical engineering to solve the various problems they will encounter throughout their careers. A solid understanding of the functions of basic electronic devices and circuits, coupled with practical skills acquired in the laboratory, is essential for these technologists. This knowledge will aid them when working with electronically controlled or operated equipment and electronic circuits. Therefore, this course is designed to ensure that students can effectively use and apply the principles of basic electronics whenever required.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Apply fundamental principles to analyze and solve problems in electronics engineering.	U
02	Describe the different types of semiconducting materials and their functionalities in electronic devices.	U
03	Demonstrate the characteristics and functions of various semiconductor diodes and rectifiers, including their applications in electronic circuits.	U
04	Utilize transistors in the design and implementation of electronic circuits.	A
05	Apply the 555 timer IC in various electronic circuit applications.	A

Revised Bloom's Taxonomy (RBT)

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Program Name: Diploma in Engineering
Level: Diploma
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Course / Subject Code :
Course / Subject Name : Basics of Electronics

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
2	0	2	3	70	30	20	30	150

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Basics of electronic circuits.	06	20
2.	Fundamentals of different types of Semiconductors.	06	15
3.	Introduction to Diodes and Rectifiers with their types.	08	30
4.	Introduction to Transistors.	06	20
5.	Timer circuits and application.	04	15
	Total	**30**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
30	40	30	-	-	-

Where R: Remember; U: Understanding; A: Application, N: Analyze, E: Evaluate and C: Create (as per Revised Bloom's Taxonomy)

Underpinning Theory:

The major underpinning theory is given below based on the higher level UOs of Revised Bloom's taxonomy that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of cOs and competency.

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Unit	Major Learning Outcomes	Topics and sub-topics
Unit – I Electronic Components	1a Define active and passive components. 1b Explain the calculation of color coding technique for resistance Calculation. 1c Compare specifications of capacitors. 1d Differentiate between resistors, capacitors and inductors. 1e Block diagram of DC power supply and compare with AC power supply	1.1 Introduction to electronics, brief history of electronic components, active and passive components 1.2 Resistors: Concept of resistors, specification of resistor, classification of resistors, fixed type and variable type resistors with applications, color coding of resistors. 1.3 Capacitors: Concept of capacitor, Classification of capacitors, capacitors specifications, fixed and variable capacitor. 1.4 Inductors: Faraday's laws of electromagnetic induction self-inductance, mutual inductance, and inductor specifications. 1.5 DC & AC Power supply analysis
Unit – II Fundamentals of Semiconductor	2a Explain atomic structure and conductivity 2b Describe Semiconductors and conductivity	2.1 Structure of atom of trivalent, tetravalent pentavalent materials, valence electron, free electrons, energy levels 2.2 Doping, Intrinsic semiconductor, extrinsic semiconductor 2.3 P-type and N-type semiconductor, majority - minority charge carrier and conductivity.

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Course / Subject Code :

Course / Subject Name : Basics of Electronics

Unit– III Diodes and Rectifiers	3a Describe the working, characteristics and applications of P-N junction diode. 3b Describe the working, characteristics and applications of Zener diode. 3c Describe applications of various Diodes. 3d Compare performance of various types of rectifiers	3.1 P-N junction, Depletion layer, knee voltage 3.2 P-N junction diode forward bias, reverse bias working 3.3 P-N junction diode voltage-current characteristics 3.4 Zener diode: Working, characteristics and applications 3.5 Symbol, construction, characteristics and working of Varactor diode, Photodiode, Light Emitting Diode(LED) and Multi color LED 3.6 Rectifier: Need of rectifier, definition, types of rectifiers - half wave and full wave
Unit– IV Transistors	4a Distinguish the specification of the given type of transistors. 4b Differentiate the performance of the specified transistor with sketches. 4c Explain the operation of transistor Configuration with current gain, voltage gain and power gain. 4d Explain application of transistor as switch.	4.1 Types of transistors: PNP, NPN. 4.2 Working of transistors. 4.3 Transistor Configuration and input output characteristics of NPN transistors in Common base (CB), Common emitter (CE) and Common collector (CC) configuration 4.4 Transistor voltage gain and current gain 4.5 Transistor as switch
Unit– V Introduction to 555 timer IC and its application	5a Overview of 555 timer IC 5b Pin configuration and functions 5c Applications of 555 timer IC	5.1 IC 555 5.2 Description of the 8 pins: Vcc, GND, Trigger, Output, Reset, Control Voltage, Threshold, Discharge. 5.3 Functional block diagram. 5.4 List Applications - pulse generators, oscillators, timers and frequency Counters.

References/Suggested Learning Resources:

(a)Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Basic Electronics and Linear Circuits	N.N. Bhargava , D.C. Kulshreshtha , S.C. Gupta	McGraw Hill Education, ISBN: 9781259006463
	Electronic Devices and	Mottershead,	Goodyear Publishing Co., New Delhi,

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2	Circuit: An Introduction	Allen	ISBN : 9780876202654
3	The Art of Electronics	Horowitz, Paul; Hill, Winfield	Cambridge University Press, New Delhi, 2015, ISBN : 9780521689175
4	Basic Electronic Engineering	Baru, V., Kaduskar, R., Gaikwad S.T.	Dreamtech Press, New Delhi, 2015 ISBN: 9789350040126
5	Fundamentals of Electronic Devices and Circuits	Bell, David	Oxford University Press New Delhi, 2015, ISBN : 9780195425239
6	Electronic Devices and Circuit	Maini, Anil K.	Wiley India, New Delhi, ISBN : 9788126518951
7	Transistor Selector Handbook	TAB books	Tower's International Foulsham, London, 1974, ISBN: 9780572008888
8	Principles of Electronics	V.K.Metha, Rohit Mehta	S. Chand, New Delhi, 2014, ISBN: 978-8121924504
9	Electronic Principles	Albert Malvino, David J. Bates	McGraw Hill Education ISBN - 978-0070634244

(b) Open source software and website:

1. www.datasheetcafe.com
2. www.williamson-labs.com
3. www.learnerstv.com
4. www.cadsoft.io
5. www.nptel.iitm.ac.in
6. www.khanacademy
7. www.vlab.co.in

Suggested Course Practical List:

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Use digital multimeter to measure basic electrical parameters like current, voltage and resistance.	I	02
2	Measure resistance, capacitances and inductances of different type of resistors, capacitors and inductors using LCR meter and verify it through color code and numerical code.	I	02
3	To construct and analyze the behavior of P-type and N-type semiconductors and identify the majority and minority charge	II	02

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	carriers.		
4	To study the V-I characteristics of a P-N junction diode in forward and reverse bias.	III	02
5	To analyze the V-I characteristics of a zener diode and explore its application as a voltage regulator.	III	02
6	Build and test the half wave rectifier on a breadboard.	III	04
7	Build and test the full wave rectifier (center tapping) on a breadboard.	III	04
8	To construct and study the input and output characteristics of a transistor in Common Emitter (CE) configuration. Identify the cutoff, active, and saturation regions.	IV	04
9	Perform application of transistor as a switch	IV	04
10	To study and understand the IC 555 timer, its pin configuration, and its internal functional block diagram.	V	04
	TOTAL		**30**

List of Laboratory/Learning Resources Required:

(a) Software and Simulation Tools:
1. MATLAB
2. Multisim
3. PSpice
4. Lab VIEW
5. Proteus

(b) List of Equipment's

Sr. No.	Equipment Name with Broad Specifications	PrO. No.
1	Dual variable DC power supply ,0- 30V, 2A, With Short circuit protection, separate display for voltage and current	6,7, 8,9
2	Cathode Ray Oscilloscope ,Dual Trace 20Mhz, 1MegaΩ Input Impedance	6,7, 8,9
3	Digital MultiMate : 3 1/2 digit display, 1999 count digital multimeter measures: Vac, Vdc (600V max) , Adc, Aac(10 amp max) , Resistance (0 – 2 Mega Ohm) , with diode and transistor tester	1,6,7, 8,9
4	LCR meter bench top or hand-held type, 3 1/2 digit LCD /LED display , 1999 count , Resistance 0-20 Mega Ohm , Capacitance 0-200 micro Farad , Inductance 0 – 20 Henry	2
5	Electronic Workbench: Bread Board 840 -1000 contact points: Positive and Negative DC power rails on opposite sides of the board with , 0-30 V , 2 Amp Variable DC power supply, Function Generator 0-2MHz, CRO 0-30MHz , Digital Multimeter	1 to 10

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Suggested Project List:

Each student will work on one micro-project assigned at the beginning of the semester. In the first four semesters, these projects will be group-based, with 3 to 5 students per group. In the fifth and sixth semesters, groups will be limited to a maximum of three students.

The micro-projects can be based on industry applications, internet research, workshops, laboratory work, or field studies. Each project should cover two or more Course Outcomes (COs) and integrating Practical Outcomes (PrOs).Students must keep a dated work diary documenting their individual contributions and present a seminar on their project before submission. The workload for each student should be around 16 hours (approximately one hour per week) throughout the course. Projects should be submitted by the end of the semester to help students develop industry-relevant skills.

Here is a suggestive list of micro-projects, which should align closely with the course's competencies and COs. Similar projects may be added by the course teacher:

> Using fundamental knowledge of electronics, students can develop mini or micro-projects based on team or individual work. These projects should strengthen their understanding of electronics hardware and serve as prototype models for various societal applications.

Suggested Activities for Students:

In addition to classroom and laboratory learning, the following student-related co-curricular activities are suggested to help achieve the various course outcomes:

1. **Group Activities and Reports**: Students should conduct the following activities in groups and prepare small reports (1 to 5 pages each). For micro-project reports, follow the suggested format. For other activities, students and teachers can decide on the format together. Students should also collect and record physical evidence, such as photographs or videos, for their portfolios, which will be useful during placement interviews:

   a. Prepare charts or display boards of some electronic devices with their specifications.
   b. Undertake mini or micro-projects in teams or individually.
   c. Give a seminar on any relevant topic.
   d. Conduct a market survey of various types of hardware components.
   e. Prepare showcase portfolios.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Python Programming

w. e. f. Academic Year:	2024-2025
Semester:	1st
Category of the Course:	PCC

Prerequisite:	Basic computer skills, including the ability to write basic statements and expressions.
Rationale:	Computer programming skills are now becoming part of basic education as these skills are increasing of vital importance for future job and career prospects. The Python programming language is one of the most popular programming languages worldwide. The course emphasizes the use of python programming in multiple domains. Python is a modern language for writing compact codes specifically for programming Server-side web apps, Data Analytics and Machine Learning, an important Artificial Intelligence domain. Furthermore, Python has gained popularity in scientific computing, production tools and game programming.
	This course focuses on developing python programming to do a variety of programming tasks where the students are encouraged to develop basic applications using different open source tools. At the end of the course, the student will be developing adequate basic programming skills using python language.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Prepare flowchart and algorithm for solving computing problems.	Apply
02	Develop python programs to solve simple problems.	Apply
03	Apply control structure feature of python for developing programs.	Apply
04	Develop programs in Python using built-in functions, modules, and library functions.	Apply
05	Develop python programs applying strings and lists manipulation concepts.	Apply

Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	**ESE (E)**	**PA / CA (M)**	**PA/CA (I)**	**ESE (V)**	
3	0	2	4	70	30	20	30	150

GUJARAT TECHNOLOGICAL UNIVERSITY
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Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Python Programming

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Problem Solving using Flowchart and Algorithm** 1.1 Introduction, Steps for problem-solving, Algorithm and its characteristics, Importance of algorithm. 1.2 Symbolic representation of a flowchart, Importance and Limitations of flowchart, Flow of control 1.3 Problem solving using pseudocode	05	11
2.	**Basics of Python** 2.1 Introduction to python, Python features, Applications of python programming 2.2 Python installation 2.3 Basic structure of python program, Python Comments, Keywords, identifiers, variables, Data types, and Operators. 2.4 Type Conversion	10	17

3.	**Flow of Control**
	 3.1 Introduction to Flow of Control
	 3.2 Selection
	     ● If statement
	     ● Elif statement
	     ● Nested if statement
	     ● match statement
	 3.3 Repetition
	     ● For loop
	     ● While loop
	     ● Nested loop
	 3.4 break, continue, and pass Statements
		10	24

4.	**Functions**
	 4.1 Introduction to Functions
	     ● User Defined Functions
	     ● Arguments and Parameters
	 4.2 Scope of a Variable
	     ● Global Variable
	     ● Local Variable
	 4.3 Python Standard Library
	     ● Built-in functions
	     ● Input or output - input() , print()
	     ● Mathematical Functions - abs(), divmod(), max(), min(), pow(), sum()
	     ● Module
		10	24

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Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Python Programming

	○ math ○ random ○ statistics			
5.	**Strings and Lists** 5.1 Introduction to Strings, String Operations, Traversing a String 5.2 Strings Methods and Built-in Functions 5.3 Introduction to List and its Operations 5.4 List Methods and Built-in Functions ● Nested and Copying Lists 5.5 List as Arguments to Function	10	24
	Total		45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
23	**28**	**49**	**-**	**-**	**-**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	Learn Programming in Python with Cody Jackson	Cody Jackson	Packt Publishing, 2018, ISBN : 9781789531947
2	Python Basics: A Practical Introduction to Python 3	David Amos, Dan Bader et. al.	Real Python, 2021 ISBN : 9781775093329
3	Introduction to Problem Solving with Python	E. Balagurusamy	Mc Graw Hill India, New Delhi ISBN: 9789352602582
4	Beginning Python	James Payne	Wiley, 2010 ISBN: 9780470414637
5	Think Python	Allen Downey	O'Reilly, USA, 2016, ISBN : 978-9352134755

(b) Open source software and website:
1.   www.python.org
2.   www.learnpython.org

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Program Name: Diploma in Engineering
Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Python Programming

3. www.hackr.io/tutorials/learn-python
4. www.sololearn.com/learning/1073
5. www.nptel.iitm.ac.in

Suggested Course Practical List:

The following practical outcomes (PrOs) are the subcomponents of the COs. These PrOs need to be attained to achieve the COs.

Sr. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	Prepare flowchart and algorithm for a given problem. ● Find the sum of two given numbers. ● Find a maximum out of two given numbers. ● Find whether a given number is odd or even. ● Find a maximum out of three given numbers.	1	2
2	Install & configure python software and Create a program to print your name, date of birth and mobile number.	2	2
3	Develop a program to identify data-types in python.	2	2
4	1) Create a program to read three numbers from the user and find the average of the numbers. 2) Create a program to convert temperature from Fahrenheit to Celsius unit using eq: C=(F-32)/1.8	2	2
5	1) Create a program to identify whether the scanned number is even or odd and print an appropriate message. 2) Create a program to find a maximum number among the given three numbers.	3	2
6	Develop a program to show whether the entered number is prime or not.	3	2
7	Develop a program to print odd and even numbers from 1 to N numbers. (Where N is an integer number entered by the user)	3	2
8	Develop a program to demonstrate the use of break, continue and pass statements.	3	2
9	1) Develop a user-defined function to find the factorial of a given number. 2) Create a user-defined function to print the Fibonacci series of 0 to N numbers. (Where N is an integer number and passed as an argument)	4	2
10	Write a program using the function that reverses the entered value.	4	2

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Course / Subject Name : Python Programming

11	Write a program that determines whether a given number is an Armstrong number or not using a user-defined function.	4	2
12	1) Write a program to reverse words in a given sentence. 2) Write a program to check if a substring is present in a given string. 3) Write a program to count and display the number of vowels, consonants, uppercase, lowercase characters in a string.	5	2
13	1) Create a program to find the sum of all elements in a list using a loop. 2) Create a program to find the smallest and largest element in a given list.	5	3
14	Given a list saved in variable: a = [1, 8, 7, 15, 25, 36,48, 64, 81, 95]. Write a Python program that takes this list and makes a new list that has only the even elements of this list in it.	5	3
	Total		**30**

Note :-

More Practical Exercises can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.

List of Laboratory/Learning Resources Required:

Sr. No.	Laboratory/Learning Resources/Equipment Name with Broad Specifications	PrO. No.
1	Computer system with operating system: Windows 7 or higher Ver., macOS, and Linux, with 4GB or higher RAM, Python versions: 2.7.X, 3.6.X, or higher Ver.	All
2	Python IDEs and Code Editors Open Source : IDLE, Jupyter	2 to 14

Suggested Project List:

Only one project is planned to be undertaken by a student that needs to be assigned to him/her in the beginning of the semester. The project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each student will have to maintain a dated work diary consisting of individual contributions in the project work and give a seminar presentation of it before submission. The duration of the project should be about 14- 16 (fourteen to sixteen) student engagement hours during the course. The students ought to submit projects by the end of the semester to develop the industry-oriented COs.

A suggestive list of projects is given here. This has to match the COs. Similar projects could be added by the concerned course teacher:

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1) Develop a console based application to convert number systems(i.e. . Binary to Decimal, Binary to Octal, etc.)
2) Develop a simple calculator.
3) Develop console based Countdown timer.
4) Print number system table for given range.(Decimal | Binary | Octal | Hexadecimal)
5) Develop a fizz-buzz game.
6) Develop a program to generate random passwords (8 Digits.).

Suggested Activities for Students:

Other than the classroom and laboratory learning, following are the suggested student- related co-curricular activities which can be undertaken to accelerate the attainment of the various outcomes in this course: Students should perform following activities in group and prepare reports of about 5 pages for each activity. They should also collect/record physical evidences for their (student's) portfolio which may be useful for their placement interviews:

a) Prepare a document which differentiates python versions.
b) Undertake projects in teams
c) Give a seminar on any relevant topics.
d) Undertake a market survey of different python frameworks.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering
Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Introduction to I.T. Systems

w. e. f. Academic Year:	2024-2025
Semester:	1st
Category of the Course:	**ESC**

Prerequisite:	Basic knowledge of Computer, demonstrated through the school's Test Learning Center.
Rationale:	Information technology is a relatively new comprehensive term that describes the entire range of information generation, storage, transmission, retrieval, and processing. Most organizations in the industry, business, non-profit organizations, and government departments now rely heavily on their information systems (IS) and information technology (IT). The information system collects, stores, and disseminates information from the organization's environment and internal operations to support organizational functions and decision-making, communication, coordination, control, analysis and visualization. Therefore, the knowledge about the various applications areas of Information Technology including practical skills acquired through the laboratory will help students when he/she will be working with information systems.
	At the end of the course, students will be able to comfortably work on computers, install and configure OS, connect it to external devices, protect information and computers from basic abuses/attacks. This course is therefore so designed that the students will be able to apply the concepts of IT systems as and when required.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Apply the basic concepts of Information technology systems for various educational, business, and industrial applications.	**A**
02	Discuss basic logic gates for designing digital logic circuits.	**U**
03	Describe features of different Operating Systems for various applications.	**R**
04	Analyze different parameters of the computer network- its communication cable/devices, topology, and addressing system.	**N**
05	Appraise information security for data protection and cyber-attacks in network communication.	**N**

Revised Bloom's Taxonomy (RBT)

GUJARAT TECHNOLOGICAL UNIVERSITY
Program Name: Diploma in Engineering
Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Introduction to I.T. Systems

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	**ESE (E)**	**PA/CA (M)**	**PA/CA (I)**	**ESE (V)**	
2	**0**	**2**	**3**	**70**	**30**	**20**	**30**	**150**

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Basics of Information System** 1.1 Importance of information technology in the modern era. - Information Concepts - Information v/s knowledge - Components Of Information System 1.2 Hardware Components of computer system - Memory (Primary and secondary) - Motherboard - Peripherals (Names and application) 1.3 Applications of various Internet Digital Platforms - - BHIM, Digi-Locker, Digital Gujarat	**4**	**10**
2.	**Digital Logic** 2.1 Introduction to digital computers and number system - Binary numbers - Base conversions (Binary, Decimal, Hexadecimal, Octal) 2.2 Working of Logic gates - AND, OR, INVERTER, XOR, XNOR 2.3 Working of Universal Gates - NAND and NOR Gate	**4**	**10**

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3.	**Operating System** 3.1 General features of OS - Introduction - Need, Functions, Services 3.2 Types of OS (Introduction and Classification) - Batch, Multitasking/Time-Sharing, Multiprocessing, Real-Time, Distributed, Network, Mobile 3.3 Proprietary & Open-source software - Windows OS -Introduction Only - Linux OS-Architecture, Components of Linux System, Kernel Mode vs User Mode, Basic Features	**5**	**20**
4.	**Information Communication & Networking** 4.1 Basic terminology of information communication - Basic Structure of communication system - Transmission modes (Simplex, half-duplex, Full-duplex) - Synchronous and Asynchronous transmission - Serial and Parallel communication 4.2 Transmission media and Connectors - Twisted -pair (STP-UTP), Coaxial, Fiber Optic, - RJ-45 connectors 4.4 OSI Model - Working & Functioning of each layer - Name of Protocols & Hardware supported at each layer 4.5 Network Topologies - Bus, Mesh, Star, Ring, Hybrid 4.6 Types of Computer Networks - LAN, MAN, WAN 4.7 Internet & Intranet - URL, Internet, Intranet, - Comparison between Intranet & Internet 4.8 Networking Devices (Types & use) - Switch, Router, Repeater, Wireless Access Point	**7**	**25**

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Program Name: Diploma in Engineering
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5.	**IP Addressing Scheme & DNS** 5.1 Network Addressing (IPv4) & Frame Format (IPv4) - Internet Protocol (need, types) - Classful addressing scheme, Address space, notations, netid, hostid - Need of IPv6 - IPv6 Notations & examples 5.3 Comparison between IPv4 & IPv6 5.4 DNS - Introduction, Need - Domain Names & its types	**5**	**15**
6.	**Information Security** 6.1 Need for Information Security - Definition of various terms of Information Security like Cryptography, Vulnerability, Threat, Attack, Encryption, Decryption 6.2 The Principles of Security (CIA Triad) 6.3 Cyber attacks - Introduction of common types of attacks - Malware, Virus, Worm, Trojan Horse, Denial-of-service, Phishing, Password cracking 6.4 Cyber Law - IT Amendment Act 2008 (Section 66 & 67-Introduction Only)	**5**	**20**
		30	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	**30**	**10**	**40**	**0**	**0**

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:
(a) Books:

Sr No.	Title of Book	Author	Publication, year and ISBN
1.	Digital Design (4th Edition)	M. Morris Mano; Michael D. Ciletti	Pearson publication, Latest Edition, ISBN: 81-203-0417-9

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2.	Operating systems	Dhamdhere	Tata McGraw Hill, ISBN: 1282187244, 9781282187245
3.	Operating systems	Silberschatz, Galvin, Gagne	Wiley & Sons publication ISBN: 978-0-470-12872-5
4.	Data Communications and Networking	Behrouz Forouzan	Tata McGraw Hill ISBN: 978-0-07-296775-3
5.	Cryptography and network security	William Stallings	Prentice Hall ISBN: 978-0130914293

(b) Open-source software and website:

Open-source software:
1. https://fedoraproject.org/
2. https://www.libreoffice.org/discover/libreoffice/

Website:
1. https://www.digitalindiaportal.co.in/
2. https://getintopc.com/
3. https://nptel.ac.in/
4. https://www.cert-in.org.in/
5. https://www.netacad.com

Suggested Course Practical List:

Sr. No	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs.
1	Identify specifications of various types of computer systems available in your institute.	1	02
2	Demonstrate participation in any three Digital India Platforms from the following to survey Digital literacy. Digital India Platforms: BHIM/Dig-Locker/Digital Gujarat	1	02
3	Convert given decimal number into another (HEXADECIMAL, OCTAL, DECIMAL, BINARY)	2	02
4	Install anyone from the given freeware application software/tool on your PC (Adobe PDF, notepad++, VLC media player)	3	02
5	Update the Operating System by using the recommended Setting from the Control Panel.	3	02

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6	Identify different aspects of the network in your department lab by following Parameter's consideration. (1) Types of Cables (Twisted -pair, Coaxial, Fiber Optics) (2) Topology (Bus, Mesh, Star, Ring, Hybrid) (3) Network Type (LAN, MAN, WAN)	**4**	**04**
7	Demonstrate following Networking Commands for troubleshooting. Commands: ping, traceroute, hostname, netstat, nslookup, route	**4**	**02**
8	Install any three peripheral devices from the following in your Desktop/Laptop. List of Peripheral Devices: -Computer Mouse (Wired/Wireless), -Microphone, -Digital Camera, -Scanner, -Printer, -USB Flash Drive	**4**	**04**
9	Identify specifications of the various network connecting devices at your Institute's Lab.	**4**	**02**
10	Identify your Desktop/Laptop IP Address (IPv4 & IPv6) by the following. (1) Ipconfig command (2) Default/Manual Network & Internet setting	**5**	**04**
11	Compile various cyber incidents by visiting the site https://cert-in.org.in/.5	**5**	**02**
12	Prepare a document by using various digital platforms, newspapers or any social media platform to identify cyber-crimes that have been done in your city.	**6**	**02**
	Total Hrs.		**30**

List of Laboratory/Learning Resources Required:

Sr. No	Learning Resources Specifications	Practical No.
1	Computer System (Desktop/Laptop) with minimum configuration: Operating System: Windows 7 or later version, Linux (Red Hat, Fedora, Ubuntu) RAM:8 GB, HDD: As per preferable, MS-Office :2016 or Open Office	**All**

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Level: Diploma
Branch: Information Technology
Course / Subject Code :
Course / Subject Name : Introduction to I.T. Systems

Suggested Project List: Suggestive list of projects is given here. This has to match the competency and the COs. Similar projects could be added by the concerned course teacher:

a) **Digital India Platform**: Demonstrate the various Digital India initiatives to create awareness about Digital literacy.
b) **Operating System**: Install any flavor of the Linux Operating System by using the virtualization Software (VMware/virtual box).
c) **Networking**: Prepare a report of various Network connecting devices existing at your home/ Institute Lab.
d) **Information Security:** Prepare a case study of various cyber-attacks in the current marketplace.

Suggested Activities for Students:

a) Prepare a portfolio for the Digital India platform and identify digital services for Indian citizens.

b) Give a seminar on the latest technologies & applications in demand.

c) Identify the existing network structure of your home.

d) Prepare a case-study on cyber-crime.

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GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Information Technology

Course / Subject Code :

Course / Subject Name : Web Development using PHP

w. e. f. Academic Year:	2024-2025
Semester:	1st
Category of the Course:	**ESC**

Prerequisite: Basic knowledge of computer programing and internet.

Rationale:	PHP is a powerful tool for making dynamic and interactive database driven web pages. PHP is the widely-used as efficient open-source technology. The students of diploma in Information Technology as web developers would be able to write dynamic interactive web-based applications such as for online banking, ticket/hotels booking sites, E- Commerce using PHP and MYSQL database. After study this course, they may work as self-employed web page developer.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Design static webpage using HTML tags.	R-3, U-3
02	Create small programs using basic PHP concepts.	A-2, N-1, E-2, C-2
03	Create User defined functions in PHP programming.	U-2, A-1, C-1
04	Design and develop a Web site using form controls for presenting web-based content.	A-2, N-2, E-1, C-3
05	Debug the Programs by applying state management concepts and error handling techniques of PHP.	U-2, A-1, C-2

Revised Bloom's Taxonomy (RBT)

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial / Practical		
L	**T**	**PR**	**C**	ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
0	1	4	3	0	0	20	30	50

GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Information Technology

Course / Subject Code :

Course / Subject Name : Web Development using PHP

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	**Introduction to HTML & Forms** 1.1 Introduction to HTML 1.2 Syntax - Tags and Attributes 1.3 Formatting Tags (Body, Heading Styles, Paragraph, q, sub, sup, Mark, Pre, Special Characters, head, title) 1.4 Image Tags (img, figure, figcaption, map, area), Hyper linking 1.5 Tables (table, th, tr, td, col, colgroup, caption) 1.6 Lists (Sorted List, Unsorted List, Definition List) 1.7 HTML forms 1.8 Introduction to CSS	8	15
2.	**Introduction to PHP** 2.1 Configuration and installation of PHP, Apache Web Server, MySQL 2.2 Installing WAMP/XAMPP server 2.3 PHP Structure and Syntax 2.4 Rules of PHP syntax 2.5 PHP Echo and Print statements 2.6 PHP Constants, Variables 2.7 PHP Data Types 2.8 Scope of variables: Static, Local and Global 2.9 PHP operators 2.10 Looping Structure (for, while, do…while, for each, break and continue) 2.11 Conditional Structure (if...else, else if, switch)	15	25

3.	**PHP Functions ,array and strings**
	3.1 User Defined function, argument function, variable function, Return function, default argument, Passing Arguments by Reference, Recursive function
	3.2 Include() and require() function
	3.3 Creating index based and Associative array and multidimensional Array
	3.4 Accessing array Element
	3.5 Library functions of an array.
	    (Count, list, in_array, current, next, previous, end, each, sort, array_merge, array_reverse)
	3.6 Creating and accessing String
	3.7 Searching & Replacing String and Formatting String
	3.8 String Related Library function:
	    (Chr, ord, strtolower, strtoupeer, strlen, ltrim, rtrim, trim, substr, strcmp, strcasecmp, ctrops, strops, stristr, str_replace, strrev)
		11	20

4.	**Working with data and form handling**	11	20

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Program Name: Diploma in Engineering

Level: Diploma

Branch: Information Technology

Course / Subject Code :

Course / Subject Name : Web Development using PHP

	4.1 Create, opening, Reading and writing file 4.2 working with directory 4.3 file uploading and downloading 4.4 Submitting form values using Get and Post Methods 4.5 Reading data from form using super globals $_GET, $_POST and $_REQUEST 4.6 Validate name using preg_match() function 4.7 Validate email and URL using filter() function 4.8 Sending plain text email, Sending HTML email and Sending attachments with email		
5.	**Working with Cookies, Session, and Error Handling** 5.1 Creating Cookies 5.2 Set Cookies 5.3 Destroying Cookies 5.4 Creating Session 5.5 Set Session 5.6 Destroying Session 5.7 Exception Handling in PHP using die() using custom error handling using try and catch	11	20
Total			**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
--- Not Applicable---					

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

Sr. No.	Title of Book	Author	Publication with place, year and ISBN
1	HTML & CSS: The Complete Reference	Thomas Powell	McGrew Hills, 2010
2	Beginning PHP and MySQL, 4th Edition	W. Jason Gilmore	Apress, 2010
3	PHP: The Complete Reference	Steven Holzner	McGraw-Hill, 2017
4	Learning PHP, MySQL, JavaScript, CSS & HTML5, Fourth Edition!	Robin Nixon!	O'reilly Media
5	Beginning PHP and MySQL	W. Jason Gilmore	Apress

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Level: Diploma

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Course / Subject Code :

Course / Subject Name : Web Development using PHP

6	Head First PHP & MySQL	Lynn Beighley, Michael Morrison	O'reilly Media, 2015

(b) Open source software and website:

1. https://www.php.net/
2. http://www.codecademy.com/tracks/php
3. http://www.w3schools.com/html
4. https://www.phptutorial.net
5. http://www.tutorialspoint.com/php
6. https://www.homeandlearn.co.uk/php/php.html
7. https://www.javatpoint.com/php-tutorial
8. https://www.geeksforgeeks.org/php-tutorials/

Suggested Course Practical List:

Sr. No	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. Required
1	Create html page which will use different html tags.	1	04
2	Use HTML table tags to create HTML web page.	1	04
3	Create html form with html controls and apply concepts of CSS to it.	1	04
4	Write a PHP script to display Welcome message.	2	02
5	Write a PHP script to demonstrate use of global, local, static and constant variables.	2	02
6	Write a PHP script to demonstrate arithmetic operators, comparison operator, and logical operator.	2	02
7	Write a PHP program to swap two numbers with and without using third variable.	2	02
8	Write a PHP program to check the given number is odd or even.	2	02
9	Write PHP Script to print Fibonacci series in html tabular format.	2	02
10	Write a PHP Script to show different looping structure.	2	02
11	Write a PHP script to call by reference and call by value.	3	02
12	Write PHP Script for addition and multiplication of two 2x2 matrices.	3	02
13	Write a PHP Script for performing function that takes arguments, returns arguments, default argument and variable length argument.	3	02
14	Write PHP script to demonstrate use of various strings handling function.	3	02
15	Write a PHP script to Demonstrate Include () and require () function.	3	02
16	Write PHP script to demonstrate Array functions.	3	02
17	Write PHP script to demonstrate use of fopen(), fread(), fwrite() and fclose() File functions.	3	02
18	Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page using GET Method.	4	02
19	Create Website Registration Form using text box, check box, radio button,	4	02

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Program Name: Diploma in Engineering

Level: Diploma

Branch: Information Technology

Course / Subject Code :

Course / Subject Name : Web Development using PHP

	select, submit button. Display user inserted value in new PHP page using POST method.		
20	Write PHP script to validate form including name, email using appropriate functions.	4	02
21	Write PHP script for sending plain text email, HTML email and attachments with email.	4	03
22	Write a PHP script to explain concept of $_REQUEST.	4	03
23	Write a PHP script to demonstrate creating, deleting, updating, retrieving and passing variable cookie data.	5	03
24	Write two different PHP script to demonstrate passing variables with sessions.	5	03
25	Write a PHP script to demonstrate Error Handling.	5	02
	Total		60

List of Laboratory/Learning Resources Required:

Sr. No.	Equipment Name with Broad Specifications	Practical No.
1	Computer with latest configuration with windows or UNIX OS with web browser	All
2	XAMPP/WAMP tool, editors like VSCODE, notepad++, sublime	All

Suggested Project List:

A suggestive list of micro-projects is given here. This should relate highly with competency of the course and the COs. Similar micro-projects could be added by the concerned course teacher:

a) Develop website for your department

b) Create web-based feedback system

c) Develop a dynamic website for online admission process.

d) Create a login-based web application like Feedback Form/Address book/rating.

e) Create a web application library management system.

f) Create a website for student management system which can be useful to your institute.

g) Create a login-based web application e-book uploading and downloading.

Suggested Activities for Students:

These are sample strategies, which the student/teacher can use to accelerate the attainment of the various outcomes in this course:

a) Massive open online courses (MOOCs) may be used to learn/teach various topics/sub topics.

b) Students can do group learning amongst them so that teaching can easily enhanced.

c) Students can study different web application and try to prepare such application.

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