

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.
 - **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)