

BARGAON INSTITUTE OF TECHNOLOGY

DISCIPLINE:	All Branches	SEMESTER:	1st Year (1st / 2nd Sem)
SUBJECT:	COMPUTING AND ARTIFICIAL INTELLIGENCE LAB	COURSE CODE:	PR 4
ACADEMIC PERIOD:	FROM: _____ TO: _____	FACULTY NAME:	_____
TOTAL PERIODS:	64 Periods	PERIODS / WEEK:	02 / Week (32 Weeks)
PROGRESSIVE ASSESSMENT:	25 Marks	END EXAM:	25 Marks
EXAM DURATION:	2 Hours	NO. OF CREDITS:	2 Credits

COURSE OUTCOMES (COS)

- CO 1:** Perform computer start-up, shutdown, restart operations, and identify major hardware components including input/output devices, CPU, memory, and motherboard components.
- CO 2:** Install and configure basic operating systems and demonstrate the use of web browsers, search engines, and Internet services.
- CO 3:** Create, edit, format, save, and print professional documents using word processing software.
- CO 4:** Develop spreadsheets and presentations using appropriate office productivity tools, including data formatting, calculations, charts, and multimedia elements.
- CO 5:** Develop and test Python programs using variables, operators, conditional statements, and loops to solve basic computational problems.
- CO 6:** Utilize Generative AI tools such as ChatGPT, Google Gemini, and Microsoft Copilot for information generation.

LESSON DELIVERY PLAN

SL. NO.	WEEK	CLASS DATE	NO. OF CLASS / DAY	TOPICS PLANNED TO BE COVERED	SIGNATURE
01	01			Topic 1: Computer Start-Up and Shutdown Operations — Procedure for switching on a computer & observation of the booting process.	
				Topic 1 Continued: Proper shutdown procedure and restarting a computer safely.	
02	02			Topic 2: Identification of Different Components of a Computer — Input devices and Output devices identification & functioning.	
				Topic 2 Continued: Central Processing Unit (CPU), memory devices (RAM, ROM), and peripherals.	
03	03			Topic 3: Identification of Various Motherboard Components — CPU socket, RAM slots, and BIOS chip.	
				Topic 3 Continued: Expansion slots, storage connectors, power connectors, I/O ports, and on-board components.	
04	04			Topic 4: Installation of Operating Systems — Installation procedure of Windows operating system on laboratory computers.	
				Topic 4 Continued: Installation procedure of Linux operating system (Ubuntu) on laboratory computers.	
05	05			Topic 5: Web Browser and Internet Usage — Browsing different websites and navigating web pages effectively.	
				Topic 5 Continued: Using various search engines for efficient information retrieval and internet safety.	
06	06			Topic 6: Word Processing using MS Word — Introduction to MS Word UI, creating and editing basic text documents.	
				Topic 6 Continued: Advanced text, paragraph, and page formatting techniques (fonts, spacing, margins).	

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07	07			Topic 6 Continued: Inserting tables, graphics, images, headers/footers, and page numbers.	
				Topic 6 Continued: Saving, opening, printing documents, and utilizing Print Preview & view options.	
08	08			Topic 7: Electronic Spreadsheet using MS Excel — Introduction to MS Excel, creating, saving, and editing spreadsheets.	
				Topic 7 Continued: Data entry, formatting cells, conditional formatting, and working with rows/columns.	
09	09			Topic 7 Continued: Performing basic arithmetic calculations and applying simple built-in formulas (SUM, AVERAGE, MIN, MAX).	
				Topic 7 Continued: Creating charts/graphs, worksheet printing, and using Print Preview options.	
10	10			Topic 8: Presentation Package using MS PowerPoint — Creating and editing presentations, slide management.	
				Topic 8 Continued: Formatting slides, applying background styles, design themes, and slide layouts.	
11	11			Topic 8 Continued: Inserting text boxes, images, smart art, charts, and multimedia elements (audio/video).	
				Topic 8 Continued: Configuring slide transitions, animations, Slide Show controls, and presentation printing.	
12	12			Mid-Term Practical Evaluation & Hands-on Assessment on Office Automation Tools (MS Word, Excel, PowerPoint).	
				Verification of Practical Records and Skill Assessment on Hardware/OS Installation.	
13	13			Topic 9: Programming using Python — Introduction to Python environment (IDLE/ Jupyter/VS Code) and basic syntax.	
				Topic 9 Continued: Write a Python program to determine the sum and average of 5 numbers.	
14	14			Topic 9 Continued: Python operators (Arithmetic, Relational, Logical).	
				Topic 9 Continued: Write a Python program to perform all arithmetic operations (addition, subtraction, multiplication, division).	
15	15			Topic 9 Continued: Conditional statements in Python (if, if-else, elif).	
				Topic 9 Continued: Write a Python program to find the greatest number among two numbers.	
16	16			Topic 9 Continued: Practice session on conditional logic and modulus operator.	
				Topic 9 Continued: Write a Python program to check the input number is even or odd.	
17	17			Topic 9 Continued: Leap year logic and logical operators in conditional branching.	
				Topic 9 Continued: Write a Python program to check the input year is a leap year or not.	
18	18			Topic 9 Continued: Nested conditional logic in Python.	
				Topic 9 Continued: Write a Python program to find the greatest number among three numbers.	
19	19			Topic 9 Continued: Loop structures in Python — Introduction to 'for' loop and range() function.	
				Topic 9 Continued: Write a Python program to find the average of n numbers by using for loop.	
20	20			Topic 9 Continued: Control structures — while loop and loop controls (break, continue).	

SL. NO.	WEEK	CLASS DATE	NO. OF CLASS / DAY	TOPICS PLANNED TO BE COVERED	SIGNATURE
				Topic 9 Continued: Write a Python program to determine whether a number is prime or not.	
21	21			Topic 9 Continued: Iterative algorithms and accumulator patterns in Python.	
				Topic 9 Continued: Write a Python program to find the factorial of a number.	
22	22			Topic 9 Continued: Generating ranges and filtering sequences in Python.	
				Topic 9 Continued: Write a Python program to display even numbers from 1 to 50.	
23	23			Topic 10: Getting Started with Generative AI Tools — Introduction to Generative AI concepts & prompt engineering basics.	
				Topic 10 Continued: Hands-on exploration of ChatGPT for information generation, text summarizing, and coding assistance.	
24	24			Topic 10 Continued: Utilizing Google Gemini for real-time web research, content creation, and multimodal prompts.	
				Topic 10 Continued: Utilizing Microsoft Copilot for documentation, web search integration, and productivity workflows.	
25	25			Comprehensive Review — Hardware Identification & OS Installation (Topics 1 - 4).	
				Comprehensive Review — Web Browsing, Internet Search Strategies & Security (Topic 5).	
26	26			Comprehensive Review — Advanced Document Preparation & Spreadsheet Formatting in MS Office (Topics 6 & 7).	
				Comprehensive Review — Presentation Design Principles and Python Syntax Basics (Topics 8 & 9).	
27	27			Python Problem Solving Session — Additional exercises on loops, conditions, and mathematical logic.	
				Generative AI Practical Session — Effective prompting strategies for code debugging and learning assistance.	
28	28			Micro-Project Presentations (Group A): PC Assembly, Troubleshooting, and OS Configuration.	
				Micro-Project Presentations (Group B): Automated Spreadsheet Reports & AI-assisted Python Applications.	
29	29			Practical Mock Test 1 — Hardware identification, OS setup, and MS Office document creation.	
				Practical Mock Test 2 — Python programming problem solving & Generative AI search execution.	
30	30			Internal Practical Examination & Viva-Voce (Batch A).	
				Internal Practical Examination & Viva-Voce (Batch B).	
31	31			Final Practical Record Verification, Lab Assessment Marks Finalization & Viva Preparation.	
				Discussion on End-Semester Practical Exam Pattern, Marking Scheme, and Important Questions.	
32	32			Final Revision on Python Computational Logic & GenAI Applications.	
				Course Wrap-up, Lab Maintenance Review & Final Academic Feedback.	

TEACHING STRATEGIES & PEDAGOGICAL METHODS

- Interactive laboratory demonstrations and hands-on practice sessions for hardware and software configurations.
- Utilizing virtual laboratories, interactive coding platforms (IDLE/Jupyter), and MOOCs for practical skill enrichment.
- 15-20% self-learning component on advanced office productivity tools and AI prompt techniques evaluated via student presentations.
- Group micro-projects focusing on PC assembly, automation scripting in Python, and GenAI applications.
- Industrial visits / exposure sessions to IT infrastructure setups, data centers, and computer maintenance facilities.

REFERENCE BOOKS

- ✓ **Computer Fundamentals**, by E. Balaguruswamy, TMH.
- ✓ **Let Us Python**, Yashavant Kanetkar, 2nd Edition, BPB Publications, India, 2020.
- ✓ **Python Programming: Using Problem Solving Approach**, Reema Thareja, 1st Edition, Oxford University Press, India, 2017.
- ✓ **Microsoft Office 2019 Step by Step**, Publisher: Microsoft Press.

Signature of Faculty

Principal