

1 Course Information

Instructor: Mr. Tevis Boulware

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Office Hours: M, T, W, TH after 3:00 to 4:30 By Appointment

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2 Course Description

Catalog description:

Object oriented programming concepts and methods. Includes encapsulation, data abstraction, class development, instantiation, constructors, destructors, inheritance, overloading, polymorphism, libraries, and packages.

Credit Hours: 3.0

Lecture Hours: 3.0

Prerequisites: CS151 with C or better.

Course Overview

Object-Oriented Programming (OOP) has become a widely accepted methodology and most new software developments use Object Oriented methods and tools. Object-oriented methods bring important benefits to the workplace, including reuse, localization of errors, protection of data, division of labor, etc. Employers are recognizing the benefits of object-oriented methods and are seeking these skills in their employees. You rarely see a job posting for software engineers or programmers that do not require object oriented programming expertise.

This course is designed as the student's first exposure to the object-oriented methodology and is the second in a series that provides students with a foundation for structured and object-oriented programming. This course builds on the structured programming concepts of the previous course CS 151 and CS256.

As you are aware this course will use **Java** to implement your object-oriented programs. In your first programming class, you may have learned C#, Visual Basic, or C/C++, but you will find that the basic programming techniques you learned in your first language are common to Java. In fact, C# and Java are so similar you can copy and paste a simple C# program into a Java compiler, or vice-a-versa, make a few changes in capitalization and be on your way. While all object-oriented programming languages have different syntax, the concepts and basic techniques are the same for all the different languages. In the beginning of the course we will look at the basic object-oriented principles and basic program construction and investigate the building blocks we need to create a complete object-oriented Java program. In these first weeks, you will come to realize the similarity between the different languages.

You will learn to apply object-oriented concepts to programming problems. You will learn how to design an object-oriented program and then how to implement that design. In

In addition to understanding object-oriented concepts, you will learn to select appropriate program techniques to implement the design concepts. The reading provides excellent description of the specific techniques. The lectures will provide you with an overview and description of the concepts and will give you explain complete working examples of the programming techniques that you will be using in your weekly labs and course project.

Throughout this course, emphasis is placed on understanding and correct usage of specific object-oriented concepts and techniques. Approaching the course content in this way ensures you will understand the underlying principles of object oriented programming that are common to all object-oriented programming languages, not just Java. Understanding the basic concepts will make the programming much easier and you will find that you will be able to apply the concepts to any object-oriented language.

Course Objectives

Students who successfully complete this course will meet the following objectives:

1. Explain key characteristics and benefits of an object-oriented program.
2. Describe the structure of a class and the purpose of each member of a class.
3. Given program requirements, determine and document the design for the required classes and the members for each class.
4. Given program requirements, that requires a Graphical User Interface (GUI), event driven program, document the GUI design and implement a program that implements the design.
5. Given the requirements for a program that requires two or more classes, document the composition relationship between the classes and create a working program that implements composition.
6. Given the requirements for a program, that requires two or more classes/objects, document the inheritance relationships between the classes and create a program that implements inheritance.
7. Given a program description where the solution will benefit from Abstract class, document the Abstract classes relationship and create working program.
8. Given a program description where the solution will benefit from an Interface document the Interface relationship and create working program.
9. Given a program, that requires external, persistent data storage design and implement a program that inputs and outputs information to a file system.
10. Given a program that requires multiple classes/objects design and implement a 3-tiered program architecture.

3 Course Textbook and Tools

There is no textbook required for this course. All reading and references will be provided using Open Educational Resources, and the links to the resources are provided in BlackBoard.

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Required Reading

There is no required textbook for this course; however there will be assigned "Required" reading in Open Educational Resource web sites. The website readings have been carefully selected to allow you to focus on the specific object oriented concepts without including unnecessary details that do not align with the course and module objectives. You will find that the selected pages are relatively short and it is vital that you do the required reading prior to coming to class and you will want to review the readings prior to starting your programming assignments, and reference the information as you complete your assignments.

Lectures/Content

Each week there will be in class lectures that cover the weekly course and module objectives. In addition, there will be supplementary, written "lessons" that supplement the inclass lecture.

Note: the midterm, and final exam will all have questions based on the required reading, in class lectures, and written lessons.

Optional Resources

In addition to the required reading, there are optional video tutorials (mostly YouTube videos) that provide alternative, dynamic explanations of the key concepts and programming techniques. While these videos are not required, and you will not be tested on the content of these video, it will be well worth your while to view the videos. As with the required reading, these videos are fairly short and they add a little variety to the content.

Programming Language and Tools

Throughout this course, the complete software development process is emphasized from problem identification, requirements analysis, design, programming, and testing. The course covers the basics of implementing a design using the Java programming language and the use of the programming language software development tools, language syntax, and debugger tools.

Since ISU requires that everyone has a laptop you can download the FREE NetBeans tool at (available for Windows, MAC, and Linux) operating systems).

<http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

1. Select your Platform

2. Download the software
3. Once downloaded double click on the download file and let the installation proceed and accept all defaults.

Depending on your connection speed this may take 1-2 hours to complete.

You will also be doing some Unified Modeling Language (UML) drawings for this course. You can use any tool available and you can even hand draw the diagrams and take a picture of the result. However, here are some available tools:

- Microsoft Visio Professional (paid subscription)
- <https://www.draw.io/>

Directions and demonstrations will be provided on the installation of all the tools.

4 Grading

The following specifies the point breakdown and grade scale for the course and provides a description of the assignments.

Attendance will be recorded each class period for weeks 1 through 14.

Team Exercises will be conducted each week, these exercises will be done partially in class and then completed outside of class.

Design Assignments are individual assignments where you will perform the analysis and design of a program.

Programming Assignments are individual assignments where you will implement the design created in the associated Design assignment.

The actual due dates of the Team Exercises, Design Assignments, and Programming Assignments will be determined as the course progresses.

Point Break Down

Assignment	%	Points
Attendance	6.0%	60
Team Exercises	24.0%	240
Design Assignments	9.0%	90
Programming Assignments	35.0%	350
Midterm	6.0%	60
Course Project	10.0%	100
Final	10.0%	100
Total	100.0%	1000

Grade Scale

Percent Range	Grade
>= 95	A
90 – 94	A-
87 – 89	B+
84 – 86	B
80 – 83	B-
77 – 79	C+
74 – 76	C
70 – 73	C-
67 – 69	D+
64 – 66	D
60 – 63	D-
0 – 59	F

5 Course Policies

Office Hours:

Office hours will be Monday, Tuesday, Wednesday, and Thursday from 3:00 PM to 4:30 PM.

However, office hours are by appointment only.

Late Work

There will be no late assignments accepted one week after the due date, unless you have a documented emergency AND make arrangements with me at least one day prior to the due date.

I will accept one “free” late assignment from each student for the term, this “free” late assignment must be submitted within one week (7 days) of the assigned due date (Thursday of each week). If the assignment is submitted later than 7 days after the due date the assignment cannot be accepted. No late points will be deducted for this one “free” late assignments.

For late work after the “free” late assignment, you will receive a 4% deduction for each day the assignment is late, but no credit if the assignment is submitted more than 7 days after the due date.

Quizzes cannot be made up without prior arrangements.

Attendance

Absences affect class participation and attendance is graded. For each student, ISU allocates four absences for the course, **regardless of excuse. However, you will receive a 0 for the attendance score of the day, unless prior arrangements are made.**

For every additional full absence after four, students will lose 1/3 of a letter grade from their final course average. For this reason, I'd advise you to save your absences for emergencies such as illnesses, funerals, court dates, and child care needs; none of these will be considered valid reasons for additional absences beyond the given four.

If you are absent from more than nine class periods for any reason, you will automatically receive an F in the course, regardless of your mathematical course grade.

Additionally, please be on time to all class meetings. If you are late to class by my cell phone clock, you will receive a tardy. Three tardies will count as one absence, so be careful. If you are more than **fifteen minutes** late to class, you will simply be marked absent for the day and you will not be able to take the quiz. If you arrive late, it's your responsibility to check with me after class to ensure that you are marked as tardy rather than absent. Once class ends, the recorded attendance cannot be changed.

Academic Integrity/Plagiarism

Plagiarism has serious consequences Indiana State University students. I personally do not hesitate to take disciplinary action if a student has plagiarized. Please review the university's Academic Dishonesty Policy, which can be found in the Student Code of Conduct: (www.indstate.edu/student-conduct).

It is perfectly acceptable to seek help from tutors, friends, and Internet research; however, it remains your responsibility to ensure that any work you submit is your own work. If a friend tutor, or Internet search, supplies you with the code or showed you how to code it, you cannot claim the work as your own. I will work with you to help you understand the concepts and the programming techniques and ***I would rather see you submit the assignment late, or not at all, than submit work that isn't your own.***

When you find code on the Internet you cannot just copy the code and change a few variable names and slightly modify the algorithm. You can take the ideas from the any source and then create your complete original work based off the idea, but copying and only minimally modifying the algorithm violates the Academic Integrity policy and rules.

Laptop Policy

For the purposes of this course, it will be assumed that you are in compliance with the mandatory laptop policy of the University. You will be expected to bring your laptop and be ready to use it for those class periods noted on the syllabus. Usage of the laptop must conform to the provisions of this course as laid out in this syllabus as well as the Code of Student Conduct.

On days when we look at materials on websites or the course Blackboard page, including assigned readings, you should bring your laptop. Failure to do so will affect your participation grade. Surfing the web, checking social media, playing games, etc. will result in a loss of participation points for the week.

Course Notes

I will make all PowerPoints and example programs demonstrated during class available in Blackboard for you to download.

While I will demonstrate solutions to the development assignments in class, I will NOT make the instructor solutions to the program available.

In-Class Courtesy

All cell phones and similar devices must be turned off or silenced. Do not make a call, write/check text messages, or surf the web in class. If I see you doing any of these, you will receive a zero for your participation grade for the week. Repeated offenses and you will be asked to leave the class for that day.

If you have an emergency, are waiting for an urgent call, or have reason to expect the unexpected (kids, for example), please set your phone to vibrate, take a seat by the door, and exit the classroom immediately in the event of a call. Do not answer your phone in the classroom.

Academic Freedom

Teachers

"Teachers are entitled to freedom in the classroom in discussing their subject, but they should be careful not to introduce into their teaching controversial matter which has no relation to their subject."

The preceding comes from the American Association of University Professors statement on academic freedom. Though the entire statement speaks to many issues, it is this portion on the conduct of the course that is most relevant. This means that faculty have the right to conduct their class in a fashion they deem appropriate as long as the material presented meets the learning objectives laid out by the entire faculty.

For more information, visit

<http://www.aaup.org/AAUP/pubsres/policydocs/contents/1940statement.htm>

Students

As students, you can also expect to have Academic Freedom and to be able to voice your opinions and questions without fear of reprisal. However, please ensure any questions and opinions you state are related to the objectives of the course.

Statement Regarding Student Disclosures of Sexual Misconduct

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual

misconduct are encouraged to contact confidential resources listed below. To make a report to the Title IX Coordinator, visit the Equal Opportunity and Title IX website: <http://www.indstate.edu/equalopportunity-titleix/titleix>.

Confidential Resources:

The ISU Student Counseling Center – HMSU 7th Floor; 812-237-3939;
www.indstate.edu/cns

The ISU Victim Advocate – Leah Reynolds; HMSU Room 813; 812-237-3829(office);
812-243-7272; leah.reynolds@indstate.edu

Campus Ministries - <http://www2.indstate.edu/sao/campusministries.htm>;

For more information on your rights and available resources:
<http://www.indstate.edu/equalopportunity-titleix/titleix>

ADA Statement

Indiana State University seeks to provide effective services and accommodation for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, you are required to register with Disability Support Services at the beginning of the semester. Contact the Director of Student Support Services. The telephone number is 237-2301, and the office is located in Normal Hall, Room 126. The Director will ensure that you receive all the additional help that Indiana State offers.

If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classrooms.