



# **CSCI 528 01W Advanced Object-Oriented Programming**

COURSE SYLLABUS: FALL 2016

## **INSTRUCTOR INFORMATION**

**Instructor:** Ray Maleh, Ph.D., Adjunct Professor

**Office Location:** Online

**Office Hours:** Tuesdays, 8:00 PM – 9:00 PM CST

**Office Phone:** 903-441-7014

**Office Fax:** N/A

**University Email Address:** ray.maleh@tamuc.edu

**Preferred Form of Communication:** Email

**Communication Response Time:** Within 1 Business Day

## **COURSE INFORMATION**

### ***Materials – Textbooks, Readings, Supplementary Readings***

#### ***Textbook(s) Recommended***

Horstman, Cay. Big Java Early Objects 6<sup>th</sup> Edition. New York: John Wiley & Sons, Inc. (4<sup>rd</sup> and 5<sup>th</sup> Editions are also acceptable) [This is a great introduction to the Java programming language.]

Horstman, Cay. Object Oriented Design & Patterns 2<sup>nd</sup> Edition. New York: John Wiley & Sons.

Any additional resources about UML and important differences between OOP in Java and C++ will be handed out in class.

## **Software Required**

Java Development Kit (Java 8.0 or later)

An IDE such as NetBeans (preferred), Eclipse, etc. or a suitable text editor.

## **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.

## **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 super-classes 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 REQUIREMENTS**

### **Minimal Technical Skills Needed**

Students should, at a minimum, be comfortable with programming in C/C++.

Some prior knowledge of Java Programming is recommended, but not required.

The syllabus/schedule is subject to change.

## ***Instructional Methods***

Powerpoint lectures will be posted weekly with supplemental video demonstrations. Students are encouraged to use the online discussion forum to post any questions about the material. Homeworks will be designed to help student practice and master the material.

## ***Student Responsibilities or Tips for Success in the Course***

Students should log into the course shell at least once weekly (and preferably more). For maximum success, students should read the lectures, watch the video demonstrations, and read the textbook. Also, please do keep track of the exam dates (posted below) and don't forget to take them.

All submitted 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.

# GRADING

Your final letter grade will be determined as follows:

- A – total number of points  $\geq 89.5$
- 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.

## Assessments

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. There will be a programming assignment roughly every other week.

The following table explains the relationship between student learning outcomes and the assignments:

<b>Student Learning Outcome</b>	<b>Assignments</b>
CO528.1	All Assignments
CO528.2	HW1, HW2, All Exams
CO528.3	HW3, HW4, Exams II and III
CO528.4	HW4, Exam II
CO528.5	HW5, Exam II
CO528.6	HW1, HW6, Exam I, Exam III
CO528.7	Final Project

## TECHNOLOGY REQUIREMENTS

- To fully participate in online courses you will need to use a current Flash enabled internet browser. For PC and Mac users the suggested browser is Mozilla Firefox.

The syllabus/schedule is subject to change.

- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
  - 512 MB of RAM, 1 GB or more preferred
  - Broadband connection required courses are heavily video intensive
  - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
  - Sound card, which is usually integrated into your desktop or laptop computer
  - Speakers or headphones.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site http://www.java.com/en/download/manual.jsp](http://www.java.com/en/download/manual.jsp)
- Current anti-virus software must be installed and kept up to date.
- Run a browser check through the Pearson LearningStudio Technical Requirements website. [Browser Check http://help.ecollege.com/LS\\_Tech\\_Req\\_WebHelp/en-us/#LS\\_Technical\\_Requirements.htm#Browset](http://help.ecollege.com/LS_Tech_Req_WebHelp/en-us/#LS_Technical_Requirements.htm#Browset)

Running the browser check will ensure your internet browser is supported. Pop-ups are allowed.  
 JavaScript is enabled.  
 Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
  - [Adobe Reader https://get.adobe.com/reader/](https://get.adobe.com/reader/)
  - [Adobe Flash Player \(version 17 or later\) https://get.adobe.com/flashplayer/](https://get.adobe.com/flashplayer/)
  - [Adobe Shockwave Player https://get.adobe.com/shockwave/](https://get.adobe.com/shockwave/)
  - [Apple Quick Time http://www.apple.com/quicktime/download/](http://www.apple.com/quicktime/download/)

- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.
- For additional information about system requirements, please see: [System Requirements for LearningStudio](https://secure.ecollege.com/tamuc/index.learn?action=technical)  
<https://secure.ecollege.com/tamuc/index.learn?action=technical>

## ACCESS AND NAVIGATION

### ***Pearson LearningStudio (eCollege) Access and Log in Information***

This course will be facilitated using Pearson LearningStudio, the learning management system used by Texas A&M University-Commerce. To get started with the course, go to [myLeo](#) and from the top menu ribbon select eCollege. Then on the upper left side of the screen click on the My Courses tab. <http://www.tamuc.edu/myleo.aspx>

You will need your campus-wide ID (CWID) and password to log into the course. If you do not know your CWID or have forgotten your password, contact the Center for IT Excellence (CITE) at 903.468.6000 or [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu).

**Note:** It is strongly recommended you perform a “Browser Test” prior to the start of your course. To launch a browser test login to Pearson LearningStudio, click on the My Courses tab, and then select the Browser Test link under Support Services.

### **Pearson LearningStudio Student Technical Support**

Texas A&M University-Commerce provides students technical support for the use of Pearson LearningStudio.

Technical assistance is available 24/7 (24 hours, 7 days a week).

If you experience LearningStudio (eCollege) technical problems, contact the LearningStudio helpdesk at 1-866-656-5511 (toll free) or visit [Pearson 24/7 Customer Support Site](http://247support.custhelp.com/) <http://247support.custhelp.com/>

The student help desk may be reached in the following ways:

- **Chat Support:** Click on '*Live Support*' on the tool bar within your course to chat with a Pearson LearningStudio Representative.

- **Phone:** 1-866-656-5511 (Toll Free) to speak with Pearson LearningStudio Technical Support Representative.

**Accessing Help from within Your Course:** Click on the *'Tech Support'* icon on the upper left side of the screen inside the course. Then you will be able to get assistance via online chat or by phone.

**Note:** Personal computer and internet connection problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, Starbucks, a TAMUC campus open computer lab, etc.

### ***Policy for Reporting Problems with Pearson LearningStudio***

Should students encounter Pearson LearningStudio based problems while submitting assignments/discussions/comments/exams, the following procedure must be followed:

1. Students must report the problem to the help desk. You may reach the helpdesk at 1-866-656-5511.
2. Students must file their problem with the helpdesk and obtain a helpdesk ticket number
3. Once a helpdesk ticket number is in your possession, students should email me to advise me of the problem and provide me with the helpdesk ticket number.
4. I will call the helpdesk to confirm your problem and follow up with you

**PLEASE NOTE:** Your personal computer and internet access problems are not a legitimate excuses for filing a ticket with the Pearson LearningStudio Help Desk. Only Pearson LearningStudio based problems are legitimate reasons to contact the Help Desk.

You strongly are encouraged to check for your internet browser compatibility **BEFORE** the course begins and take the Pearson LearningStudio tutorial offered for students who may require some extra assistance in navigating the Pearson LearningStudio platform.

### **myLeo Support**

Your myLeo email address is required to send and receive all student correspondence. Please email [helpdesk@tamuc.edu](mailto:helpdesk@tamuc.edu) or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at [myLeo. https://leo.tamuc.edu](https://leo.tamuc.edu)

## Learner Support

The [One Stop Shop](http://www.tamuc.edu/admissions/onestopshop/) was created to serve you by providing as many resources as possible in one location. <http://www.tamuc.edu/admissions/onestopshop/>


The [Academic Success Center](http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/) provides academic resources to help you achieve academic success.

<http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/>

## FREE Mobile APPS

The Courses apps for phones have been adapted to support the tasks students can easily complete on a smaller device. Due to the smaller screen size course content is not presented.

The Courses app is free of charge. The mobile Courses Apps are designed and adapted for different devices.

	<b>App Title:</b>	<b>iPhone</b> – Pearson LearningStudio Courses for iPhone <b>Android</b> – LearningStudio Courses - Phone
	<b>Operating System:</b>	<b>iPhone</b> - OS 6 and above <b>Android</b> – Jelly Bean, Kitkat, and Lollipop OS
	<b>iPhone App URL:</b>	<a href="https://itunes.apple.com/us/app/pearson-learningstudio-courses/id977280011?mt=8">https://itunes.apple.com/us/app/pearson-learningstudio-courses/id977280011?mt=8</a>
	<b>Android App URL:</b>	<a href="https://play.google.com/store/apps/details?id=com.pearson.lsphone">https://play.google.com/store/apps/details?id=com.pearson.lsphone</a>

Once downloaded, search for Texas A&M University-Commerce, and it should appear on the list. Then you will need to sign into the myLeo Mobile portal.

The Courses App for Android and iPhone contain the following feature set:

- View titles/code/Instructor of all Courses enrolled in online
- View and respond to all discussions in individual Courses
- View Instructor Announcements in individual Courses
- View Graded items, Grades and comments in individual Courses
- Grade to Date
- View Events (assignments) and Calendar in individual Courses
- View Activity Feed for all courses
- View course filters on activities
- View link to Privacy Policy
- Ability to Sign out
- Send Feedback



## **LearningStudio Notifications**

Students can be alerted to course activities via text on their mobile phones or up to two email addresses.

Based on their preferences, students can automatically receive a push notification with every new: course announcement, threaded discussion post, grade, and/or assignment without having to login to the course. Enrolled students will automatically receive email notifications for announcements and can opt out of this feature. To receive text notifications, students must opt in.

To begin setting up notifications, go into your course in LearningStudio and click on the bell-shaped Notifications icon on the main menu ribbon.

By default the student's university email address will appear. This cannot be changed in LearningStudio. Additional email addresses may be added by clicking the Add button. After all of the other selections are completed be sure to click the Save and Finish button.

## **COMMUNICATION AND SUPPORT**

### ***Interaction with Instructor Statement***

The instructor will respond to all email questions within one business day or less. The instructor will make every effort to provide homework and exam feedback within one week.

## **COURSE AND UNIVERSITY PROCEDURES/POLICIES**

### ***Course Specific Procedures/Policies***

Students are expected to log in regularly into the course. All student work must be submitted by the deadline for credit. No late work will be accepted. As for missed exams, because I drop the lowest of the three exams, no make-up exams will be provided (unless otherwise required by university regulation). There are no opportunities for extra credit in this course.

### **Syllabus Change Policy**

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

### ***University Specific Procedures***

### ***Student Conduct***

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. The Code of

The syllabus/schedule is subject to change.

Student Conduct is described in detail in the [Student Guidebook](http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf).  
<http://www.tamuc.edu/admissions/registrar/documents/studentGuidebook.pdf>

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](http://www.albion.com/netiquette/corerules.html)  
<http://www.albion.com/netiquette/corerules.html>

### **TAMUC Attendance**

For more information about the attendance policy please visit the [Attendance](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx) webpage and [Procedure 13.99.99.R0.01](http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx).  
<http://www.tamuc.edu/admissions/registrar/generalInformation/attendance.aspx>

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/academic/13.99.99.R0.01.pdf>

### **Academic Integrity**

Students at Texas A&M University-Commerce are expected to maintain high standards of integrity and honesty in all of their scholastic work. For more details and the definition of academic dishonesty see the following procedures:

[Undergraduate Academic Dishonesty 13.99.99.R0.03](http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/undergraduates/13.99.99.R0.03UndergraduateAcademicDishonesty.pdf>

[Graduate Student Academic Dishonesty 13.99.99.R0.10](http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf)

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/13students/graduate/13.99.99.R0.10GraduateStudentAcademicDishonesty.pdf>

### **ADA Statement**

#### **Students with Disabilities**

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 have a disability requiring an accommodation, please contact:

#### **Office of Student Disability Resources and Services**

Texas A&M University-Commerce  
Gee Library- Room 132  
Phone (903) 886-5150 or (903) 886-5835  
Fax (903) 468-8148  
Email: [Rebecca.Tuerk@tamuc.edu](mailto:Rebecca.Tuerk@tamuc.edu)

Website: [Office of Student Disability Resources and Services](http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

### ***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.

### ***Campus Concealed 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 the [Carrying Concealed Handguns On Campus](#) document and/or consult your event organizer.

Web url:

<http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf>

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.

## **COURSE OUTLINE / CALENDAR**

Mon. Aug. 29, 2016	Week 1 (Crash Course in the Java Programming Language, assumes knowledge of C/C++)
Mon. Sept. 5, 2016	Labor Day (No Class)
Tues. Sept. 6, 2016	Week 2 (Introduction to Object-Oriented Design and Analysis)
Mon. Sept. 12, 2016	Week 3 (Classes in Java, Encapsulation, Information Hiding, Unit Testing)
Mon. Sept. 19, 2016	Week 4 (Interfaces and Polymorphism)

The syllabus/schedule is subject to change.

Mon. Sept. 26, 2016	Week 5 (Introduction to Design Patterns (Observer, Strategy, Composite, Decorator, Iterator))
Mon. Oct. 3, 2016	Week 6 (Creation of Team Project Proposals and Exam Preparation)
Tues. Oct. 4, 2016	Exam I (6:00 PM to 11:59 PM CST on e-College)
Mon. Oct. 10, 2016	Week 7 (Inheritance, Virtual Functions, More Polymorphism, Abstract Classes)
Mon. Oct. 17, 2016	Week 8 (Java Types, the Object Class, Cloning Objects, Serialization of Objects)
Mon. Oct. 24, 2016	Week 9 (Reflection and Generic Programming / Templates, Type Erasure vs. Reification)
Mon. Oct. 31, 2016	Week 10 (Object Oriented Frameworks, Java Collections)
Mon. Nov. 7, 2016	Week 11 (Preparation for Exam II, Project Updates)
Tues. Nov. 8, 2016	Exam II (6 PM – 11:59 PM CST on e-College)
Mon. Nov. 14, 2016	Week 12 (Concurrency and Multi-threading, Synchronization of access to objects)
Mon. Nov. 21, 2016	Week 13 (More Design Patterns: Adaptor, Command, Factory Method, Proxy, Singleton, and Visitor)
Mon. Nov. 28, 2016	Week 14 (Comprehensive Final Exam Review, Project Presentations)
Mon. Dec. 5, 2016	Week 15 (Final Exam Preparation and Exam)
Tues. Dec. 6, 2016	Exam III (6 PM – 11:59 PM CST on e-College)