

## Introduction to Computers (ITSC 1301)



**Credit:** 3 semester credit hours (2 hours lecture, 2 hours lab)

### Course Description

Overview of computer information systems. Introduces computer hardware, software, procedures, and human resources.

### Required Textbook and Materials

1. *Invitation to Computer Science* by G. Michael Schneider and Judith Gersting, 8<sup>th</sup> Edition. Cengage Learning, Inc..
  - a. ISBN number is 13: 978-1-3375-6191-4

### Course Objectives

Upon completion of this course, the student will be able to:

1. Identify the components of a computer system
2. Use common applications
3. Explain the impact of computers on society
4. Identify computer careers
5. Identify fundamental programming structures
6. Identify ethical use of computers
7. Use basic operating system functions

### Course Outline

1. An Introduction to Computer Science
  - a. The Definition of Computer Science
  - b. Algorithms
  - c. A Brief History of Computing
2. Algorithm Discovery and Design
  - a. Representing Algorithms
  - b. Examples of Algorithmic Problem Solving
3. The Efficiency of Algorithms
  - a. Attributes of Algorithms
  - b. Measuring Efficiency
  - c. Analysis of Algorithms
4. The Building Blocks: Binary Numbers, Boolean Logic, and Gates
  - a. The Binary Numbering System
  - b. Boolean Logic and Gates
  - c. Building Computer Circuits
  - d. Control Circuits
5. Computer Systems Organization
  - a. The Components of a Computer System
  - b. Putting the Pieces Together—the Von Neumann Architecture
  - c. Non–Von Neumann Architectures
6. An Introduction to System Software and Virtual Machines
  - a. System Software
  - b. Assemblers and Assembly Language
  - c. Operating Systems
7. Computer Networks and Cloud Computing
  - a. Basic Networking Concepts
  - b. Communication Protocols
  - c. Network Services and Benefits

# ITSC 1301

## Course Syllabus

- d. Cloud Computing
- e. A History of the Internet and the World Wide Web
- 8. Information Security
  - a. Threats and Defenses
  - b. Encryption
  - c. Web Transmission Security
- 9. Introduction to High-Level Language Programming
  - a. The Language Progression
  - b. A Family of Languages
  - c. Two Examples in Five-Part Harmony
  - d. Feature Analysis
  - e. Meeting Expectations
  - f. The Big Picture: Software Engineering
- 10. The Tower of Babel: Programming Languages
  - a. Procedural Languages
  - b. Special-Purpose Languages
  - c. Alternative Programming Paradigms
  - d. New Languages Keep Coming
- 11. Compilers and Language Translation
  - a. The Compilation Process
  - b. Phase I: Lexical Analysis
  - c. Phase II: Parsing
  - d. Phase III: Semantics and Code Generation
  - e. Phase IV: Code Optimization
- 12. Models of Computation
  - a. What Is a Model?
  - b. A Model of a Computing Agent
- c. A Model of an Algorithm
- d. Turing Machine Examples
- e. The Church–Turing Thesis
- f. Unsolvable Problems
- 13. Simulation and Modeling
  - a. Computational Modeling
  - b. Running the Model and Visualizing Results
- 14. Ecommerce, Databases, and Data Science
  - a. Ecommerce
  - b. Databases
  - c. Data Science
- 15. Artificial Intelligence
  - a. A Division of Labor
  - b. Knowledge Representation
  - c. Recognition Tasks
  - d. Reasoning Tasks
  - e. Robots and Drones
- 16. Computer Graphics and Entertainment: Movies, Games, and Virtual Communities
  - a. Computer-Generated Imagery (CGI)
  - b. Video Gaming
  - c. Multiplayer Games and Virtual Communities
- 17. Making Decisions about Computers, Information, and Society
  - a. Case Studies
  - b. Personal Privacy and Social Media
  - c. Fake News, Politics, and Social Media

## Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

## Course Evaluation

Final grades will be calculated according to the following criteria:

## **ITSC 1301**

### Course Syllabus

1. Labs	25%
2. Discussions	25%
3. Quiz	20%
4. Finals	30%

### **Course Policies**

1. You must log onto Blackboard and access this course a minimum of three times per week.
2. Cheating of any kind will not be tolerated.
3. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
4. Internet Usage – Students are expected to use proper net etiquette while participating in course emails, assignment submissions, and online discussions.

### **Technical Requirements**

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

[https://help.blackboard.com/Learn/Student/Getting\\_Started/Browser\\_Support/Browser\\_Checker](https://help.blackboard.com/Learn/Student/Getting_Started/Browser_Support/Browser_Checker)

A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

### **Disabilities Statement**

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)839-2018. You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](#).

### **Student Code of Conduct Statement**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu) or obtained in print upon request at the Student Services Office.

### **Starfish**

## **ITSC 1301**

### Course Syllabus

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.



### **Certification Requirement**

CIS majors are required to earn certification in one of the following areas prior to graduation.

- CompTIA ITF+ Certification
- CompTIA Security+ Certification
- CompTIA Linux+ Certification
- Oracle Java Foundations Certification
- Certified Associate in Python Programming