

CSCI 528: OBJECT ORIENTED PROGRAMMING, Fall 2017

INSTRUCTOR:

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CLASS MEETING TIMES:

Web Based
Aug. 28, 2017 - Dec. 15, 2017

TEXTBOOK:

Author: Horstmann, Cay
Title: Object-Oriented Design and Patterns 2nd Edition
Publisher: John Wiley & Sons, Inc.
ISBN: 0-471-74487-5

CREDIT HOURS: 3

PREREQUISITES:

CSCI 516 and CSCI 520

STUDENT LEARNING OUTCOMES:

- (CO528.1): **Software Engineering Basics.** Students will be expected to apply knowledge of the software development cycle to write programs using the object oriented programming paradigm.
- (CO528.2): **Classes basics/advanced.** Students will become comfortable at designing and implementing classes as well as creating and manipulating objects belonging to those classes. Students will also become familiar with advanced topics such as reflection and the use of GoF design patterns.
- (CO528.3): **Overloading.** Students will learn how to take advantage of function overloading so as generate more readable and maintainable code suitable for large software projects.
- (CO528.4): **Polymorphism/Virtual functions.** Students will learn to develop hierarchies of related classes. They will design and implement superclasses and interfaces that use common field/method names but have base class dependent implementations. Students will learn the principles of code-refactoring and efficient code reuse.
- (CO528.5): **Templates/Generic Programming.** Students will learn to design, implement, and use generic classes and methods. Students will learn

about the limitations of generic programming, i.e. type erasure. Students will also learn how to throw and handle exceptions for dealing with exceptional situations and errors. Students will design custom exception types.

(CO528.6): **UML**. Students will use the Unified Modeling Language to model the static and dynamic behavior of object oriented software.

(CO528.7): **Integration Project**. Students will complete a comprehensive final project to include design/analysis as well as implementation.

COURSE DESCRIPTION:

This course investigates object-oriented methods including object-oriented programming, analysis and design. Current methodology is emphasized. The use of object-oriented features such as encapsulation, information hiding, inheritance and polymorphism is reinforced by class assignments and programming exercises. Prerequisites: CSci 516 and 520

METHOD OF EVALUATION (Tentative):

Your grade in the course will be calculated as follows:

Programming Assignments:	25 %
3 Exams:	25 % each (lowest dropped)
Final Project:	25 %

Assignments and projects will be assigned on eCollege and must be turned into the **correct** dropbox. Three exams will be administered. I will keep only your two best scores and drop the lowest. Because of this policy, no makeup exams will be given. If you have to miss an exam for any reason, this will be the exam that will not be counted.

All code must be readable. What this means is that you indent nested statements and provide a generous amount of comments. As an example, consider the following two pieces of code, both of which calculate the factorial of an integer n:

```
//Good Code

/*This function calculates the factorial of its non-negative
integer input n. Output type is integer.*/
public static int factorial(int n)
{
    if (n == 0)                //Base Case: 0! = 1
        return 1; else
        return n*factorial(n-1); //For n > 0, recursively let //n! =
                                n*factorial(n-1)
}

//Bad
Code
public static int fctrl (int n) {return n>0?n*fctrl (n-1):1;}
```

While both are correct, the second version can be very difficult for another person to understand. Conversely, don't over-comment your code to the point where I'm struggling to find the locations of the actual instructions. When evaluating your code, I will take coding style into account. I believe that it is imperative for programmers to produce readable code, especially when working on massive team-based software development projects.

Your final letter grade will be determined as follows:

- A - total number of points ≥ 89.5
- B - $79.5 \leq$ total number of points < 89.5
- C - $69.5 \leq$ total number of points < 79.5
- D - $59.5 \leq$ total number of points < 69.5
- F - total number of points < 59.5

I reserve the right to curve the grades in the course; however, for a given raw average, you will at least earn the grade letter shown above (if not better). As you will notice, I have already incorporated a standard rounding scheme into the schedule of grades. Thus, please do not ask me to round your grade at the end of the semester.

For this class, it is permissible to assist classmates in general discussions of computing techniques. General advice and interaction are encouraged. Each person, however, must develop his or her own solutions to the assigned projects, assignments, and tasks. In other words, students may not "work together" on graded assignments unless noted in the project instructions. Such collaboration constitutes cheating. A student may not use or copy (by any means) another's work (or portions of it) and represent it as his/her own.

If the instructor receives two or more assignments which appear to be identical and the result of dishonesty, all parties involved will receive a zero on that assignment. Keep track of your work and do not share with others. If multiple events like this occur, the instructor reserves the right to award a failing grade for the course.

TECHNOLOGY REQUIREMENTS

In order to successfully participate in and complete this course, you must have access to a computer with internet access that can run the e-College software. You will also need access to word processing software (preferably Microsoft Word). Within the e-College interface, you must be accessible with the following tasks: reading and posting to a discussion thread, uploading and downloading documents from "Doc Sharing," uploading homework assignments/papers into an appropriate drop box, and taking exams online. If you are uncomfortable with performing these tasks, then you are encouraged to view the tutorial that is offered on the e-College website. In addition, you can always ask the e-College technical support staff or me if you require assistance.

ACADEMIC ETHICS:

"All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment."
(See Student's Guide Handbook, Policies and Procedures, Conduct).

ATTENDANCE POLICY:

Since this is an online course there are no official face to face meetings. However, students are expected to complete all the assigned readings and view all online class lectures. All assignments must be turned in ON TIME. Any student wishing to withdraw from the course must do so officially as outlined in the class schedule. **THE INSTRUCTOR CANNOT DROP OR WITHDRAW ANY STUDENT.**

COURSE REQUIREMENT DEADLINES:

Credit will be given for ONLY those exam(s), program(s), and/or project(s) turned in no later than the deadline(s) as announced by the instructor of this class unless prior arrangements have been made with the instructor.

ACADEMIC ETHICS AND HONESTY STATEMENT:

Scholastic dishonesty is a violation of the Code of Student Conduct. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion. "All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment." (See Student's Guide Handbook, Policies and Procedures, Conduct).

Academic dishonesty includes, but is not limited to, cheating on tests, plagiarism and collusion. ***Cheating*** includes copying from another student's test or homework assignments or projects or quizzes, using materials not authorized, collaborating with or seeking aid from another student during a test, knowingly using, buying, selling, stealing, or soliciting the contents of an unadministered test, and substituting for another person to take a test. ***Plagiarism*** is the appropriating, buying, receiving as a gift, or obtaining by any means another's work and the unacknowledged submission or incorporation of it in one's own written work. ***Collusion*** is the unauthorized collaboration with another person in preparing written work for the fulfillment of course requirements. Academic dishonesty is a serious offense in college. You will be given not only a failing grade on the assignment or test, but also a failing grade for the class. Further, it will result in suspension from college.

PLAGIARISM:

In any written paper or test or assignment or quiz or project including code and/or documentation, you are guilty of the academic offense known as plagiarism if you half-copy or copy another author's sentences, words or any part of the content. **This will result in an automatic grade of "F" for the course.** Hence any of these must be fully avoided in order not to fail the class. Students copying from work done in previous semesters by former students as

well as copying from internet sources without proper referencing will result in you failing this course. You cannot mix the author's words with your own or "plug" your synonyms into the author's sentence structure. To prevent unintentional borrowing, resist the temptation to look at the source as you write. The author's words, phrases, sentences must be put in your words and in your way of writing! When you do this, you are demonstrating your ability to understand and comprehend the material!

STUDENTS WITH DISABILITIES:

Students requesting accommodations for disabilities must go through the Academic Support Committee. For more information, please contact the Director of Disability Resources & Services, Halladay Student Services Bldg., Room 303D, (903) 886-5835

CAMPUS CARRY STATEMENT

Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to (<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>) and/or consult your event organizer). Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

NONDISCRIMINATION NOTICE:

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

Tentative Schedule of Topics

Week	Monday of Week	Topic Scheduled
1	August 28	A Crash Course in Java
2	September 4	The Object-Oriented Design Process
3	September 11	Guidelines for Class Design
4	September 18	Interface Types and Polymorphism
5	September 25	Patterns and GUI Programming
6	October 2	Exam 1
7	October 9	Inheritance and Abstract Classes
8	October 16	The Java Object Model
9	October 23	Reflection and Generic Programming
10	October 30	Frameworks
11	November 6	Exam 2
12	November 13	Multithreading
13	November 20	More Design Patterns
14	November 27	T.B.A.
15	December 4	Project Demos and Final Exam
16	December 11	Final Exam