SYLLABUS - OBJECT-ORIENTED DESIGN AND DEVELOPMENT (MIS 363)

Spring 2018 [Last updated December 19, 2017]

THIS COURSE WILL BE ON CANVAS – CANVAS.WIDENER.EDU

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Prerequisites: MIS 290

Course Materials:
Textbook: Gaddis, T. (2016). *Starting Out With JAVA: From Control Structures through Objects,* 6th Edition, Pearson. ISBN-13: 978-0-13-395705-1.

UML Free resources on the web (students will be required to read about UML from free resources provided on the web): List found in Course schedule -- there are lots of free UML Tutorials available on the web -- take a look!!!

Additional course materials: any additional course materials will be will be posted on files of the course area in Canvas. ** The student is required to bring a storage drive to class.

Oracle tech network - http://www.oracle.com/technetwork/java/javase/downloads/index.html - This site has a wealth of documentation, tutorials, and information for the Java programmer!!! They even have great tutorials for the basics - http://docs.oracle.com/javase/tutorial/index.html . You can download the version we will be using (JDK with JavaFX SDK) at http://www.oracle.com/technetwork/java/javase/overview/index.html -- or the EE version at http://www.oracle.com/technetwork/java/javaee/downloads/index.html , you can also use documentation from the lower versions such as J2EE 1.4 sdk for what we will be doing in this class. A great reference site for JAVA 7 API at http://docs.oracle.com/javase/7/docs/api/index.html and sdk at http://docs.oracle.com/javase/7/docs/index.html
Note: Oracle is constantly updating Java versions -- you may download the latest version for this class!

SBA Learning Goals and Objectives:
The SBA faculty has outlined goals and objectives for the Bachelor of Science in Business Administrations. This course supports the following goals and objectives:

- Goal 1: SBA students will demonstrate the knowledge, skills and scholarship that are appropriate to the business discipline.
- Goal 3: SBA students will be competent in the application of core business concepts and technologies.
    - Critical Thinking: Through course assignments, students will demonstrate the ability to effectively incorporate both qualitative and quantitative methods in the development of business solutions.
    - Technology: Students will use appropriate technology in the analysis and development of business solutions.

Course Description:
This course emphasizes the object-oriented aspects of programming, analysis, and design. Students will learn how to design and develop information systems using an object-oriented/event-driven language. Topics include object-oriented concepts such as classes. Inheritance, polymorphism, abstraction, hierarchy, modularity, and encapsulation. The course will reinforce object design concepts using an object-oriented programming language. Students will be required to write a number of computer programs using Java.

Assessment:
The plus/minus system will be used

Assessment	*Percentage of Final Grade*
Labs	10%
Discussions and Class Participation	5%
Assignments	35%
Group Project	10%
Midterm Exam	20%
Final Exam	20%
Totals	100%

Grades

A ≥ 92%	B - ≥ 80% and < 82%	D+ ≥ 68% and < 70%
A - ≥ 90% and < 92%	C+ ≥ 78% and < 80%	D ≥ 60% and < 68%
B+ ≥ 88% and < 90%	C ≥ 72% and < 78%	F < 60%
B ≥ 82% and < 88%	C - ≥ 70% and < 72%	

A Note on Grading
Dates for exams, quizzes, and homework have been given in class. Except for documented emergencies (i.e. death in the family, doctor's excuse) or documented school-related events (i.e. class trips, athletic events), no makeup exams will be allowed. During exams no electronic devices are permitted to be on or used, and no visits to the bathroom will be permitted during the exam.

Labs – Various classroom labs will be assigned during the semester to enforce course topics.
Assignments – Various assignments will be assigned throughout the semester. These assignments will cover course concepts, logic design, and program development.

- Concept assignments are designed to help the student understand course topics.
- Design assignments – the logic design of any program needs to be done FIRST before programming. To this end, each program will require a design. In several cases the student will be required to hand in the design separate from the program assignment. Some design assignments will be given out without a program requirement.
- Program assignments will require the student to write and implement the JAVA code that matches their program design. The student is to hand in the implemented program code (source and compiled). Files are to be submitted on the class canvas assignment area that include screen prints of the program code, the program output(s), and its associated design.

Group Project – Each student will be assigned to a group of 3-4 students. Based on an identified need within the Widener community, each group will design and develop a solution. Ideas within the class will be considered for the project. Design thinking methodology will be utilized. Individual students will be graded upon their ability to work as a contributing team member, collaboration, creative thinking, contribution to solution, and quality of solution presentation.

Exams, labs and homework will be based on your readings and material covered in class. Therefore, it is to your advantage to attend class, participate in class and keep up with readings.

Once grades for an exam are received, you have three days to let me know by e-mail, that you feel a mistake has been made in your grade. If you fail to contact me about your grade, quiz or homework within this three day period, then the grade will be considered final.

Canvas Assignment Feedback - This class will use the student's assignment area in Canvas for assignment and activity feedback --- it is the student's responsibility to check their assignment area for any feedback from the instructor.

Expectations for Students:

Attendance Policy: This course material is best learned by doing, therefore significant class time will be dedicated to student activities such as labs and assignment time. Students are expected to attend class. The University's policy on attendance which is contained in the student handbook will be followed for this class. This means each student can miss up to 4 classes without academic penalty (except for required class sessions). It is not necessary to inform the instructor of the 4 absences however any missed class material is the responsibility of the student to obtain on their own.

- Students are expected to arrive to class on time… chronic lateness will be counted as an absence.
- Students are expected to be respectful within class to all who are present. Any disrespect will result in the student being asked to leave the classroom. Appropriate dress and attitude in class is expected.

Participation: Group discussion will often serve as the vehicle for our examination of the class material and participation in class labs is imperative for understanding coursework. Because of the obvious importance of such discussion, one's presence in class as well as one's participations is not only suggested but also expected. Questions and discussion concerning the assigned topics are encouraged. Considerable good can be derived from intelligent discussion. Personal problems and questions not pertinent to class interested should be directed to the instructor before or after class and during office hours.

- Issues concerning class material – Please do not use email, instead use Canvas to ask questions outside of class or refer to assignments – please add a new topic and the instructor will reply accordingly. Keep all class related communication within the class.
- Use of Canvas – Students are expected to log into the course site of canvas often. The student is expected to find and read all material found on this site and follow/adhere to the syllabus and assignment requirements.

Assignment Policies:

- Assignments are found under My Assignments. It is the student's responsibility to locate and adhere to assignment details.
- Each assignment is to be done by the individual student unless otherwise indicated – NO COPYING WILL BE TOLERATED!
- Some assignments involve using the computer, therefore flash drives or other storage mediums (e.g. onedrive) are needed. It is recommended each student back up all their work before handing in an assignment.
- Late assignments are strongly discouraged however students can turn in an assignment up to 1 week late with a 10% grade reduction. After 1 week the assignment grade will be a zero. NO ASSIGNMENTS WILL BE ACCEPTED AFTER 1 WEEK FROM THE ASSIGNMENT DUE DATE OR AFTER THE LAST CLASS DAY.

Academic Honesty and Honor Code:

- All class assignments/labs are to be done by the individual student unless explicitly indicated by the instructor.
- ***Academic Dishonesty***: This course is governed by the Academic Integrity Policy as described in the Widener University Undergraduate Catalog. Please familiarize yourself with this section of the Catalog, especially the subsection describing the Resolution at the Faculty/Student Level. To briefly summarize this procedure, any form of cheating, attempting to cheat, helping others cheat, plagiarism, or electronic/computer fraud is a violation of Academic Integrity. This includes work submitted that is identical or substantially identical to another student's submission. In such a circumstance, each student involved will receive a failing grade for the assignment and/or course, and the instructor must file a report with the Dean and Associate Provost describing the charges made and how the matter was resolved.
- Honor code violations include ANY duplication of designs, program code, descriptions… This means don't even look at another student's code or designs! Looking at someone else's design or program code may lead to using that code or design for your submission – don't be tempted!

- Don't cheat - - take late points instead of rushing to get something in on time by using someone else's work.
- ***Classroom misuse of computers or other devices:*** If the student is caught using the classroom computers or personal devices for something other than class work, they will be counted as absent for that day.
    - The use of cell phones (and any electronic device) during class is only permitted for class related activities as indicated by the instructor.
    - activities as indicated by the instructor.
- ***Exams***: There will be NO exam waivers given without a doctor's note or other supporting documentation. During exams no electronic devices are permitted to be on or used, and no visits to the bathroom will be permitted during the exam.

Learning ***Accommodations***:
In accordance with the Americans with Disabilities Act, any student has the right to request reasonable accommodation of a disability. Accommodations can be requested at Disabilities Services (520 E. 14th Street, 610-499-1266). Disabilities Services is the office that authorizes all accommodations on campus. Please note that you will need to present documentation of your disability to Disabilities Services. It is important to make this request as soon as possible so that we will have time to make any necessary arrangements.

A Note on Class Decorum
I interpret your coming to class as an expression of your interest in learning as much as you possibly can. Certainly, you should assume that this is your classmates' intention in being here. In fairness to your classmates (and me), I expect you to refrain from talking to others, reading newspapers, sleeping, playing radios or CDs, working on other assignments, making telephone calls, texting, or other similar disruptive activities. In addition, the classroom computers provided by the University are to be used for class purposes only. Any use of classroom computers not pertinent to the class (e.g. email, IM, Internet surfing, etc.) will be deemed a disruptive activity. **Such disruptive activities negatively affect the learning environment, and will result in a 2.5 point deduction from your final grade for each offense, and if excessive, removal from classroom.**

A Note on Extra Credit
In general, I only make extra credit available during class. While I sympathize with every reason why you need the higher grade, obtaining the grade you want is ultimately your responsibility. In short, a poor grade on an assignment is not a reason for me to provide extra credit. On rare occasions, I may consider giving an extra credit assignment, but it will only be for a few points, and in order to be fair, must be made available to everyone.

Communication plan for alerting students in the event that classes remain in session but the professor is not able to get to campus: If the professor is unable to attend class she will post an announcement on the class site of canvas. If the student has any questions feel free to text the instructor at (610)615-1308 [note: this is a TextNow number, it is wireless not cellular, therefore do not call, only text and include your name in the message – if your name is not included do not expect a response.]

Software Access*:*
- This class will use Build.me to create storyboard designs.
- This class will be using Oracle Java which is accessible from any lab on any of Widener's campuses. This is free software available for download at the Oracle/java web site. You also can find a copy of the Java compiler on the Book CD. You can download either the EE (enterprise edition) or the SE (standard edition).
- This class will also be using Textpad as a program editor - this is also available from any lab on any of Widener's campuses.... If you are interested in purchasing Textpad for your home computer you should visit Textpad.com. [note: you can also use Eclipse if you prefer] - download and install Textpad ***– only after you installed Java (above)***

    Go to : http://www.textpad.com/download/ Download and install

    Now you need to: After you have installed the Java SDK, as described in its installation instructions, you can add commands to compile and run Java applications and applets to TextPad's Tools menu as follows: From within Textpad do the following:

1. From the Configure menu, choose Preferences.
2. Select the Tools page on the Preferences dialog box.
3. Click Add.
4. Select "Java SDK Commands" from the drop down menu.
5. Click OK.

- There will also be some use of UML using ARIS Business Architect which is accessible from any lab on Campus or from your own computer (however ARIS will not work with MAC machines).

Special Note

The instructor reserves the right to amend this syllabus.

Course Schedule:

Important dates: January 23 - Last day to drop/add; March 3-11 Spring Break no classes; March 30 Spring Holiday; Apr 2 Pre-Registration Starts; Apr 4 - Last day to withdraw without penalty; Apr 27 – Student Project Day; May 4 - Last day of classes for university however May 2 is our last

DATE	TOPIC	READINGS

January 17, 22	**INTRODUCTION**
	• Overview of Course
	• Review of computer basics
	• What is Object-Oriented?
	  ○ Introduction to the Object-Oriented System Life Cycle
	• What is Java?
	  ○ Java History
	  ○ Why Java?
	• Other Object Oriented programming languages
	• Installing Oracle Java
		• *Gaddis, pp 1-9 [introduction to programming and Java];*
		• *Appendix E: Installing the JDK*

January 24	**INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING: JAVA**
	• Introduction to Java
	  ○ Your first Java Program
	  ○ Moving to the web - Applets and packages
		• *Gaddis, pp 9-16 [Programming and Java];*
		• *pp19-21; pp27-38 [intro to object-oriented programming;*
		• *pp 77-83 [Java fundamentals];*
		• *p 837 [Splash screens];*
		• *pp 918-931 [introduction to applets]*
		• *Shelly et al. Applets and Textpad*

January 29, 31, February 5	**PROGRAMMING CONCEPTS** • Program Development Life Cycle • Structured Programming • Control structures • Program Design Methods ○ Pseudocode, Flowchart, Storyboard, Event diagram, class diagram • Introduction to Build.me	• *Gaddis, pp 16-19 [the programming process;* • *pp 320-326 [Objects and Classes]* • *Shelly et al. Program Development Life Cycle*
February 7, 12	**OBJECT-ORIENTED CONCEPTS** • Basic concepts	• *Oracle's Java Tutorial - Object Oriented Programming Concepts http://docs.oracle.com/javase/tutorial/java/concepts/index.html* • *Shelly et al. Object Oriented Design and Programming*

February 14, 19, 21	**THE OBJECT-ORIENTED ANALYSIS AND DESIGN**
	• Object Think
	• Introduction to UML
	• Modeling and Object-Oriented Analysis
	• Use Case Diagrams
	• Class Diagrams
	  ○ Generalization/Specialization
	  ○ Class Relationships
	• Object-Oriented Development
		• *UML.org*
		• *gentleware.com*
		• *a UML Tutorial*
		• *Gaddis, pp 341-343 [UML Diagrams];*
		• *pp 384-390 [OO concepts, how to identify objects in word problems-UML];*
		• *pp 525 [UML];*
		• *pp 547-548 [CRC card method-class collaboration];*
		• *pp 614-618 [what is inheritance];*
		• *pp 622-623 [inheritance in UML]*
		• *Another UML Tutorial - http://uml-tutorials.trireme.com/*
		• *ARIS UML Designer; Software AG: UML Designer*

		• *SAP Developer Network on UML*
February 26, 28	**BASICS OF JAVA** • Basic Java program syntax • Using Simple Data	• *Gaddis, pp 9-12[Program basics];* • *Appendix D [Java Key Words]*
March 5-9	**MID-TERM BREAK - no class**	
March 12	Catch-up and Review Day (if time)	
March **14**	**MIDTERM EXAM**	

March 19, 21, 26, 28, April 2	**JAVA: METHODS, DECISION, REPETITION, AND REUSABLE OBJECTS**
	• Methods
	  ○ Math operators
	  ○ comparisons
	  ○ user input - interactive programs
	  ○ instantiation and constructors
	• Using Java API
	• Component modularity
	• Exception handling
	• Strings
	• IF Decision Structure
	• User-Defined methods
	• The Case Structure
	• Loops
		• *pp 39-68 [variables, math operators, data types];*
		• *pp 71-75 [String Class];*
		• *pp 84-100 [reading input, dialog boxes, swing components];*
		• *pp 383 [import statements];*
		• *pp 942-956 [drawing shapes]*
		• *Appendix C [Operator Precedence]; Gaddis, chapter 3 [Decision Structures];*
		• *pp 189-229, 256 [Loops];*
		• *chapter 5 [Methods],*
		• *pp 560-592 [wrappers, conversion, String Methods];*
		• *pp 613-642 [inheritance];*
		• *pp 704-734 [Exceptions]*

April 4, 9	**JAVA: EXTERNAL CLASSES, ARRAYS, AND CHOICES** • Constructing an instance • Understanding Arrays and Operators • Sorting Arrays	• *Gaddis, pp 348-380 [Constructors, passing objects];* • *chapter 7 [arrays];* • *chapter 8 [classes and objects]*

April 11	**JAVA: USING THE ABSTRACT WINDOW TOOLKIT**
	• Understanding Components
	  ○ Container
	  ○ Frame
	  ○ Panel
	  ○ Layout Managers
		• *Gaddis, chapter 12 and chapter 13 [GUI Applications];*
		• *pp 932-941, 963-971 [Mouse events and applets]*
		• *Appendix I: JOptionpane*

April 16, 18, 23	**JAVA: USING EXTERNAL DATA AND CREATING INTERFACES**
	• Creating an Interface
	• External Data
	  ○ Java IO files
	• Error Checking
	• Moving to the Web
	  ○ What are Servlets?
	  ○ Java Scripts
	  ○ What are Java Beans?
	  ○ Animation
	• JavaDoc
	• Databases and Java
		• *Gaddis, pp 230-254 [File input and output];*
		• *pp 735-742 [Files];*
		• *pp 974-981 [timers, audio clips];*
		• *pp 76-81 [javadoc];*
		• *portions of chapter 15;*
		• *chapter 17 [databases];*
		• *Appendix F Using JavaDoc;*
		• *Appendix M:Configuring JavaDB*

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<td>April 25, 30</td>
<td><u>DEVELOPING ENTERPRISE MOBILE APPS</u>

• Basic of Enterprise mobile app development using SAP Mobile Unwired Platform
• Object Oriented Nature of mobile apps
• development using SAP Mobile Unwired Platform</td>
<td>• Suggested to browse: (not required) note: the first app we will create will be the employee lookup app!

Thought Leadership / White Papers
○ SAP Mobile Assets
○ http://www.sap.com/resources/technology-mobile/index.epx
Videos / Webcasts
○ YouTube - SAP Mobile Channel
○ http://www.youtube.com/SAPEnterpriseMobile
Case Studies
○ Customer Testimonials
○ http://www54.sap.com/solutions/tech/mobile/customer-reviews.html
Webinars
○ SAP Mobile Insights Webinar Series
○ http://scn.sap.com/docs/DOC-29195
Interactive Resources
○ SAP Mobile Apps Store
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<td>May 2</td>
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