

Course Outline and Policy

Objectives & Intended Learning Outcomes: Students should be able to:

- Understand computer architecture, design, numbering systems, Boolean operations, software including operating systems' concept, and theory of computation;
- Understand how information is represented and manipulated within a computer system;
- Analyze a problem statement, develop a problem solving approach, and construct an algorithm to solve the problem, using program development techniques (flow-charting and pseudo-code);
- Understand and apply the basic concepts of Structured & Procedural Programming using C;
- Write simple and useful C programs.

Course Contents:

- **Introduction:** Introduction to Computing, Computer Organization and Architecture, Input & Output Units, Types of Hardware & Software.
- **Design and construction of Computing Machines:**
 - **Data Storage:** Bits, main & mass memory, representing information, numbering systems, conversion between numbering systems, mathematical operations, Boolean operations, logic gates, equivalent circuits, truth table for Boolean circuits, combinational and sequential circuits, design simple digital logic circuits.
 - **Data Manipulation:** Computer architecture, machine language/instruction set, program execution, arithmetic/logic instructions.
- **Other computer-related subjects:** Operating Systems, and Computer Networks.
- **Problem Solving Techniques including Algorithms:** Concepts, abstraction, algorithm representation & discovery, flowcharting, pseudo coding, iterative structures, efficiency & correctness, practical & engineering problems.
- **Programming Languages:** History, traditional programming concepts, procedures & functions, implementation (translation, linking, loading), OOP.
- **Introducing C:** Introduction to Programming, Basic features of C, including strengths, and weaknesses.
- **C Fundamentals:** Writing simple programs, compiling, debugging, and linking.
- **Formatted Input/Output in C Language:** printf, and scanf.
- **Expressions in C Language:** Arithmetic operators, assignment operators, increments and decrements, evaluations.
- **Selection Statements in C Language:** One-way, Two Way, & Multiple-Way selections (Boolean values, if statement, else, switch, and break statements).

Lab:

- Computer architecture, HW & Maintenance, DOS Major Commands.
- Windows: Interface, Files & Folders, Internet, Email, & Web Search.
- MS Office: Word/Excel/PowerPoint/Access/MS Visio.
- Writing C Programs with MS Visual Studio 6.0.
- C Language: Formatted Input/Output, Expressions, Selection Statements.

Important Notes:

- Don't miss lectures, and be on time.
- Homework should be predicted at the end of each lecture.
- A quiz should be predicted each lecture.
- Honor Code: Don't ever share solution or code!

Assessments:

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| • Term 1 & Term 2 | 50% |
| • Assignments, Quizzes, & Project | 10% |
| • Final | 40% |

Web site:

For useful materials, announcements about the course, feedbacks, bookmark this web page: <http://www.e4t.net/intro>

References:

- Computer Science: An Overview (8th Edition), by J. Glenn Brookshear, ISBN-13: 978-0321247261.
- C Programming: A Modern Approach, K. N. King, Georgia State University, ISBN 0-393-96945-2.
- How Computers Work (9th Edition) (How It Works), by Ron White, and Timothy Edward Downs, ISBN-13: 978-0789736130.

Lab Contents:

- Computer architecture, HW & Maintenance (1 Week).
- DOS Major Commands (1 Week).
- Windows: Interface, Files & Folders (1 Week)
- Internet, Email, & Web Search (1 Week).
- MS Office: Word/Excel/PowerPoint (Major and advanced features only, and including Office Tools) – (3 Weeks)
- MS Access (creating tables and forms) & MS Visio (drawing flowcharts, diagrams, and UML) – (2 Weeks).
- Writing C Programs with MS Visual Studio 6.0 (code window, cpp files, compilation, linking, executing, simple programs and Hello World!) – (1 Week)
- C Language: Formatted Input/Output (1 Week)
- C Language: Expressions (applying concepts mentioned in lecture) – (3 Weeks)
- C Language: Selection Statements – (2 Weeks)