

NORTHERN TECHNICAL UNIVERSITY

Kirkuk Technical Polytechnic

Department of Computer Systems Techniques

Course Syllabi for Computer Systems Techniques (First Level)

Academic Year: 2025/2026

First Level / First Semester

Course Specification: Computer Fundamentals

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Computer Fundamentals	Mandatory University Requirement	Level 1 / Semester 1	2	4	4

Course Objectives:

- General knowledge of what computers are, their capabilities, and their uses.
- Identification of personal computer components.
- Understanding the fundamentals of operating systems and interacting with the most important ones.
- General knowledge of the types of computer software.
- Ability to use computer software to raise efficiency and increase individual productivity.

Evaluation Methods:

- Theoretical exams - Quizzes - Laboratory work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Specification: English Language First Stage

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	English Language First Stage	Mandatory University Requirement	Level 1 / Semester 1	2	-	2

Course Objectives:

- Identify the types of verb tenses and how to formulate simple and complex sentences.
- Learn essay writing techniques.
- Develop skills to listen to conversations and solve their corresponding exercises.

Evaluation Methods:

- Daily quizzes and solving exercises.

Course Specification: Statistics

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Statistics	Mandatory Institute Requirement	Level 1 / Semester 1	2	2	3

Course Objectives:

- Introduce the student to the use of statistical measures, data processing methods, and the application of operations research techniques in studying phenomena.
- Familiarize the student with statistical methods in graphical presentation, and the uses of measures of central tendency, dispersion, correlation, regression, and future forecasting.

Evaluation Methods:

- Quizzes - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Introduction to Statistics: Definition of statistics, importance of statistics, and its relationship with other sciences.
2 - 4	Data Collection, Classification, and Tabulation: • Cumulative ascending and descending frequency. • Measures of central tendency for ungrouped data (Arithmetic mean, Median, Mode).
5 - 6	Measures of central tendency for grouped data, and the relationship between averages.
7	Measures of Dispersion: Range, variance, standard deviation for ungrouped data.

8 - 9	Measures of Dispersion: Range, variance, standard deviation for grouped data.
10	Coefficient of variation and the standard score for grouped and ungrouped data.
11	Simple Correlation: Pearson method for ungrouped data.
12	Rank Correlation Coefficient: Spearman and Kendall.
13	Correlation Coefficient for Attributes: Association and Contingency.
14	Simple Regression.
15	Time Series: Measuring the general trend, finding the general trend line equation.

Course Description: Psychology

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Psychology	Elective Institute Requirement	Level 1 / Semester 1	2	-	2

Course Objectives & Evaluation Methods:

- Theoretical exams - Quizzes - Laboratory work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
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1	Introduction to Psychology (Historical development of psychology).
2	Definition of Psychology and Educational Psychology.
3	Schools of Psychology: Psychoanalytic school.
4	Behavioral School.
5	Humanistic School.
6	Definition of behavior and factors influencing behavior.
7	Learning and Motivation in learning.
8	Attention and Sensory Perception.
9	Memory and Forgetting.
10	Factors influencing memory and forgetting processes.
11	Thinking: Types of thinking, factors influencing thinking.
12	Learning Theories: Classical conditioning theory (Pavlov).
13	Operant Conditioning Theory (Skinner).
14	Insight Learning Theory (Kohler).
15	Trial and Error Learning (Thorndike).

Course Description: Ethics of Professions

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Ethics of Professions	Elective Institute Requirement	Level 1 / Semester 1	2	-	2

Course Objectives:

- Provide the student with information about professional behavior and its importance.
- Instill sound professional values by educating the student on professional etiquette.
- Provide the student with concepts of personal values and their types.

Evaluation Methods:

- Theoretical exams - Quizzes.

Course Syllabus Details:

Week	Syllabus Details
1	Professional Behavior: Definition, concept, practical applications, and the relationship between employees and their superiors.
2 - 3	Principles of Professional Etiquette: Rules of professional etiquette, manners, ethics, the importance of professional etiquette, and qualities required in an employee.
4 - 5	Professional Tools and Benefits: Definition of law, constitutional nature of professional etiquette, and benefits of professional codes. Values and their impact on practice: Definition of values, classification of values (theoretical, economic, aesthetic, social, religious, political).
6 - 7	Personal and Professional Values: Definition of personality and significant theories in its study. Types of personalities: Introverted, Humanistic, Hysterical, Depressive, Volatile, Suspicious,

	Aggressive.
8	Administrative appearance and environmental habits affecting the rules and duties of the technical administrative employee.
9	The role of the administrator in certain professional situations.
10	Regulations and instructions, the importance of commitment to compliance, and the administrator's role in obeying and applying regulations.
11 - 13	State Officials Discipline Law.
14 - 15	Behavioral approach to the profession and rules of professional conduct with practical applications.

Course Specification: Programming Language C++

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST100	Programming Language C++	Mandatory Department Requirement	Level 1 / Semester 1	2	2	3

Course Objectives:

- Introduce the student to programming languages, their types, and the C++ language.
- Understand the general structure of a program, its sections, and data types used in C++.
- Train students in writing code for programs, functions, procedures, data files, and using graphics capabilities.

Evaluation Methods:

- Theoretical exams - Quizzes - Laboratory work - Practical exam - Presentation - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Basic essentials for C++ language / C++ language concepts. What a C++ program contains. What are the basic files? Simple explanation for basic files included in a C++ program.
2	Basic elements and tools of C++ language: • Language symbols • Definition names • Keywords • Constant representation • Variables representation Data types in C++ and representation methods in memory (char, integer, real, boolean). Converting between different data types.
3	Expression types in C++ language, how to formulate expressions: • Arithmetic expressions / different arithmetic operations and priorities / conversion manner of arithmetic expressions to C++ language / various examples.
4	• Relational expressions / relational operations and priorities / formulating relational expressions. • Logical expressions / logical operations and priorities / formulating logical expressions. • Compound expressions / priorities table of public operations / various examples.
5	• Give the primary values of constants and variables. • Spaces and brackets. • Type of comments. • Special tools / minimum tools.
6	• Assignment statement: its types with explanatory examples. • Arithmetic expressions (equations), counters and counter types. • Different forms of equations belonging to C++ language.

7 - 8	Formatted Input and Output Functions: • Output text, numeric values, and arithmetic expressions. Unformatted Input and Output Functions. Control, Conditional, and Loop Statements: • Conditional statements & tools (If conditional statement, If...else statement, Nested conditional, switch conditional statement).
9	Nested conditional statements (continued).
10 - 11	Repetition Statements: • For loop, Nested for, while statement, do...while statement. • Control in repetition: continue, exit, go to statements.
12 - 13	Dimensional Variables: Arrays and Matrices: • One-Dimensional array. • Two-Dimensional array, square matrix (as a special state of 2D arrays).
14 - 15	Functions: • Global and local variables. • Define function, call function, ways of calling functions. • Form of retrieving values from functions (parameters, arguments, factors affecting function usage). • Functions of type void, user-defined functions, library of standard functions (string functions, arithmetic functions, date and time functions).

Course Specification: Digital Logic

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST101	Digital Logic	Mandatory Department Requirement	Level 1 / Semester 1	1	2	2

Course Objectives:

- Introduce the student to the basics of logic circuits.
- Train the student to implement digital logic circuits used in computer fields.
- Familiarize the student with the main components of a computer, their functions, and their impact on overall performance.
- Introduce the student to arithmetic operations within digital systems.

Evaluation Methods:

- Theoretical exams - Quizzes - Laboratory work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Essentials of information technology: Introduction, computer and software system, computer types.
2	Numeric methods, including: • Decimal method, Binary method. • Convert decimal to binary. • Four arithmetic operations in binary, and computer interest in this method.
3	Octal Method: • Convert from octal to decimal and vice versa. • Convert from binary to octal. Hexadecimal Method.
4	Convert from binary to hexadecimal. Numeric representation in computer: BCD codes, 4-bit BCD codes, check level. Integer numeric representation, real numeric representation.
5	Gates: OR, AND, NOR, NAND, XOR, XNOR gates. External pin edge diagram for integrated circuits (IC) of gates.
6 - 7	Boolean Algebra: • Boolean algebra and De Morgan's theorem. • Rules of Boolean algebra used for simplifying logical expressions.

8 - 9	Formula rules and Karnaugh Map (K-Map): • Formula rules: Sum of Products (SOP), Product of Sums (POS). • Karnaugh map for simplifying functions of two and three variables.
10	Hardware: Study of hardware parts. Characteristics and functions of the chassis (case) and power supply.
11	Study of characteristics, functions, and parts of the motherboard.
12	Study of memory functions and types: ROM and RAM.
13	Study of BIOS setup and update.
14	Study of secondary storage units technology: H.D, F.D, C.D, DVD.
15	Study of characteristics and functions of expansion slot cards (Network, Sound, Video).

Course Specification: Algorithms

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST102	Algorithms	Mandatory Department Requirement	Level 1 / Semester 1	2	-	2

Course Objectives:

- Develop organized logical thinking skills in students.
- Teach students how to construct algorithms to solve simple problems.
- Train students on converting algorithms into working programs.
- Train students to solve problems using computer software applications.

Evaluation Methods:

- Theoretical exams - Quizzes - Practical exam - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Initial principles of programming / Definition of a program / Programming languages (High-level languages, Low-level languages) / Definition of user program / Application programs / Operating system software.
2	Problem Solving: • Understanding the problem / dividing the problem / problem-solving process. • Types of data and variables used in programming languages and defining them in a program. • Constants & variables (Numeric and String).
3	Flowcharts: • Benefits of flowcharts. • Symbols used in drawing flowcharts. • Types of flowcharts: Simple flowcharts.
4 - 5	Branched flowcharts / Loop flowcharts.
6 - 8	Algorithms: • Definition of an algorithm / Algorithm design. • Types of algorithms: Sequential, Conditional, and Repetition.
9	Characteristics of a good program / Program development stages / Writing the program / Implementation and debugging.
10	Types of programming errors: • Syntax errors / Run-time errors / Semantic errors. • Testing, Documentation, and Maintenance.
11	Top-down design / Bottom-up design.
12	Process (Program) Life Cycle inside the computer:

	1. Ready 2. Waiting 3. Running 4. Complete.
13	Subroutines / Subprograms.
14 - 15	Introduction to structured programming / Structures used in structured programming: • Sequence structures / Selection structure (IF-THEN-ELSE) / Repetition structure (Do-While).

Course Specification: Mathematics

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST103	Mathematics	Mandatory Department Requirement	Level 1 / Semester 1	2	2	3

Course Objectives:

- Extending the student's thinking scope.
- Understanding the concept of matrices and their applications for solving a system of linear equations simultaneously.
- Understanding the mathematical logic in differentiation and integration and solving non-linear and differential equations.
- Understanding the mathematical logic in testing the convergence and divergence of infinite series.
- Applying MATLAB: The mathematical program to perform operations on matrices and solve linear, non-linear, and differential equations.

Evaluation Methods:

- Quizzes - Laboratory work - Practical exam - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1 - 2	The concept of matrices, their types, and how to

	find their ranks.
3 - 4	The equality of matrices and operations on them (addition, subtraction, and multiplication).
5	The determinant of a matrix and its relation with its rank; Sarrus method to find the value of a determinant.
6 - 7	The inverse matrix and its relation with rank; cofactors method to find the inverse matrix. Solving a system of linear equations simultaneously using the inverse matrix of the coefficients.
7 - 8	Differentiation rules of algebraic, trigonometric, exponential, and logarithmic functions. Derivative of a composite function (chain rule), implicit differentiation, and partial derivatives.
9	The approximate real root of a non-linear equation in some interval applying iteration and Newton-Raphson methods.
10 - 12	Integration rules of algebraic, trigonometric, exponential, and logarithmic functions. Integration by parts and integration by partial fractions.
13 - 15	The concept of sequences and infinite series and their types; ratio and root tests for their convergence and divergence.

First Level / Second Semester

Course Specification: Human Rights and Democracy

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Human Rights and Democracy	Mandatory University Requirement	Level 1 / Semester 2	2	-	2

Course Objectives:

- Familiarize the student with citizen rights and the duties they must fulfill toward the state.

Evaluation Methods:

- Daily quizzes and participation in classroom discussions.

Course Specification: Arabic Language (First Stage)

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Arabic Language First Stage	Mandatory University Requirement	Level 1 / Semester 2	2	-	2

Evaluation Methods:

- Daily quizzes and participation in classroom discussions.

Course Specification: Sports

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
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-	Sports	Elective University Requirement	Level 1 / Semester 2	1	1	2
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Course Specification: Principles of Administration

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Principles of Administration	Mandatory Institute Requirement	Level 1 / Semester 2	2	2	3

Evaluation Methods:

- Daily quizzes and participation in classroom discussions.

Course Description: Programming in Java

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST104	Programming in Java	Mandatory Department Requirement	Level 1 / Semester 2	2	2	3

Evaluation Methods:

- Daily short written and oral quizzes, exercise solving, and assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1 - 2	Introduction to Java programming / The Java Virtual Machine / Variables and data types / Conditional and looping constructs / Arrays.

3 - 4	Object-oriented programming with Java: Classes and Objects, Fields and Methods, Constructors, Overloading methods, Garbage collection, Nested classes.
5 - 6	Inheritance: Overriding methods, Polymorphism, Making methods and classes final, Abstract classes and methods, Interfaces.
7	Exception handling with try-throw-catch-finally constructs. The Exception class.
8	The Object class, Cloning objects, The JDK LinkedList class, Strings, String conversions.
9	Working with types: Wrapper classes, Enumeration interface.
10	Packages: Package access, Documentation comments.
11	Applets: Configuring applets, Applet capabilities and restrictions.
12 - 4	Basics of AWT and Swing: Layout Managers, Event Handling, The Action Listener interface, Panels, Classes for various controls (label, choice, list, Checkbox, etc.), Dialogs and frames, Using menus, Using adapter classes, Graphics.
15	Database connectivity with JDBC / Java security.

Course Specification: Fundamentals of Databases in SQL

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST105	Fundamentals of Databases in SQL	Mandatory Department Requirement	Level 1 / Semester 2	2	2	3

Course Objectives:

- Introduce the student to basic concepts and types of databases.
- Familiarize the student with the characteristics of relational databases.
- Study Structured Query Language (SQL) used for interacting with databases.
- Train the student to create and manage simple databases using SQL.

Evaluation Methods:

- Theoretical exams - Quizzes - Laboratory work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1 - 2	Database definition, Database types, Characteristics of database, Comparing databases with traditional file systems.
3 - 4	Principles of records and fields, Types of data (character, string, and numeric), Types of keys (primary and secondary), Database relationships (1-1, 1-N, N-M).
5	Why Learn SQL? What Is SQL? Introduction to SQL, SQL language & its elements, Advantages & disadvantages, SQL tools.
6 - 7	Tables: Creating tables, Types of fields, Inserting data, Inserting and deleting fields in tables, Relational connections between tables.
8	Combination Insert/Update Statements.
9 - 10	Ordered Updates and Deletes.
11	Multitable Updates and Deletes.
12 - 15	Extensions to the SELECT Statement. SQL instructions: selection with conditions, AND, OR, MAX, MIN, INSERT, UPDATE.

Course Specification: Fundamentals in Web Design

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST106	Fundamentals in Web Design	Mandatory Department Requirement	Level 1 / Semester 2	1	2	2

Course Objectives:

- Introduce the student to the basics and uses of internet protocols.
- Familiarize the student with HTML basics and its applications in writing electronic web pages.
- Train the student to create and deploy electronic web pages.

Evaluation Methods:

- Theoretical exams - Quizzes - Lab work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1 - 2	Study of Internet characteristics and types of applications used on it.
3 - 5	Study of protocols for transferring web pages, files, and email over the Internet (HTTP, FTP, SMTP).
6 - 7	Study of HTML basics.
8 - 9	Designing/Creating a web page.
10 - 11	Programming using PHP and CSS.
12 - 13	Publishing a page on the Internet.

14 - 15	Web site management and administration.
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Course Specification: System Analysis

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST107	System Analysis	Mandatory Department Requirement	Level 1 / Semester 2	2	-	2

Course Objectives:

- Introduce students to basic systems concepts, analysis, properties, levels, and types.
- Train students to analyze and design systems using a set of analysis and design tools.

Evaluation Methods:

- Theoretical exams - Quizzes - Lab work - Practical exam - Presentation of a small project per group - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Basic concepts in computer-based information systems analysis and design. The System: systems theory, principles, general characteristics (Objective, Environment, Boundaries, Subsystems, Feedback, Control mechanism). Classification of systems: complexity, nature, origin, relationship with environment, outputs, purpose.
2	Data & Information: Data processing, basic and advanced processing. Information: characteristics of good information, sources (paper, electronic, audio), importance and forms. Computerized Information Systems: Development stages (Analysis, Design, Implementation). Objectives and types of systems. The Systems Analyst: qualifications, personal traits, major problems

	faced, evolution of relationships with end-users.
3 - 7	Systems Analyst work environments, teams, and reasons for failure in some organizations. Analysis and Design Phases: Systems Analysis (Preliminary Study), Information gathering methods and validation (Interviews, Questionnaires, Observation, Document analysis). Presentation skills, team meetings, Joint Application Development (JAD). Problem Definition and Feasibility Study. Detailed Analysis Phase: System function model, Data Flow Diagrams (DFD) elements and levels. Data analysis, Entity-Relationship Diagram (ERD), normalized relations, Entity Life History (ELH), Petri Networks, process specification tools, structured language, decision tables, data dictionary, data coding, normalization rules (1NF, 2NF, 3NF, BCNF, 4NF, 5NF). Optimal model design, physical vs logical models. Outputs of the analysis phase.
8 - 14	Systems Development Life Cycle (SDLC) - Design Phase: General Design, logical model of the new system, business process redesign, physical model design. Detailed Design Phase: interface design, user interface types, input/output design, report design, forms design, database design points and tools, software design characteristics.
15	Graduation Projects: General guidelines, ideas, types of computerized systems. Warnings, project structure, preparation for defense/discussion. Examples: administrative computer system ('University Library'), computerized educational curriculum, website, or electronic magazine.

Course Specification: Computer Maintenance

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST108	Computer Maintenance	Mandatory Department Requirement	Level 1 / Semester 2	1	2	2

Course Objectives:

- Introduce the student to the basics of maintenance workshops.
- Train the student on how to detect faults in computer hardware components and peripherals.
- Train the student on how to repair hardware faults in computer components and peripherals.
- Train the student on how to perform periodic preventive and corrective maintenance.

Evaluation Methods:

- Theoretical exams - Quizzes - Lab work - Practical exam - Assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	How computers work.
2 - 3	Hardware and Software components.
4 - 5	Electronic and Electrical circuits.
6 - 9	Identifying computer programs and their maintenance.
10 - 14	Identifying computer hardware and methods of maintenance.
15	Software installation and installing Windows 10 Operating System.

Course Description: Object-Oriented Programming in C++

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST109	Object-Oriented Programming in C++	Elective Department Requirement	Level 1 / Semester 2	1	2	2

Course Objectives:

- What is object-oriented programming?
- Why do we need object-oriented programming?
- Characteristics of object-oriented languages (C and C++).

Evaluation Methods:

- Daily written and oral short quizzes, solving exercises, and assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	Introduction: What is object-oriented programming? Why do we need object-oriented programming? Characteristics of object-oriented languages in C++.
2	C++ Programming basics: Output using cout, Directives, Input with cin, Type bool, The setw manipulator, Type conversions.
3	Functions: Returning values from functions, Reference arguments, Overloaded functions, Inline functions, Default arguments, Returning by reference.
4	Objects and Classes: Making sense of core object concepts (Encapsulation, Abstraction, Polymorphism, Classes, Messages Association, Interfaces). Implementation of classes in C++, C++ Objects as physical objects, C++ objects as data types, constructors, Objects as function arguments, The default copy constructor, returning objects from functions. Structures and classes. Classes, objects and memory, static class data. Const and classes.
5	Arrays and string arrays fundamentals. Arrays as class Member Data: Arrays of objects, strings, The standard C++ String class.
6	Operator Overloading: Overloading unary operations, Overloading binary operators, data conversion, pitfalls of operator overloading and

	conversion keywords. Explicit and Mutable.
7	Inheritance: Concept of inheritance, Derived class and base class, Derived class constructors, member functions, inheritance in the English distance class, class hierarchies, inheritance and graphics shapes, public and private inheritance, aggregation (classes within classes), inheritance and program development.
8	Pointers: Addresses and pointers, The address-of operator, pointers and arrays, Pointers and functions, pointers and C-type strings. Memory management: New and Delete, pointers to objects, debugging pointers.
9 - 10	Virtual Functions: Virtual functions, friend functions, static functions, assignment and copy initialization, the 'this' pointer, dynamic type information.
11 - 13	Streams: Stream classes, Stream Errors, Disk File I/O with streams, file pointers, error handling in file I/O with member functions, overloading the extraction and insertion operators, memory as a stream object, command line arguments, and printer output.
14 - 15	Templates and Exceptions: Function templates, Class templates, Exceptions.

Course Description: Programming with Python

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
CST110	Programming with Python	Elective Department Requirement	Level 1 / Semester 2	1	2	2

Evaluation Methods:

- Daily written and oral short quizzes, solving exercises, and assignment grading.

Course Syllabus Details:

Week	Syllabus Details
1	The Context of Software Development: Software, Learning Programming with Python.
2	Values and Variables: Integer and String Values, Identifiers, User Input, String Formatting.
3	Expressions and Arithmetic: Expressions, Arithmetic Examples.
4	Conditional Statements: Boolean expressions, If/Else statement, Other Conditional Expressions.
5	Iteration: Loops.
6	Using Functions: Introduction to Using Functions, Functions and Modules.
7	Writing Functions - 1: Function Basics, Parameter Passing, Custom Functions vs Standard Functions, Refactoring.
8	Writing Functions - 2: Global Variables, Making Functions Reusable, Functions as Data.
9 - 10	Objects: Using Objects, String and File Objects.
11 - 12	Lists: Using Lists, Building Lists, List Traversal.
13 - 14	Tuples, Dictionaries, and Sets: Storing Aggregate Data, Enumerating the Elements of a Data Structure.
15	Class Design: Composition and Inheritance.

First Level / Third Semester (Summer)

Course Specification: Summer Training

Course Code	Course Name	Course Type	Level & Semester	Theoretical Hours	Practical Hours	Units
-	Summer Training	Mandatory Institute Requirement	Level 1 / Semester 3	-	-	-

Course Objectives:

- Give the student an opportunity to conduct training in an actual field work environment.
- Link academic study with the practical and applied reality in various institutions and organizations.
- Provide the student with real exposure to the labor market and how to handle administrative systems in institutions.
- Equip the student with skills to deal with realistic technical problems in the labor market and try to solve them using appropriate scientific methods.
- Help the student realize the importance of their specialization through training in institutions closely related to their field.

Expected Skills and Knowledge to be Acquired During Cooperative Training:

- Proficiency in using Microsoft Word to write documents and reports with high professionalism.
- Proficiency in using Microsoft Excel to manage data tables and spreadsheets with high professionalism.
- Proficiency in using Microsoft PowerPoint to present data and represent it via advanced electronic presentations in an attractive manner.

Evaluation Methods:

- Presentation - Oral Exam - Reports.