

# 3460:421 Object-Oriented Programming Spring 2020

Section 001 13064 Tuesday and Thursday 1:15 - 2:30 pm Olin Hall (Olin) 107

**Instructor:** Dr. Michael L. Collard  
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**Office Hours:** Posted on the instructor's homepage. Also available by appointment.

**Course Description** The design and development of software systems, covering abstraction, encapsulation, class inheritance, polymorphism, modeling, physical design, and architecture, to build reliable and maintainable systems.

The course is primarily taught using C++ but may include principal 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

<b>Grading</b>	Exercises	10%	A	≥ 93%	C	≥ 73%
	Projects	40%	A-	≥ 90%	C-	≥ 70%
	Midterm	25%	B+	≥ 87%	D+	≥ 67%
	Final	25%	B	≥ 83%	D	≥ 63%
		100%	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** At least 4 projects are assigned, and collectively are 40% of the overall score. Projects include both implementation in source code and design using modeling languages such as UML. Project grades include 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 the regular classroom on Thu May 7, 2:30 - 4:30 pm and is worth 25% of your overall score.

**Policies** Class instruction uses a variety of sources of sources; web pages, the instructor's web pages, and written on the board. Examples may be entered by the instructor and discussed during class. Attendance is necessary for a complete understanding of the material.

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 require a valid excuse. It is up to the student to make up any missed material. Make-ups of any work for this class are given only 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 are not on the University's official 15-day class list are not permitted to attend class. Consult University information for specific dates and policies regarding the withdrawal policy.

**Academic Honesty** All submitted work (exercises, projects, and tests) must be your own. Submission of work that is even partly not yours results in a report to the *Office of Student Conduct and Community Standards*.

**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 at 105 Simmons Hall.

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](http://uakron.edu/Title-IX)