

Course Descriptions - Second Year

Department of Computer Networks and Software Techniques – Mosul Polytechnic College / Northern Technical University

1. GENERAL AND HUMANITARIAN COURSES - SECOND YEAR

A. Computer Applications 2 (Computer 2 / NTU201)

30 Total Hours (2 Hours / Week - Theory + Practical)

Academic Year / Term: Second Semester - Second Year

Content & Syllabus:

- Microsoft Word features, launching the application, window interface elements, and switching languages.
- Paragraph definition, merging and splitting paragraphs, text selection and highlighting.
- File management: New, Open, Close, Save new document, Save current document, Print preview, and Exit application.
- Clipboard operations: Cut, Copy, Paste, and Format Painter.
- Font formatting: changing font type/size, grow/shrink font, clear formatting, font color, highlight color, subscript, superscript, case changing, and text effects.
- Paragraph formatting: numbering, bulleted lists, creating and modifying lists, alignment, line and paragraph spacing, borders, and shading.
- Styles & Editing: using styles, Find, Replace, and Select elements.
- Insert menu (Pages, Tables, Shapes): Blank page, Cover page, Page break, creating and styling tables, drawing tables, inserting pictures, SmartArt, and charts.
- Advanced Tools: Header & Footer, page numbers, text boxes, WordArt, signature line, date & time, equations, and symbols.

B. Arabic Language 2 (Arabic Language / NTU202)

30 Total Hours (2 Hours / Week - Theoretical)

Academic Year / Term: Second Semester - Second Year

Content & Syllabus:

- Introduction to common linguistic errors and distinguishing between tied marbuta (ة) and open taa (ت).
- Rules for writing extended and shortened alef, solar and lunar letters.

B. Arabic Language 2 (Continued)

- Distinction between Dad (د) and Dha (ذ), and rules for writing Hamza in various positions.
- Punctuation marks and their correct usage.
- Distinction between noun, verb, and particle, identifying indicators for each.
- Study of object types (Mafa'eel) and rules for number formulation and writing.
- Distinction between Noon and Tanween, meanings of prepositions.
- Formal aspects, administrative communication language, drafting templates, and official administrative correspondence.

C. Crimes of the Baath Regime in Iraq (Crimes of the Baath Regime in Iraq / NTU203)

30 Total Hours (2 Hours / Week - Theoretical)

Academic Year / Term: Second Semester - Second Year

Content & Syllabus:

- Crimes of the Baath regime under the Iraqi Higher Criminal Court Law of 2005; linguistic and idiomatic concepts/classifications of crime.
- Types of international crimes and rulings issued by the Iraqi Higher Criminal Court.
- Psychological and social crimes, their impacts, and mechanisms of implementing mental crimes.
- Social crimes, militarization of society, and the regime's stance on religion.
- Violations of Iraqi laws; forms of political and military violations.
- Locations of prisons and detention centers belonging to the Baath regime.
- Environmental crimes: wars, radioactive pollution, landmine explosions, destruction of cities/villages, scorched-earth policy, marsh drainage, and destruction of orchards/crops.
- Crimes of mass graves, genocide, and chronological classification of genocide mass graves in Iraq.

D. Professional Ethics (Professional Ethics / NTU204)

30 Total Hours (2 Hours / Week - Theoretical)

Academic Year / Term: Second Semester - Second Year

Content & Syllabus:

- Concept of ethics, and the distinction between work, profession, and trade.
- Professional practice ethics, values, and professional standards.
- Unethical behavior patterns in the workplace: administrative corruption, bribery, fraud.
- Methods and approaches to establishing and reinforcing professional ethics.
- Qualities, duties of technicians/technologists, and rights of users and patients.
- Relationship of technicians with society, responsibility towards environment and public safety.
- Professional relationships (technician's relation with colleagues and subordinates).
- Ethics of teaching, learning, and human/professional communication.

2. SPECIALIZED COMPUTER AND NETWORK COURSES - SECOND YEAR

A. Databases - SQL (Databases - SQL / CPN200)

2 Hours / Week (Theory + Practical)

Academic Year / Term: Second Year Students - First Semester

Content & Syllabus:

- Introduction to databases: concepts, components, and types of databases.
- Creating tables, defining data types, and table structures.
- INSERT Commands and executing data insertion operations.
- UPDATE Commands and DELETE Commands for modifying and removing data.
- Conditional data retrieval using SELECT with WHERE statement.
- Using logical and comparison operators in queries (SELECT with Logical Operators).
- Sorting and grouping data (ORDER BY & GROUP BY).
- Table relationships, Primary & Foreign Keys.
- Table JOIN operations (INNER JOIN, LEFT JOIN).
- Built-in aggregate functions: COUNT, SUM, AVG, MAX, MIN.
- Designing and implementing a practical database mini-project.

B. Network Management (Network Management / CPN202)

5 Hours / Week (2 Theory + 3 Practical)

Academic Year / Term: Second Year Students - First Semester

Content & Syllabus:

- OSI Model & Data Link Layer: core functions and concepts.
- Data Link Sublayers (LLC & MAC sublayers) and their interaction.
- Physical vs Logical Topologies and network diagrams.
- Media Access Control mechanisms (CSMA/CD vs CSMA/CA) and Half vs Full Duplex modes.
- Frame Structure: header, payload, and trailer.
- MAC Addresses and their utilization in local delivery.
- Packet analysis and network traffic inspection using Wireshark software.
- Network Layer (Layer 3) characteristics and roles.
- Encapsulation & Routing concepts.
- Comparison of IPv4 and IPv6 protocols and Network Address Translation (NAT) challenges.
- Analyzing Packet Headers for IPv4 and IPv6.
- Structural address types: Public/Private, Static/Dynamic IP addresses.

B. Network Management (Continued)

- Routing decisions, static and dynamic aggregations using simulation via Cisco Packet Tracer.

C. Web Programming (Web Programming / CPN203)

2 Hours / Week (Theory + Practical)

Academic Year / Term: Second Year Students - Second Semester

Content & Syllabus:

- Introduction to HTML and CSS fundamentals for web page design.
- Introduction to JavaScript, its importance, and reasons for use in interactive page development.
- Writing first JS script and working with Developer Console.
- Variable declaration, data types, and applications.
- Conditional logic (if-else structures).
- Iteration loops (for loop, while loop).
- Creating and utilizing basic Functions.
- Document Object Model (DOM) tree introduction and interacting with web page elements.
- Event handling and user interaction (button clicks, background changes).
- Creating HTML Forms and client-side Validation.
- Local Storage implementation in user browser.
- Developing small interactive web projects (e.g., calculator, image slider).

D. Operating Systems (Operating Systems - OS / CPN206)

5 Hours / Week (Theory + Practical)

Academic Year / Term: Second Year

Content & Syllabus:

- Operating System concept and role as User-Hardware Intermediary.
- Core OS services: Memory, Processes, Input/Output, Security.
- Interrupts, Caching, Exceptions, and Bus architectures.
- OS classification: Real-Time, Multitasking, and modern systems.
- Relationship between OS and computer architecture/physical layout.
- Input/Output Systems (I/O Systems) and hardware roles.
- Kernel I/O Management and Device Driver interaction.
- Process Management Concepts and CPU execution handling.
- CPU Scheduling Algorithms (FCFS, SJF, Round Robin) and performance evaluation.
- Process Synchronization and advanced techniques for concurrency issues.
- Memory management strategies and memory allocation.
- Page Replacement algorithms, frame allocation, and Fragmentation.
- Management and distinction between Physical & Virtual Memory.

SUMMARY PLAN AND HOURS FOR SECOND YEAR COURSES

Course Title	Course Code	Semester	Weekly Hours	Nature of Subject
Databases (SQL)	CPN200	First Semester	2	Theory + Practical
Network Management	CPN202	First Semester	5	Theory + Practical
Web Programming	CPN203	Second Semester	2	Theory + Practical
Operating Systems	CPN206	Full Year	5	Theory + Practical
Computer Applications 2	NTU201	Second Semester	2	Theory + Practical
Arabic Language 2	NTU202	Second Semester	2	Theoretical
Crimes of the Baath Regime	NTU203	Second Semester	2	Theoretical
Professional Ethics	NTU204	Second Semester	2	Theoretical