



OFFICIAL TEACHER PORTFOLIO

MASTER LESSON PLAN PORTFOLIO

Professional Pedagogical & Technical Documentation Portfolio for Educators

Programming and Artificial Intelligence

Grade 11 (Secondary 2) — First Semester (Term 1)

Academic Year: 2026 / 2027



Authorized Term 1 Curriculum Framework (4 Core Chapters):

- **Chapter 1:** Information Technology and Society (Moore's Law, Edge Computing, AI Mechanics & Ethics).
- **Chapter 2:** Cybersecurity (RSA Cryptography, Network Security, DMZ Architecture & CSIRT Incident Response).
- **Chapter 3:** Web Applications (3-Tier Web Topologies, HTTP/S Protocol Lifecycle & JavaScript DOM Manipulation).
- **Chapter 4:** Web & Media Design (Vector SVG, UI/UX Principles, Heuristics, LCP & Iterative Design Thinking).



Professional & Pedagogical Profile:

- Instructor Name:** Eng. Elsayed Afandy
- Subject & Track:** Computer Science, Programming & Artificial Intelligence
- Grade & Level:** Secondary Stage — Grade 11 (Official Language Schools)
- School & District:** / Directorate
- Qualification:**
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AI Laboratory Operation Norms & Commitments:

- Verify workstation functionality, network sandbox access, and software IDEs before every session.
- Activate active learning methods (Think as an Engineer, Pair Programming, and Project-Based Labs).
- Uphold strict cybersecurity standards, personal data privacy, and ethical AI utilization.
- Track continuous evaluation metrics, Tri-Model weekly quizzes, and individualized student scaffolding.

Official Weekly Teaching Schedule (Term 1 — 2026 / 2027):

Day / Period	Period 1	Period 2	Period 3	Period 4	Break	Period 5	Period 6	Period 7	Period 8
Sunday					Midday Recess				
Monday									
Tuesday									
Wednesday									
Thursday									

 Ministry of Education Strategic Vision:

To establish an internationally benchmarked educational ecosystem producing graduates equipped with critical analytical reasoning, innovation, and technological leadership; providing secondary students with advanced computer systems engineering, AI, and cybersecurity competencies aligned with Egypt Vision 2030.

 Educational Mission & Pedagogy:

Empowering learners to transition from passive consumers of technology into ethical creators and software architects through rigorous experiential mastery of modern system architectures, machine learning models, network defense perimeters, and interactive full-stack web applications.

 Core Technical Guidelines for Laboratory Instruction:

- 1. Practical Hands-on Dominance:** Allocate $\geq 60\%$ of instructional time to live workstation coding and system simulations.

2. 'Think as an Engineer' Framework: Guide students to approach problems with engineering blueprints, trade-off analysis, and iterative testing.

3. Objective Assessment Integrity: Administer parallel Tri-Model assessments (A, B, C) to ensure individual authenticity and prevent duplication.
- 4. Universal Differentiation:** Scaffold foundational concepts with visual analogies while challenging advanced students with architectural extensions.

5. Ethical & Cyber Defense Principles: Embed rigorous ethical discussions on algorithmic bias, deepfake forensics, and privacy protection.

6. Meticulous Documentation: Ensure session completion logs, lesson observation entries, and performance records are maintained up to date.

Cognitive Objectives (Knowledge):

- Formulate Moore's Law and trace transitions toward Edge Computing and Quantum Computing.
- Deconstruct Artificial Neural Networks and distinguish Supervised, Unsupervised, and Reinforcement Learning.
- Understand the mathematical foundation of Asymmetric Cryptography (RSA), Hashes, and Digital Signatures.
- Explain 3-Tier Web Architecture, HTTP/S Request-Response cycles, and Status Code taxonomies.
- Differentiate Vector SVG vs Raster graphics and Lossy vs Lossless digital media compression algorithms.

Psychomotor Objectives (Skills):

- Train a computer vision machine learning model, adjusting dataset balances to optimize test accuracy.
- Generate RSA cryptographic key pairs, encrypting payloads and verifying digital signatures.
- Design secure network topologies isolating DMZ servers via packet-filtering firewall access control lists.
- Author semantic HTML5 documents styled with CSS Flexbox/Grid and dynamic JavaScript DOM interactions.
- Draft responsive UI wireframes conforming to WCAG accessibility and audit web performance via LCP metrics.

Affective Objectives (Values):

- Appreciate ethical imperatives surrounding algorithmic fairness, bias mitigation, and synthetic deepfakes.
- Develop proactive cybersecurity instincts to safeguard organizational infrastructure and personal identities.
- Embrace the Design Thinking mindset, empathy for diverse users with disabilities, and continuous refinement.
- Foster collaborative engineering teamwork, professional code review habits, and technological curiosity.

Chapter & Domain	Units & Instructional Topics	Core Scientific & Architectural Concepts	Targeted Learning Outcomes (Competencies)
Chapter 1: IT and Society	1-1 IT Evolution & Social Transformation 1-2 How AI Works 1-3 AI in Daily Life & Industry 1-4 Ethical Issues with AI	Moore's Law, Edge Computing vs Cloud, Cashless Society, Supervised/Unsupervised/Reinforcement Learning, Artificial Neural Networks, Weights & Biases, Recommender Systems (Collaborative Filtering), Algorithmic Bias, Explainable AI (XAI), and Deepfakes.	Analyze IT historical transitions; deconstruct neural network learning cycles; design recommender algorithms; and evaluate ethical dilemmas in Generative AI.
Chapter 2: Cybersecurity	2-1 Cryptographic Technologies 2-2 Network Security Design 2-3 Incident Response & Risk Management	Symmetric vs Asymmetric Cryptography, Public/Private Key (RSA/ECC), Hash Functions (SHA-256), Digital Signatures, 2FA/MFA, Firewalls (Packet/Stateful/Proxy), Demilitarized Zone (DMZ), IDS/IPS, Zero Trust, CSIRT Lifecycle, and BCP/DRP.	Execute public-key encryption; authenticate digital signatures; design DMZ network topologies; and formulate CSIRT incident containment playbooks.
Chapter 3: Web Applications	3-1 Web Application Structure 3-2 Web Communication Methods 3-3 Fundamentals of Frontend	Client-Server Model, 3-Tier Architecture (Presentation, Logic, Database), REST APIs, HTTP/HTTPS Request-Response, Headers & Status Codes (200, 404, 500), Cookies & Sessions, WebSockets, Semantic HTML5, CSS Flexbox/Grid, and JavaScript DOM Manipulation.	Deconstruct 3-tier distributed systems; trace HTTP transactions; code responsive semantic web interfaces; and manipulate DOM trees asynchronously.
Chapter 4: Web & Media Design	4-1 Types & Characteristics of Media 4-2 Information Design & UX 4-3 Methods for Evaluating Websites 4-4 Iterative Improvement Process	Vector Graphics (SVG) vs Raster (PNG/JPEG), Lossy vs Lossless Compression, Frame Rates, UI vs UX Design, Wireframing, Web Content Accessibility Guidelines (WCAG 2.1), Heuristic Evaluation, Largest Contentful Paint (LCP), A/B Testing, and Design Thinking.	Calculate media file sizes; optimize visual assets; draft WCAG-compliant wireframes; audit web performance via Google Lighthouse; and deploy iterative improvements.