Tech Fundamentals

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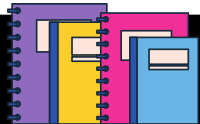
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Course Description

This course is designed to introduce your child to the world of computers, the internet, and artificial intelligence. It's an excellent way to spark their interest in technology and help them explore the digital world.
If your child is new to computers or you want to nurture their curiosity about technology, this course is a perfect starting point. It will help you and your child discover if they have a passion for the digital sector, potentially guiding their future academic and career choices.
Whether your child is a complete beginner or just starting to explore technology, this course provides a solid foundation for understanding our increasingly digital world.

Requirements				
Laptop/PC	Parents Monitoring	Any Notebook App	Urge to learn	

Course Grading

Grading Scale

A+

100% - 90% = A
89% - 80% = B
79% - 70% = C
69% - 60% = D
59% - 50% = F

Types of Assignments

- Interactive Quizzes - Test understanding of computer basics, internet concepts, and AI fundamentals.
- Coding Exercises - Practice simple coding to reinforce programming concepts.
- Digital Projects - Apply knowledge through hands-on projects in web design and basic app development.
- Online Discussions - Participate in moderated forums to share ideas and collaborate with peers.
- Tech Workshops - Engage in interactive online sessions focusing on course concepts and their real-world applications.

Remember this

Believe in yourself!   Don't give up!   Ask questions!   Be willing to learn!

Inclusion	Attendance & Tardies
At DG10 Academy, we embrace diversity and inclusivity. Our virtual classroom is a safe space where all students, regardless of background, are respected and valued. We believe diverse perspectives enhance learning and innovation in technology. Together, we'll create a collaborative environment that prepares you for the global digital world.	We expect regular attendance in our online sessions. If you miss a class, it's your responsibility to catch up on the material. Joining over 15 minutes late will be marked as an absence. After three late arrivals, we'll schedule a call with a parent or guardian. Continued tardiness may affect your course progress and participation grade.

AI Usage

We will embrace the responsible use of AI as a learning tool while maintaining academic integrity. For each assignment, I will clearly specify the allowed level of AI usage, ranging from no AI use to full AI collaboration. When AI is used, you must always cite this assistance, provide links to AI interactions, and include your original work. You are expected to follow these guidelines and be prepared to discuss and evaluate AI contributions. This policy will help you learn digital, proper citation practices, and critical thinking while you develop essential writing and analytical skills. Remember, the goal is for everyone to learn and grow in their abilities.

Curriculum Overview

- **Course Duration**: 12 weeks.
- **Total Modules**: 4 (with multiple lessons in each module).
- **Teaching Methods**: Lectures, Practical Exercises, Assignments, Quizzes, and Projects.
- **Assessment Methods**: Assignments, Quizzes, Projects, and Participation.

Every day is a new adventure. Be curious, be brave, and never stop learning!

Syllabus

Module 1 - Introduction to Computers

Objective: To provide students with a basic understanding of computers, their components, operating systems, and essential software applications, and to help them improve the speed and efficiency of their computer operations.

Lesson 1: Definition and Fundamental Concepts

- Detailed definition of a computer, including both hardware and software aspects.
- Overview of computer architecture (input, processing, output, and storage).
- Explanation of binary code and its importance in computing.

Assignment: Write a 500-word essay on how binary code translates to computer operations.

Lesson 2: Basic Components of a Computer

- Central Processing Unit (CPU)
- Memory (RAM)
- Storage (Hard drives, SSDs)
- Input Devices (keyboard, mouse)
- Output Devices (monitor, printer)
- All other hardware components

Assignment: Identify and label the main components of your personal computer or a family member's computer.

Lesson 3: Operating Systems

- Definition and examples (Windows, macOS, Linux)
- Basic functions of an operating system
- How to navigate an operating system
- How to be efficient on computers for greater productivity

Lesson 4: Basic Software Applications & Programming

- Typing Class – Type like a pro
- Office Suites (Word processors, spreadsheets, presentations)
- Web Browsers & it's working
- Introduction to Programming (basic concepts, simple programs)
- Programming with Scratch

Assignment: Create a simple program using a beginner-friendly programming language (e.g., Scratch or Python).

Lesson 5: Computer Maintenance and Safety

- Keeping your computer clean
- Regular software updates
- Antivirus and malware protection and cyber-Security for personal computers
- Safe internet practices

Assignment: Develop a weekly computer maintenance checklist and follow it for a month.

50 Marks Quiz

Every procedure has a purpose: to help us learn better!

Syllabus

Module 2: Understanding the Internet

Objective: To provide students with a comprehensive understanding of the internet, its history, how it works, and internet safety.

Lesson 6: Internet & It's working

- Definition and basic concepts
- Differences between the internet and the World Wide Web
- Early development (ARPANET)
- The growth of the internet in the 1990s
- Modern internet infrastructure

Assignment: Write a 500-word essay on the evolution of the internet and its impact on communication.
Assignment: Create a timeline of key events in the history of the internet.

Lesson 7: Internet Communication

- asics of network communication (IP addresses, DNS)
- Types of internet connections (dial-up, broadband, fiber optic)
- Introduction to websites and web servers

Assignment: Research and present the different types of internet connections available in your area.

Lesson 8: Browsers and Search Engines

- What is a web browser? (Examples: Chrome, Firefox, Safari)
- How to use a web browser
- What is a search engine? (Examples: Google, Bing)
- Tips for effective online searches
- Google Dorks

Assignment: Conduct a research project on how search engines work and present your findings.

Lesson 9: Internet Safety and Ethics

- Understanding digital footprints
- Safe browsing practices
- Recognizing and avoiding online scams
- Ethical behavior online (cyberbullying, plagiarism)

Assignment Create a list of all cyber threats and fraud in India and write a paragraph on each of them and how can we avoid those scams and security threats.

50 Marks Quiz

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Syllabus

Module 3: Fundamentals of Artificial Intelligence, ML, Data Science & Prompt Engineering

Objective: To introduce students to the basics of Artificial Intelligence, including machine learning, data science, large language models, and prompt engineering, providing a comprehensive understanding of AI and its applications.

Lesson 10: Introduction to AI

- Definition of AI and its importance in today's world.
- Differences between AI, Machine Learning, and Data Science.
- Early milestones in AI research.
- Major breakthroughs and current state of AI.
- Key contributors to the field of AI.

✖ **Assignment**: Write a 500-word essay on the differences between AI, Machine Learning, and Data Science, and their real-world applications.

Lesson 11: Machine Learning

- Definition and types of machine learning (supervised, unsupervised, reinforcement).
- Key concepts: algorithms, models, training, and testing.
- Introduction to common machine learning algorithms (linear regression, decision trees, neural networks).
- How models are trained and evaluated.
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✖ **Assignment**: Create a simple machine learning model using a beginner-friendly platform like Google Colab or a similar tool.

Lesson 12: Data Science

- Definition and importance of data science.
- The data science lifecycle: data collection, processing, analysis, and visualization.
- Common tools used in data science (Python, R, SQL, Excel).
- Basic data analysis and visualization techniques.

✖ **Assignment**: Perform a basic data analysis project using a dataset of your choice, applying simple analysis and visualization techniques.

Lesson 13: Working of LLMs (Large Language Models)

- Definition and significance of large language models.
- How LLMs are trained and their common applications.
- Introduction to popular LLMs (GPT-3, BERT, etc.).
- Basic usage of LLMs in text generation and language understanding tasks.

✖ **Assignment**: Use an online platform to interact with an LLM and create a text generation project.

Lesson 14: Detailed Prompt Engineering

- Importance of prompt engineering in AI.
- How prompts influence the output of language models.
- Best practices for crafting effective prompts.
- Examples of successful prompt engineering applications.

✖ **Assignment**: Create and test different prompts using an LLM, analyzing how changes in prompts affect the model's output.

50 Marks Quiz

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Syllabus

Module 4: How to learn anything from the Internet

Objective: To equip students with the skills and knowledge to effectively utilize the internet for learning, including accessing online resources, participating in online communities, and leveraging social media platforms for educational purposes.

Lesson 15: Utilizing Online Learning Platforms and Research Techniques

- Understanding the advantages of online learning.
- Overview of various online learning platforms (Coursera, edX, Khan Academy, etc.).
- How to identify reliable and credible sources.
- How to find and enroll in courses on platforms like Coursera, edX, Khan Academy, and Udemy.
- Tips for effective online course participation and completion.
- Utilizing additional resources provided by these platforms (forums, additional readings, quizzes).
- Effective use of search engines (Google, Bing) for academic research.
- How to use online libraries and databases (Google Scholar, JSTOR).
- Evaluating the credibility of online sources and information.

Assignment: Find and enroll in a free online course on a topic of interest. Write a brief summary of the course content and your learning goals.

Lesson 16: Engaging with Online Communities and Social Media for Learning

- Using Facebook groups for subject-specific discussions and networking.
- How to find and join educational Discord servers.
- Participating in Twitter chats and following educational hashtags.
- How to ask effective questions and seek help in online forums (Reddit, Stack Overflow, Quora).
- Building a network of peers and mentors online.
- Contributing to online discussions and sharing knowledge.
- Live demonstration of joining a Facebook group related to a course topic.
- Exploring Discord servers for educational purposes.
- Tips for staying safe and respectful in online communities.
- Creating a study schedule and setting goals.
- Staying motivated and disciplined while learning online.
- Using tools like Trello, Notion, and Google Calendar for time management.

Assignment: Join a relevant Facebook group or Discord server, introduce yourself, and participate in a discussion.

50 Marks Quiz

Projects: To be disclosed on enrollment

Every procedure has a purpose: to help us learn better!