

Programme Structure

**School of Engineering &
Technology**

**Diploma
in
Computer Science &
Engineering**

Programme Code: 0101

Batch: 2023-2026

Vision of the University

To be recognized as an Institution of excellence, facilitating learning, fostering creativity, knowledge creation, innovations, consultancy and leadership in multiple areas to build a conscious community that will positively impact living beings for a sustainable future.

Mission of the University

1. Offers a wide range of Undergraduate and Post graduate Courses.

To create conducive environment for an interactive and application oriented experiential learning making the Institute a preferred destination for work and study.

2. Research, Innovation, Consultancy & Entrepreneurial Culture

To Foster creativity, research and innovation orientation in students and faculty in basic and applied areas in all of its disciplines, provide cost effective solutions and nurture entrepreneurial capabilities to accelerate growth.

3. Social Relevance with local actions on global thoughts

To act as a catalyst in social change by developing academic, social, political, technological, scientific, industrial and business leadership in the spirit “Think Globally and Act Locally”; by providing ample opportunities to develop team spirit, sportsmanship and love for culture and national heritage.

Core Values

**Integrity
Leadership
Diversity
Community**

Vision of the School of Engineering & Technology

To become a center of excellence for providing quality and value based education in the field of diploma engineering that will produce skilled technocrats to meet industry requirements.

Mission of the School of Engineering & Technology

- To provide technical knowledge and skills by using latest engineering tools.
- To facilitate industry-institute interaction to explore the industrial knowledge of the students.
- To inculcate ethical and professional values among students.
- To impart quality education to the students coming from rural parts and to conduct different curricular & co-curricular activities to enhance the academic.

Core Values

Integrity
Leadership
Diversity
Community

Programme Educational Objectives (PEO's)

- PEO 1.** To provide a strong foundation in computer science, programming, and computational problem-solving along with effective communication and entrepreneurial skills for addressing societal and industrial needs.
- PEO 2.** To equip students with sound scientific, mathematical, and engineering knowledge required to design, develop, and implement innovative software and hardware solutions for real-life problems.
- PEO 3.** To prepare diploma engineers with technical competence to face challenges in the IT industry, pursue higher education, and adapt to emerging technologies.
- PEO 4.** To instill lifelong learning, leadership qualities, teamwork, professional ethics, and social responsibility so that students remain updated with technological advancements and contribute effectively to society.

PROGRAMME OUTCOMES (POs)

- PO 1. Basic and Discipline-specific Knowledge:** Apply knowledge of mathematics, science, and core concepts of computer science and engineering to solve computing and engineering-related problems.
- PO 2. Problem Analysis:** Identify, analyze, and troubleshoot well-defined problems in the field of computer science using standard practices, coding techniques, and logical reasoning.
- PO 3. Design and Development of Solutions:** Design and implement software applications, databases, and simple system-level solutions to meet specified user needs.
- PO 4. Engineering Tools, Experimentation, and Testing:** Use modern programming environments, software tools, and testing frameworks to develop, debug, and validate computing solutions.
Tools, Experimentation and Testing:
- PO 5. Computing Practices for Society, Sustainability, and Environment:** Apply appropriate computing technologies considering ethical practices, cybersecurity, sustainability, and societal needs.
- PO 6. Project Management and Communication:** Apply project management skills individually and in teams, demonstrating effective communication in both technical and non-technical contexts.
- PO 7. Lifelong Learning:** Recognize the need for lifelong learning and acquire the ability to keep pace with emerging tools, technologies, and innovations in the field of computer science and engineering.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

- PSO 1.** An Apply programming concepts, algorithms, and data structures to design, develop, test, and maintain reliable software applications.
- PSO 2.** An Demonstrate practical knowledge of computer hardware, operating systems, networks, and databases to configure, manage, and troubleshoot computing systems.
- PSO 3.** Design and deploy web-based applications and adapt to emerging areas like mobile computing, cloud technologies, and cyber security.
- PSO 4.** An Apply technical skills, teamwork, communication, and ethical values to excel in industry, pursue higher education, or initiate entrepreneurial ventures.



SDGI GLOBAL UNIVERSITY, GHAZIABAD

SCHOOL OF ENGINEERING & TECHNOLOGY

SCHEME OF STUDIES AND EVALUATION FOR DIPLOMA IN COMPUTER SCIENCE & ENGINEERING

W.E.F : Session : 2025-26

(Batch : 2023-2026)

Semester - V

S. No	Status	Paper Code	Subjects	Study Scheme Lec / Week			Hours	Credits	CIE	ESE	Total	Pass Marks
				L	T	P						
1	DC	D060123501	Internet of Things	3	0	0	3	3	50	50	100	40
2	DC	D060123502	Software Engineering	3	0	0	3	3	50	50	100	40
3	DC	D060123503	Web Development using PHP	3	0	0	3	3	50	50	100	40
4	DC	D060123504	Python Programming	3	0	0	3	3	50	50	100	40
5	OE	D060123505	Computer Architecture And Hardware Maintenance	3	0	0	3	3	50	50	100	40
6	DC	D060123551	Internet of Things Lab	0	0	2	2	1	60	40	100	40
7	DC	D060123553	Web Development using PHP Lab	0	0	2	2	1	60	40	100	40
8	DC	D060123554	Python Programming Lab	0	0	2	2	1	60	40	100	40
9	OE	D060123555	Computer Architecture And Hardware Maintenance Lab	0	0	2	2	1	60	40	100	40
10		D060123560	Summer Internship or Industrial training	0	0	0	0	2	0	100	100	40
Total				15	0	8	23	21	490	510	1000	400

Semester 5th



SCHOOL OF ENGINEERING & TECHNOLOGY

INTERNET OF THINGS (D060123501)

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DETAILED CONTENTS

UNIT 1: Introduction to Internet Of Things (IoT)	08 Periods
1.1 Introduction to IoT, Defining IoT, Things in IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, IoT Protocols, IoT communication Models, IoT communication API's, IoT enabling Technologies.	
UNIT 2: IoT Devices	08 Periods
2.1 How electronic devices fit with the Internet of Things, and why they are important: Breadboard and its internal connections, LED and its connections, Tri-color, LED, Resistor. Introduction to the many 'end devices', sensors and actuators, differentiate between different sensor types	
UNIT 3: IoT Networks	08 Periods
3.1 Introduction to the components of basic IoT networks, the types of network connections and how data travels through them, and the role of Internet Protocols. understanding of microcontrollers/Arduino and communication protocols	
UNIT 4: IoT Arduino	06 Periods
4.1 Feature of Arduino device, Arduino device introduction, Components of Arduino board , C Arduino Programming Language, Understanding of basic of Arduino IDE, function, control, statement, loops, datatype, variables: (Language)	
UNIT 5: IoT and M2M	06 Periods
5.1 Introduction, M2M, Difference between IoT and M2M, SDN and NFV for IoT- Software defined networking, network function virtualization, IoT and WoT.	

TEXT BOOKS

1. **Internet of Things** by Priyam Tayal, Asian Publishers, Muzaffarnagar.
2. **Internet of Things** by Rashmi, Sachin; Jai Prakash Nath Publications, Meerut.

RECOMMENDED BOOKS

1. **The Internet of Things: Connecting Objects to the Web**, Wiley Publisher Hakima Chaouchi
2. **21 Internet Of Things (IOT) Experiments**, BPB Publications Yashavant Kanetka.
3. **Internet of Things: A Hands On Approach**, University Press, Vijay Madiseti, Arshdeep Bahga.
4. **The Internet of Things**, Pearson, By Michael Miller ISBN: 9789332552456.



SCHOOL OF ENGINEERING & TECHNOLOGY

SOFTWARE ENGINEERING

(D060123502)

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3 0 0

DETAILED CONTENTS

UNIT 1: Introduction to Software Engineering	08 Periods
1.1 System Concepts: Types of systems: (open, closed, static and dynamic systems). Introduction, Programmes v/s Software Products	
1.2 Emergence of Software Engineering- Early Computer Programming, High-level Language Programming, and Control flow based Design, Data Structure Oriented Design, and Object Oriented Design.	
UNIT 2: Software Life Cycle Models	06 Periods
2.1 Requirement of Life Cycle Model, Classic Waterfall Model, Prototyping Model, Evolutionary Model, Spiral Model, introduction to agile methodology. Comparison of different Life Cycle Models	
UNIT 3: Software Planning, Requirement Analysis and Specification	10 Periods
3.1 Software Planning: Responsibilities of Software Project Manager. - Metrics for Project Size Estimation- LOC(Lines of Code), Function Point Metric - Project estimation Techniques- Using COCOMO Model	
3.2 Requirement Analysis and Specification: Requirement gathering and Analysis, Software Requirement Specifications (SRS), Characteristics of good SRS.	
UNIT 4: Software Design and Implementation	06 Periods
4.1 Characteristics and features of good Software Design Cohesion and Coupling, Software design Approaches- Function Oriented Design (Data flow diagrams, Data dictionary, Decision Trees and tables), Object Oriented Design, Structured Coding Techniques, Coding Styles, and documentation	
UNIT 5: Software Testing	06 Periods
5.1 Concept of Testing, Testing type cycle (V-Model), Verification v/s Validations, Unit Testing, Black Box Testing, White Box Testing, Integration testing, System testing, Configuration management, Overview of test cases.	

TEXT BOOKS

1. **Software Engineering** by Satish Kumar Gupta, Jai Prakash Nath Publications, Meerut.
2. **Software Engineering** by Priyam Tayal, Asian Publishers, Muzaffarnagar.

REFERENCE BOOKS

1. **Software Engineering** by Rajib Mall, PHI Publishers, New Delhi.
2. **Software Engineering – A Practitioner’s Approach** by RS Pressman, Tata McGraw Hill Publishers, New Delhi.
3. **Software Engineering** by KK Aggarwal and Yogesh Singh.
4. **Software Engineering**, Sangeeta Sabharwal, New Age International, Delhi.



SCHOOL OF ENGINEERING & TECHNOLOGY

WEB DEVELOPMENT USING PHP

(D060123503)

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DETAILED CONTENTS

UNIT 1: PHP Introduction	10 Periods
1.1 Introduction to PHP: How PHP Works, the php.ini File, Basic PHP Syntax, PHP variables, statements, operators, decision making, loops, arrays, strings, PHP OOPs concept, PHP forms (form handling, validation), get and post methods, functions.	
1.2 Introduction to cookies, storage of cookies at client side, using information of cookies, Creating single or multiple server-side sessions, Timeout in sessions.	
UNIT 2: PHP and MySQL	08 Periods
2.1 Introduction to MySQL, connecting to MySQL, database, creation, insertion, deletion and retrieval of MySQL data using PHP.	
UNIT 3: AJAX	06 Periods
3.1 AJAX Introduction, XML Http, Request object, server response, AJAX events, Validation, Interaction with API	
UNIT 4: WordPress (CMS)	06 Periods
4.1 Basics: Introduction to content management systems based on PHP, Introduction to WordPress, How WordPress Works, Installation of WordPress	
4.2 Posts & Pages: Introduction to Blogging, Creating Blogs, Using Images, Wrapping Text Around Images, Comments, Post Formats, Linking to Posts, Pages, and Categories, Using Smilies, Links Manager, WordPress Feeds, Using Password Protection.	
UNIT 5: Customizing Site Appearance and Themes in WordPress	06 Periods
5.1 Developing a Colour Scheme, Designing Headers, CSS Horizontal Menus, Dynamic Menu Highlighting, Navigation Links, Next and Previous Links, Styling for Print, Designing Your Post Meta Data Section, Separating Categories in your Post Meta Data Section, Customizing the Read More, Formatting Date and Time, Finding CSS Styles, Creating Individual Pages, Uploading Files using WordPress Themes, Templates, Template Tags, Template Hierarchy, validating a Website, Know Your Sources, WordPress Site Maintenance	

TEXT BOOKS

1. **Web Development using PHP**, by Priyam Tayal and Manish Sahoo; Asian Publishers, Mujaffarnagar.
2. **Web Development Using PHP**, by Bajpai and Sharma; Jai Prakash Nath Publications

REFERENCE BOOKS

1. **Head First PHP & MySQL**, O'Reilly Media, Inc, Michael Morrison, Lynn Beighley.
2. **Sams Teach Yourself PHP, MySQL, and Apache All in One**" by Julie C. Meloni, Publisher: SAMS, ISBN 0-672-32976-X.

3. **Web enabled development application by Ivan Byross:** Commercial; TMH.
4. **PHP: The Complete Reference**, by Steven HolznerMcgraw Higher Ed.
5. **PHP and MySQL Web Development**, by Luke Welling, Pearson Education India.
6. **WordPress 3.5 Complete**, Packt Publishing, by karolkrol, Aaron hodge Silver.
7. **WordPress Web Application Development**, Packt Publishing.
8. **Professional WordPress: Design and Development**, by Brad Williams, David Damstra, and Hal Stern, Wrox Publication.
9. **Building Web Apps with WordPress: WordPress as an Application Framework**, by Brian Messe Lehner and Jason Coleman, O'Reilly Media.



SCHOOL OF ENGINEERING & TECHNOLOGY

PYTHON PROGRAMMING

(D060123504)

L T P
3 0 0

DETAILED CONTENTS

UNIT 1: Introduction and Basic Python Syntax	10 Periods
1.1 Introduction: Brief History of Python, Python Versions, Installing Python, Environment Variables, Executing Python from the Command Line, IDLE, Editing Python Files, Python Documentation, Getting Help, Dynamic Types, Python Reserved Words, Naming Conventions	
1.2 Basic Python Syntax: Basic Syntax, Comments, String Values, String Methods, The format Method, String Operators, Numeric Data Types, Conversion Functions, Simple Output, Simple Input, The % Method, The print Function	
UNIT 2: Language Components and Collections	08 Periods
2.1 Language Components: Indenting Requirements, if Statement, Relational and Logical Operators, Bit Wise Operators, The while Loop, break and continue, for Loop.	
2.2 Collections: Introduction, Lists, Tuples, Sets, Dictionaries, Sorting Dictionaries, Copying Collections , Summary	
UNIT 3: Functions, Modules and Exceptions	08 Periods
3.1 Functions: Introduction, Defining Your Own Functions, Parameters, Function Documentation, Keyword and Optional Parameters, Passing Collections to a Function, Variable Number of Arguments, Scope, Functions - "First Class Citizens", Passing Functions to a Function, map, filter, Mapping Functions in a Dictionary, Lambda, Inner Functions, Closures	
3.2 Modules: Standard Modules – sys, Standard Modules – math, Standard Modules - time, The dir Function.	
3.3 Exceptions: Errors, Runtime Errors, The Exception Model, Exception Hierarchy, Handling Multiple Exceptions, Raise, assert.	
UNIT 4: Python File Operations	04 Periods
4.1 Access Modes, Writing Data to a File, Reading Data From a File, Additional File Methods	
UNIT 5: Classes in Python	06 Periods
5.1 Classes in Python, Principles of Object Orientation, Creating Classes, Instance Methods, File Organization, Special Methods, Class Variables, Inheritance, Polymorphism	

TEXT BOOKS

1. **Computer Programming Using Python** by Nikhil Singh, Jai Prakash Nath Publications.
2. **Computer Programming Using Python** by Priyam Tayal, Asian Publishers, Mujaffarnagar.

REFERENCE BOOKS

1. **Learning Python** by Mark Lutz; Pratham Books, Bangalore.

2. **Foundations of Python Network Programming** by John Goerzen and BrandeuRhodes; Apress-eBook distributed by Springer Science and Business Media, New York.
3. **Think Python** by **Allen B. Downey**; O'Reily Media.
4. Python Programming For Beginners: A Must Read Introduction to Python Programming by Robert Richards; Pratham Books, Bangalore.



SCHOOL OF ENGINEERING & TECHNOLOGY

Computer Architecture and Hardware Maintenance

(D060123505)

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DETAILED CONTENTS

UNIT 1: Hardware Organisation of computer system	08 Periods
1.1 CPU organisation: general register organisation, stack organisation, instruction formats (three address, two address, one address, zero address and RISC instruction). Addressing modes: Immediate, register, direct, indirect, relative, indexed.	
1.2 CPU Design: Microprogrammed vs hard wired control.	
1.3 Reduced instruction set computers: CISC characteristics, RISC characteristics, and their comparison.	
UNIT 2 Memory organisation	08 Periods
2.1 Memory Hierarchy, RAM and ROM chips, Memory address map, Memory connections to CPU, Auxiliary memory: Magnetic disks and magnetic tapes, Associative memory, Cache memory, Virtual memory, Memory management hardware, Read and Write operation	
UNIT 3 Arithmetic Operations	04 Periods
3.1 Introduction, Addition, Subtraction, Multiplication and Division algorithm.	
UNIT 4 I/O Organization	06 Periods
4.1 Basis Input output system(BIOS): Function of BIOS, Testing and initialization, Configuring the system	
4.2 Modes of Data Transfer, Programmed I/O: Synchronous, asynchronous and interrupt initiated, DMA data transfer	
UNIT 5 8085 Microprocessor and Architecture of multi-processor systems	10 Periods
5.1 8085 Microprocessor: Introduction, Architecture, Pin diagram, Comparison with 8086.	
5.2 Architecture of multi-processor systems: Forms of parallel processing, Parallel processing and pipelines, basic characteristics of multiprocessor, General purpose multiprocessors, Interconnection networks: time shared common bus, multi-port memory, cross bar switch, multi stage switching networks and hyper cube structures.	

TEXT BOOKS

1. **Computer Architectural & Hardware Maintenance** by Priyam Tayal, Asian Publishers, Muzaffarnagar.
2. **Computer Architecture and Hardware Maintenance** by Mayank Arya, Jai Prakash Nath Publications, Meerut.

REFERENCE BOOKS

1. **Computer Architecture and Organisation** by Moris Mano.
2. **Computer Architecture** by J.P.Hayes.
3. **Structured Computer Organisation** by Tanenbaum Andrew S, PHI.



SCHOOL OF ENGINEERING & TECHNOLOGY

INTERNET OF THINGS LAB

(D060123551)

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DETAILED CONTENTS

- 1 Installation of Arduino IDE
- 2 Interfacing Light Emitting Diode (LED)- Blinking LED
- 3 Interfacing Button and LED – LED blinking when button is pressed.
- 4 Interfacing Light Dependent Resistor (LDR) and LED, displaying automatic night lamp.
- 5 Interfacing Temperature Sensor (LM35) and/or humidity sensor (e.g. DHT11).
- 6 Interfacing Liquid Crystal Display (LCD) – display data generated by sensor on LCD.
- 7 Interfacing Air Quality Sensor-pollution (e.g. MQ135) - display data on LCD, switch on LED when data sensed is higher than specified value.
- 8 Interfacing Bluetooth module (e.g. HC05) - receiving data from mobile phone on Arduino and display on LCD.
- 9 Interfacing Relay module to demonstrate Bluetooth based home automation application (using Bluetooth and relay).



SCHOOL OF ENGINEERING & TECHNOLOGY

WEB DEVELOPMENT USING PHP LAB

(D060123553)

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DETAILED CONTENTS

- 1 Design PHP based web pages using correct PHP, CSS, and XHTML syntax, structure.
- 2 Create Web forms and pages that properly use HTTP GET and POST protocol as appropriate.
- 3 Design SQL language within MySQL and PHP to access and manipulate databases.
- 4 Install and configure both PHP and MySQL.
- 5 Create PHP code that utilizes the commonly used API library functions built in to PHP.
- 6 Design and create a complete web site that demonstrates good PHP/MySQL client/server design using ajax.
- 7 Write a PHP program to store a cookie using PHP on client side.
- 8 Write a PHP program to save the user session on server side.
- 9 Design a website using WordPress.
- 10 Creation of basic Blogging website using WordPress.



SCHOOL OF ENGINEERING & TECHNOLOGY

PYTHON PROGRAMMING LAB

(D060123554)

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DETAILED CONTENTS

- 1 Write a python program to add two numbers in python IDLE in interactive and batch mode.
- 2 Write a python program to demonstrate the use of lower, count, and replace string methods.
- 3 Write instructions in python to perform each of the steps below :
 - (a) Create a string containing at least five words and store it in a variable.
 - (b) Print out the string.
 - (c) Convert the string to a list of words using the string split method.
 - (d) Sort the list into reverse alphabetical order using some of the list methods (you might need to use dir(list) or help(list) to find appropriate methods).
 - (e) Print out the sorted, reversed list of words.
- 4 Write a program that determines whether the number is prime.
- 5 Write a python program to find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500?
- 6 Write a python program to swap two integer numbers using a temporary variable. Repeat the exercise using the code format: a, b = b, a. Verify your results in both the cases.
- 7 Write a python program to find the largest of n numbers, using a user defined function largest ().
- 8 Write a function myReverse() in python which receives a string as an input and returns the reverse of the string.
- 9 Write a python program to check if a given string is palindrome or not.
- 10 Write a python program to convert Celsius to Fahrenheit.
- 11 Write a python program to find the ASCII value of charades.
- 12 Create a simple calculator using python.



SCHOOL OF ENGINEERING & TECHNOLOGY

COMPUTER ARCHITECTURE AND HARDWARE MAINTENANCE LAB (D060123555)

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DETAILED CONTENTS

- 1 Demonstration of following:
 - (i) motherboard
 - (ii) Key board & Keyboard decoder
 - (iii) Video Adapter & display controllers
 - (iv) Floppy Drive, CD Drive and Hard Disk.
 - (v) Multifunction Input/Output controllers
 - (vi) Assembly of PC
- 2 Troubleshooting & repair of following equipment:
 - (i) Dot Matrix Printer, Laser, Inkjet Printer.
 - (ii) Digital Plotter
 - (iii) C. P. U.
 - (iv) Disk Drive
- 3 Trouble Shooting of
 - (i) Network
 - (ii) Power Supplies.

