CSCI 528 01W Advanced Object-Oriented Programming

COURSE SYLLABUS: FALL 2018

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 6th Edition. New York: John Wiley & Sons, Inc. (4rd and 5th Editions are also acceptable) [This is a great introduction to the Java programming language.]

Horstman, Cay. Object Oriented Design & Patterns 2nd 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.

The *syllabus/schedule are subject to change.*

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.

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

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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 ≥ 89.5
B – 79.5 ≤ total number of points < 89.5
C – 69.5 ≤ total number of points < 79.5
D – 59.5 ≤ total number of points < 69.5

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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:

Student Learning Outcome	**Assignments**
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

Browser support

D2L is committed to performing key application testing when new browser versions are released. New and updated functionality is also tested against the latest version of supported browsers. However, due to the frequency of some browser releases, D2L cannot guarantee that each browser version will perform as expected. If you encounter any issues with any of the browser versions listed in the tables below, contact D2L Support, who will determine the best course of action for resolution. Reported issues are prioritized by supported browsers and then maintenance browsers.

Supported browsers are the latest or most recent browser versions that are tested against new versions of D2L products. Customers can report problems and receive support for issues. For an optimal experience, D2L recommends using supported browsers with D2L products.

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Maintenance browsers are older browser versions that are not tested extensively against new versions of D2L products. Customers can still report problems and receive support for critical issues; however, D2L does not guarantee all issues will be addressed. A maintenance browser becomes officially unsupported after one year.

Note the following:

- Ensure that your browser has JavaScript and Cookies enabled.
- For desktop systems, you must have Adobe Flash Player 10.1 or greater.
- The Brightspace Support features are now optimized for production environments when using the Google Chrome browser, Apple Safari browser, Microsoft Edge browser, Microsoft Internet Explorer browser, and Mozilla Firefox browsers.

Desktop Support

Browser	Supported Browser Version(s)	Maintenance Browser Version(s)
Microsoft® Edge	Latest	N/A
Microsoft® Internet Explorer®	N/A	11
Mozilla® Firefox®	Latest, ESR	N/A
Google® Chrome™	Latest	N/A
Apple® Safari®	Latest	N/A

Tablet and Mobile Support

Device	Operating System	Browser	Supported Browser Version(s)
Android™	Android 4.4+	Chrome	Latest
Apple	iOS®	Safari, Chrome	The current major version of iOS (the latest minor or **point** release of that major version) and the previous major version of iOS (the latest minor or **point** release of that major version). For example, as of June 7, 2017, D2Lsupports iOS

Device	Operating System	Browser	Supported Browser Version(s)
			10.3.2 and iOS 9.3.5, but not iOS 10.2.1, 9.0.2, or any other version. Chrome: Latest version for the iOS browser.
Windows	Windows 10	Edge, Chrome, Firefox	Latest of all browsers, and Firefox ESR.

- 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.
    - *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.

- 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

- Current anti-virus software must be installed and kept up to date.

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/
    - Adobe Flash Player *(version 17 or later)* https://get.adobe.com/flashplayer/
    - Adobe Shockwave Player https://get.adobe.com/shockwave/

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- Apple Quick Time 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.

ACCESS AND NAVIGATION

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**.**

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.

COMMUNICATION AND SUPPORT

Brightspace Support

Need Help?

Student Support

If you have any questions or are having difficulties with the course material, please contact your Instructor.

Technical Support

If you are having technical difficulty with any part of Brightspace, please contact Brightspace Technical Support at 1-877-325-7778 or click on the **Live Chat** or click on the words "click here**"** to submit an issue via email.

System Maintenance

D2L runs monthly updates during the last week of the month, usually on Wednesday. The system should remain up during this time unless otherwise specified in an

announcement. You may experience minimal impacts to performance and/or look and feel of the environment.

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 Student Conduct is described in detail in the Student Guidebook.
http://www.tamuc.edu/Admissions/oneStopShop/undergraduateAdmissions/studentGuidebook.aspx

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

TAMUC Attendance

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

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

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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

Graduate Student Academic Dishonesty 13.99.99.R0.10

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 162
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
Email: studentdisabilityservices@tamuc.edu

Website: Office of Student Disability Resources and Services

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

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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. 27, 2018	Week 1 (Crash Course in the Java Programming Language, assumes knowledge of C/C++)
Tues. Sep. 4, 2018	Week 2 (Introduction to Object-Oriented Design and Analysis)
Mon. Sep. 10, 2018	Week 3 (Classes in Java, Encapsulation, Information Hiding, Unit Testing)
Mon. Sep. 17, 2018	Week 4 (Interfaces and Polymorphism)
Mon. Sep. 24, 2018	Week 5 (Introduction to Design Patterns (Observer, Strategy, Composite, Decorator, Iterator)
Mon. Oct. 1, 2018	Week 6 (Creation of Team Project Proposals and Exam Preparation)
Tues. Oct. 2, 2018	Exam I (7:30 PM to 9:30 PM CST on e-College)
Mon. Oct. 8, 2018	Week 7 (Inheritance, Virtual Functions, More Polymorphism, Abstract Classes)
Mon. Oct. 15, 2018	Week 8 (Java Types, the Object Class, Cloning Objects, Serialization of Objects)

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Mon. Oct. 22, 2018	Week 9 (Reflection and Generic Programming / Templates, Type Erasure vs. Reification)
Mon. Oct. 29, 2018	Week 10 (Object Oriented Frameworks, Java Collections)
Mon. Nov. 5, 2018	Week 11 (Preparation for Exam II, Project Updates)
Tues. Nov. 6, 2018	Exam II (7:30 PM – 9:30 PM CST on e-College)
Tues. Nov. 13, 2018	Week 12 (Concurrency and Multi-threading, Synchronization of access to objects)
Mon. Nov. 19, 2018	Week 13 (More Design Patterns: Adaptor, Command, Factory Method, Proxy, Singleton, and Visitor)
Mon. Nov. 26, 2018	Week 14 (Project Presentations)
Mon. Dec. 3, 2018	Week 15 (Final Exam Review and Preparation)
Tues. Dec. 11, 2018	Exam III (7:30 PM – 9:30 PM CST on e-College)

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