3460:421 Object-Oriented Programming Fall 2019

Section 001 76347 4:15 - 5:30 pm Arts & Sciences (CAS) 134

Instructor: Dr. Michael L. Collard
Homepage: http://localhost:4000
Email: collard@uakron.edu
Office: Arts & Sciences (CAS) 228
Mailbox: Arts & Sciences (CAS) 221
Phone: (330) 972-7191
Office Hours: Posted on the instructor's homepage. Also available by appointment.

Course Description This course explores fundamental ideas in the design and development of software systems. Topics include abstraction, encapsulation, class inheritance, subtyping, polymorphism, and design modeling. Students learn how to use these principles to build reliable and maintainable systems. The course also covers other aspects of software construction, such as physical software design and system architecture.

The course is primarily taught using C++ but includes important features in other popular languages (e.g., Java and C#).

Learning Objectives Students who complete the course can:

- Describe the difference between values, objects, and types
- Describe how classes and other user-defined types support abstraction
- Apply encapsulation to hide implementation details
- Create classes to represent abstract and concrete entities
- Explain subtype and implementation inheritance and when their uses are appropriate
- Explain dynamic dispatch through virtual functions
- Apply generic programming and describe its relationship with object-oriented programming
- Demonstrate the ability to use functional abstractions (e.g., lambda expressions) with generic algorithms and reactive frameworks
- Create design models to represent existing systems
- Compare design patterns as a solution

Prerequisites: Minimum C- in 3460:210 CS II **Credits:** 3

Textbooks
A Tour of C++ by Bjarne Stroustrup, Addison-Wesley Professional, June 2018, ISBN: 9780134998053

Grading

Exercises	10%
Projects	40%
Midterm	25%
Final	25%
	100%

A	≥ 93%	C	≥ 73%
A-	≥ 90%	C-	≥ 70%
B+	≥ 87%	D+	≥ 67%
B	≥ 83%	D	≥ 63%
B-	≥ 80%	D-	≥ 60%
C+	≥ 77%	F	

Exercises Exercises occur frequently and are 10% of the overall score. Attendance is necessary to receive credit if the exercise is performed during class or distributed during class.

Projects There will be at least 6 projects collectively worth 40% of your overall score. Projects will include both implementations in source code and design using modeling languages such as UML. Project grades will depend on the correctness, readability, programming style, quality of design, and application of the concepts presented in the course.

Midterm The Midterm Exam is 25% of your overall score. It occurs after the 8th week of the semester, with the specific date announced at least one week before.

Final Exam The Final Exam is in Arts & Sciences (CAS) 134 on Wed May 11, 5:15 - 7:15 pm and is worth 25% of your overall score.

Policies The class is taught using a variety of sources. Notes are from web sources, the instructors own web pages, and written on the board. The instructor creates examples in class during class discussion. Attendance is necessary for an understanding of the material and therefore expected.

Any source code created for this course is committed to a Git repository created through GitHub Classroom. For credit, the source code must appear in the proper repository.

So that work can be graded and returned promptly, late assignments are not accepted without a valid excuse. It is up to the student to make up any missed material. Make-ups of any work for this class only apply in the case of an excused absence or a documented, valid emergency. I encourage you to contact me if an emergency arises.

Students whose names do not appear University's official 15-day class list are not permitted to participate (attend class, take exams, or receive credit.) Consult University information for specific dates and policies regarding the withdrawal policy.

Academic Honesty All submitted work must be your own. Any violations are reported to the Office of Student Conduct.

Special Notice Any student who feels she/he may need an accommodation based on the impact of a disability should contact the Office of Accessibility at 330-972-7928. The office is located in Simmons Hall, 105.

The University of Akron is committed to providing an environment free of all forms of discrimination, including sexual violence and sexual harassment. This includes instances of attempted and/or completed sexual assault, domestic and dating violence, gender-based stalking, and sexual harassment. Additional information, resources, support and the University of Akron protocols for responding to sexual violence are available at uakron.edu/Title-IX