

Course Syllabi for the Computer Systems Techniques Department

*Second Level / First & Second Semesters
Academic Year: 2025/2026*

LEVEL 2 / FIRST SEMESTER

Course Description: Computer Applications

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
-	Computer Applications	Mandatory Institute Req.	Level 2 / Semester 1	2	3	4

Course Objectives:

- 1. Ability to use word processing software (e.g., Microsoft Word).
- 2. Ability to use presentation software (e.g., Microsoft PowerPoint).
- 3. Understanding the use of computers in managing the educational process.
- 4. Understanding the use of computers as an educational tool.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Data Structure

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units	Prerequisite
CST201	Data Structure	Mandatory Departmental Req.	Level 2 / Semester 1	2	2	3	CST100

Course Objectives:

Introducing students to the definition of data structures, their various types, importance, properties, and applications, while explaining the advantages and disadvantages of each type. It aims to develop

the student's skills in selecting the optimal logical structure for data representation and storage according to the nature of the application and the problem being solved.

Course Description: Advanced Databases in SQL

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units	Prerequisite
CST202	Advanced Databases in SQL	Mandatory Departmental Req.	Level 2 / Semester 1	2	3	4	CST105

Course Objectives:

- 1. Developing the student's skills in database design and implementation using professional Relational Database Management Systems (RDBMS).
- 2. Enabling students to master writing complex Structured Query Language (SQL) statements for data retrieval, analysis, and management.
- 3. Training students on data constraints, referential integrity, and transaction control to ensure database accuracy and security.
- 4. Equipping students with the practical skills needed to link databases with external application development interfaces.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Software Engineering

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units	Prerequisite
CST203	Software Engineering	Mandatory Departmental Req.	Level 2 / Semester 1	2	2	3	CST107

Course Objectives:

- 1. Introducing the basic concepts of software engineering and the software development lifecycle.
- 2. Mastering various software life cycle models and engineering techniques.
- 3. Training students to design software using modern object-oriented methodologies and Unified Modeling Language (UML) diagrams.
- 4. Developing skills in software testing, quality assurance, project estimation, management, and software maintenance.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Operating Systems

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST204	Operating Systems	Mandatory Departmental Req.	Level 2 / Semester 1	2	2	3

Course Objectives:

- 1. Explaining the fundamental role, architecture, and core components of modern computer operating systems.
- 2. Training students to manage computer resources such as processors, memory, and devices effectively.
- 3. Understanding concurrency, process scheduling algorithms, deadlock scenarios, and synchronization methods.
- 4. Providing practical knowledge about file systems, security permissions, and command-line system administration.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Interactive Multimedia

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST205	Interactive Multimedia	Mandatory Departmental Req.	Level 2 / Semester 1	1	2	2

Course Objectives:

- 1. Understanding the essential media components: text, graphics, audio, animation, and video, and their integration.
- 2. Developing practical skills using multimedia production software to edit assets and create interactive digital media.
- 3. Exploring user experience (UX) and interface design principles optimized for electronic multimedia publishing.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Visual Programming

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST206	Visual Programming	Mandatory Departmental Req.	Level 2 / Semester 1	2	2	3

Course Objectives:

- 1. Introducing event-driven programming architectures and the visual design environment.
- 2. Enabling students to build fully graphical user interfaces (GUI) utilizing forms, menus, controls, and active dialog components.
- 3. Connecting front-end visual software elements seamlessly with backend operational databases.
- 4. Equipping students with structured debugging techniques and handling asynchronous application events.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Advanced English Language

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
-	Advanced English Language	Mandatory University Req.	Level 2 / Semester 1	2	-	2

Course Objectives:

Developing advanced English conversation skills, enhancing contextual reading comprehension, mastering precise technical report writing, and improving professional vocabulary tailored for administrative and computerized professional environments.

Assessment Methods:

Written examinations, reading evaluation, presentation performance, quizzes, and classroom discussions.

LEVEL 2 / SECOND SEMESTER

Course Description: Web Applications Development

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units	Prerequisite
CST207	Web	Mandatory	Level 2 /	2	2	3	CST106

Course Objectives:

- 1. Building advanced multi-tier interactive web applications using current dynamic scripting frameworks.
- 2. Learning secure session tracking, user authentication models, and custom form validation routines.
- 3. Managing deep backend server integration with online database tables for live processing.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Information and Network Security

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST208	Information and Network Security	Mandatory Departmental Req.	Level 2 / Semester 2	2	2	3

Course Objectives:

- 1. Establishing a foundational awareness of data privacy, integrity, and core concepts of cybersecurity systems.
- 2. Exploring standard cryptographic principles, data hashing methods, and symmetric/asymmetric algorithms.
- 3. Mitigating modern corporate network vulnerabilities using targeted firewalls and intrusion prevention platforms.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Quantitative Methods in Management

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
-	Quantitative Methods in Management	Mandatory Institute Req.	Level 2 / Semester 2	2	2	3

Course Objectives:

Familiarizing students with scientific mathematical models, operational research parameters, and optimizing allocation procedures. This includes linear programming formulations, assignment and transportation matrices, and standard critical path methods for operational execution.

Assessment Methods:

Theoretical tests, mathematical exercise verification, and assignment grading.

Course Description: Computer Networks

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST209	Computer Networks	Mandatory Departmental Req.	Level 2 / Semester 2	2	2	3

Course Objectives:

- 1. Analyzing standard architecture models such as the OSI layer framework and TCP/IP protocol suite.
- 2. Designing localized network topology routing schemas with advanced class-based subnet masking allocations.
- 3. Configuring networking hardware components (hubs, switches, and edge routers) for enterprise deployment.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Distributed Systems

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST210	Distributed Systems	Mandatory Departmental Req.	Level 2 / Semester 2	2	2	3

Course Objectives:

- 1. Outlining architecture paradigms governing decoupled network processing architectures and concurrent processing nodes.
- 2. Engineering asynchronous process coordination channels, dynamic synchronization, and localized multi-point states.
- 3. Deploying reliable failover execution schemas ensuring systematic network-wide system replication tolerance.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Mobile Applications Programming

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST211	Mobile Applications Programming	Mandatory Departmental Req.	Level 2 / Semester 2	1	2	2

Course Objectives:

- 1. Building functional modern software deployment packages tailored for cellular computing ecosystems.
- 2. Structuring user interface layouts optimized for responsive viewing across multi-touch surfaces.
- 3. Connecting programmatic layouts effectively with device-specific internal sensor streams and embedded databases.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Description: Graduation Project

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST212	Graduation Project	Mandatory Departmental Req.	Level 2 / Semester 2	-	4	2

Course Objectives:

Consolidating all academic concepts acquired throughout the curriculum into an integrated, functional software development or analytical research project. Students work under faculty supervision to analyze, design, and implement a computing system that provides practical solutions to realistic problems.

Assessment Methods:

Periodic progress evaluation, final software artifact analysis, comprehensive technical project documentation, and an oral presentation defense before a panel.

Course Description: Cloud Computing

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST213	Cloud	Elective	Level 2 /	2	-	2

Course Objectives:

Providing students with a thorough grounding in modern cloud platforms, storage virtualization, service paradigms (SaaS, PaaS, IaaS), remote deployment management, server-side scaling, data multi-tenancy rules, and underlying virtualization technical ecosystems.

Course Description: Cyber Ethics / Computer Professional Ethics

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST214	Computer Professional Ethics	Elective Departmental Req.	Level 2 / Semester 2	2	-	2

Course Objectives:

Familiarizing students with legal boundaries, intellectual property standards, societal responsibilities, and professional behavior paradigms governing modern software system deployments.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.

Course Curriculum Table:

Week	Syllabus Details
1st	Assignment: Student Questionnaire. Introduction and 'Introduce Yourself' Blog. The App Enigma Blog.
2nd	Milestones in computer development. Spotting ethical issues.
3rd - 4th	How law, ethics, and religion intertwine. Are Cyber ethics Different? Spotting Ethical Issues.
5th - 6th	Philosophical Ethics: Consequentialism, Deontologist, Social Contract Theory. Ethical Analysis. Reviewing the ACM Code of Ethics and Professional Conduct.
7th	Intellectual Property Basics: Trade Secrets, Copyrights, Patents, Trademarks. Assign Roles for Assignment 4.
8th - 9th	U.S. Privacy Law and international standards. Data collection principles and Data mining.
10th	Criminal Liability vs. Accountability.
11th	Review Midterm Exam Results. Responsibility vs. Liability vs. Accountability (Case Study).
12th	Global Outsourcing, The Digital Divide, and socio-economic factors.

Course Description: Internet of Things (IoT)

Course Code	Course Name	Course Type	Level/Semester	Theory Hrs	Practical Hrs	Units
CST215	Internet of Things	Elective Departmental Req.	Level 2 / Semester 2	2	-	2

Course Objectives:

Understanding how physical devices, microcontrollers, smart sensors, and functional endpoints link over the internet network, and mastering their configuration, discovery protocols, and remote identification methods.

Assessment Methods:

Theoretical exams - Quizzes - Laboratory work - Practical exam - Small group project presentation - Assignment grading.