

**Course:** COSC 4360.001  
**Class:** MWF 10:00 – 10:50 AM, CS-114

**Semester:** Fall 2011  
**Office Telephone:** (361) 825-3436  
**Web Page:** <http://sci.tamucc.edu/~lyoung1/>

**Instructor:** Larry Young  
**Office:** CI-339  
**Office Hours:** Monday 1:00 - 1:50 PM  
Wednesday 3:30 – 4:30 PM  
Thursday 2:00 – 4:00 PM  
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## COSC 4360--Theory of Programming Languages

**Course Description:** The study of programming language design including syntax, semantics, behavior, and implementation issues in imperative, functional, logic, and object-oriented languages. Other topics include type theory, concurrency, data dependency, and nondeterminism.

**Text:** *Concepts of Programming Languages, Ninth Edition*, Robert W. Sebesta (required)

**Learning Objectives:** Upon successful completion of this course, the student will:

- Understand reasons for studying concepts of programming languages, programming domains, language categories, programming design trade-offs, and language evaluation criteria
- Understand brief histories of a variety of programming languages
- Understand the problem of describing programming language syntax, formal methods, and attribute grammars
- Understand lexical analysis, the parsing problem, recursive descent parsing, bottom-up parsing
- Understand names and namespaces, variables, bindings, type checking, type compatibility, scope, and constants
- Understand data types in many forms including primitive, character string, user defined, arrays, associative arrays, records, unions, and pointers
- Understand programming language expressions, operators, type conversions, relational and Boolean expressions, short-circuit evaluation, and mixed mode assignments
- Understand various programming language statements including selection, iteration, unconditional branching, and guarded statements
- Understand fundamentals and design considerations of subprograms, various methods of passing parameters, overloaded subprograms, generic subprograms, and overloaded operators
- Understand semantics of subprogram calls and returns and the scoping of nested subprograms, blocks, and dynamic scoping
- Understand concepts of data and program abstraction and ADTs, parameterized ADTs, and encapsulation
- Understand programming language concurrency, semaphores, monitors, and message passing

**Assessment of Objectives:** Assessment of objectives will be conducted through homework, exams, programming assignments, and class presentations.

**Instructional Methods and Activities:** The methods and activities for instruction will include:

- Presentation of new material and concepts in the classroom through the use of lecture, tutorials, and sample programs.
- Classroom discussion using problem solving techniques.
- Programming assignments to review and reinforce topics covered in the classroom.
- Student presented material on course concepts
- Optional one-on-one discussion as needed between the student and instructor outside regularly scheduled class time.

**Class Supplies:** A flash drive to archive your programs and CD-R for turning in assignments

**Prerequisite:** Successful completion of Data Structures (COSC 2437)

### **Student Expectations:**

- Students are expected to be in attendance, punctual, and prepared for class and labs.
- Assigned readings, as found on the instructor's web page, should be completed before coming to class.
- Please ask questions on any material that you do not understand, if I cannot explain it to your satisfaction, please see me during my office hours.
- Demonstrate integrity, maturity, and ethical behavior

### **Course Grades:**

Exam 1 & 2	15% each
Final Exam	20% (comprehensive)
Homework Assignments	15%
Programming Assignments & Class Presentations	20%
Class Assignments, Attendance & Quizzes	15%

### **Grade Ranges:**

A	90 - 100%
B	80 - 89%
C	65 - 79%
D	55 - 64%
F	Less than 55%

### **Class Policies:**

**Attendance:** Success in this course depends on your attendance and participation. I normally take attendance every day the class meets. If you are not in the room and in your seat *before* I start lecturing, you will NOT be counted as present that day. Attendance and active participation is included as part of your grade and are essential to successfully completing this course. You are expected to know all material presented in class.

Turn off all cell phones and beepers when you enter the classroom!

**Reading:** Class topics will follow the order of topics in the schedule. You should read ahead and be prepared for each class. Be prepared to study and complete assignments for 1 - 2 hours for every hour you spend in class/lab.

**Email:** Each student is required to monitor the university provided email account. This is the only account that I will send email to. Forwarding this account to another account is acceptable, as long as you receive the information. Students are required to check their email account on a regular basis (before each class/lab). Class announcements, changes in schedules, feedback on assignments, clarifications on assignments, and other important information will be communicated via email. Please feel free to send questions to me on the class or subjects we are covering in class; at my discretion, I may forward the question and my reply to all class members. Not checking your designated email account is an unacceptable excuse for not receiving this information.

**Academic Integrity/Plagiarism** University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity, copying a program from the Internet or other students, or plagiarism. (Plagiarism is the presentation of the work of another as one's own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in the student or students receiving a zero on that assignment. Group interactions, investigations, and studying are encouraged; **however, duplicative work, in which more than one student claims credit for essentially the same material, will be treated as cheating and will receive a grade of zero.** *This includes sharing code for the individual lab assignments!* If you feel uncertain about a particular activity, please speak to me BEFORE problems arise. In addition, you are responsible for obtaining and retaining original copies of graded material for the entire semester. The instructor reserves the right to run programs through electronic verification designed to find plagiarism.

**Dropping a Class** I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. November 4, 2011 is the last day to drop a class with an automatic grade of "W" this term.

**Assignments:** Class work will be assigned on a regular basis. Please refer to the assignment schedule for specific information and instructions about the assignments. Late assignments will be accepted, but the grade may be reduced by 20% for each day late.

**Programming Assignments:** This class requires that you complete multiple programming assignments, which demonstrate your knowledge of the theory of programming languages. These are individual assignments. Late assignments will be accepted, but the grade will be reduced by 20% for each day late.

**Class problems:** You will be asked to work in groups in class to solve problems similar to those that will appear on exams. You are expected to actively participate in these activities. In addition, you will be asked to write answers to group problems on the board.

**Class presentations:** You will be assigned to make individual and/or group class presentation on assigned topics.

**Exams:** You MUST read the text to do well in this class. As much as one third of the material on the tests may be information in the texts not discussed in class. **Be sure to keep ALL graded material.** Makeup exams will be different from the regular exams and typically more difficult. The final examination is comprehensive, but will focus on the last half of the class.

**Makeup Exams:** Makeup exams will not be given under normal circumstances. If you notify me immediately that serious, unavoidable, documentable (e.g., with a letter from your doctor) circumstances have arisen, I will discuss options for replacing the missing grade. Excused absences due to school sponsored activities, religious observations, family events, etc. should be discussed **in advance**.

**Academic Advising:** The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located on the third floor of the Center for Instruction and can be reached at 825-6094.

**Classroom/Professional Behavior.** Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

**Grade Appeals.** As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at [http://www.tamucc.edu/provost/university\\_rules/index.html](http://www.tamucc.edu/provost/university_rules/index.html). For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Disabilities Accommodations.** The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Driftwood 101.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

**Tentative Class Schedule:** This is my planned schedule, but changes are expected. The official schedule is on my web site and that schedule will be updated as changes occur.

Class Week	Subject	Reading Assignment
August 24	Course Introduction & Preliminaries	Chapter 1
August 29	Evolution of Major Programming Languages	Chapter 2
September 5	Describing Syntax and Semantics	Chapter 3
September 12	Lexical and Syntax Analysis	Chapter 4
September 19	Lexical and Syntax Analysis	Chapter 4
September 28	Names, Bindings, and Scopes	Chapter 5
October 3	Data Types & Exam 1 (Oct 7)	Chapter 6
October 10	Expressions and Assignment Statements	Chapter 7
October 17	Statement-Level Control Structures	Chapter 8
October 24	Subprograms	Chapter 9
October 31	Implementing Subprograms	Chapter 10
November 7	Abstract Data Types and Encapsulation	Chapter 11
November 15	Abstract Data Types and Encapsulation	Chapter 11
November 21	Functional Programming Languages	Chapter 15
November 28	Concurrency	Chapter 13
December 5	Concurrency	Chapter 13
Wednesday, December 14, 8:00 – 10:30 AM	Final Exam	All above chapters

**Assignments:** There will be multiple homework and programming assignments. The exact contents and schedule is unknown at this time. Full details are provided on the course web pages.