

COMP 590 - 059

Beyond Objects: Programming in the 21st Century

Spring 2025

Course Web page <http://www.cs.unc.edu/~stotts/COMP590-059-s25/>

Course Instructor: David Stotts

<http://www.cs.unc.edu/~stotts>

office: 319 Sitterson phone: (919) 590-6133

hours: Wed 1:00 to 2:30; or email for an appointment

All office hours will be in zoom

Instructor zoom room <https://unc.zoom.us/j/93388364093>

LA zoom room: TBA

Meetings: Class meets Tu/Th, 4:00 to 5:15 in Chapman 125

First class is Thurs. 1/9, 2025

Teaching Assistants: See course web site for TA names, offices, and hours.

Texts: Reading materials will be linked into the class website

Email: [help-comp590-059 @ cs. unc. edu](mailto:help-comp590-059@cs.unc.edu)

Do not email my personal UNC account

Do not use TA or LA personal email accounts;

Email to accounts will get lost in the huge pile of other stuff we receive every day. I will communicate with you through Piazza announcements and replies to your private Piazza posts. I will also communicate with you via your email addresses given in Connect Carolina faculty central for the class. Please get in the habit of scanning your email often for information from me about the class. The titles of the emails will contain "COMP 590-059".

Target Audience: This course is intended for an upper-level undergrad student who has advanced exposure to OO programming and software concepts, as well as PL issues.

Prerequisites: COMP 301, COMP 283

Timetable: The course web site contains a calendar showing the order of topics, due dates for assignments (as we give them) and exams, and other dates to note (like holidays). This is an initial fairly accurate estimate, but it may change at the discretion of the instructor, as we adapt to specific class events and progress.

Software Used:

- 1) **Web site:** Most course material will be distributed only on the web at the [course web page](http://www.cs.unc.edu/~stotts/COMP590-059-s25/). Use it as a clearing house for all course information, including this syllabus.
- 2) **Canvas:** We will use Canvas for submitting class assignments and for returning grades. As you know, UNC is transitioning from Sakai to Canvas, and this course is still migrating all its content. So we will be distributing content and

materials via the [course web page](#) and use the Canvas site for roster control, and assignment control, and grades.

- 3) **Poll Everywhere:** We will start or end many class meeting using Poll Everywhere. Please go to <https://www.polleverywhere.com> and register, if you have not already done so for another course. I will be asking review questions and other questions designed to spur class discussing. Part of your class grade will come from your participation in these polls. The class polls will be found here as I generate them: <https://www.pollev.com/pds>

- 4) **Piazza:** I have set up a [Piazza site](#) for this course. Please go register yourself to use it.

<https://piazza.com/unc/spring2025/comp590059> Access Code: e16roplbi6v

Please use the site for discussions of the work we are doing in class. Post questions, answer questions, it is a social resource that previous classes have found very useful. We are also using the “instructor” folder in Piazza as a form of class email.

- 5) **Various PL implementations:** We will be programming is several PLs that you will need to get installed on your computer (such as SML/NJ, Java, Go, Rust, Erlang, Elixir). Instructions for installing each will be given in the course materials as we get to each one.

Supplies: You should have some means of backing up your programs (e.g. cloud store, flash drive, SD chip, CD/DVD writer, etc.). ***Do not allow your dog to eat your homework.***

Course style

This course will be conducted seminar style, meaning we will be reading papers from the computing literature and studying some topics that are not mainstream... are not (yet) in common wide-spread practice. We will have class discussion on these topics, and we will do hands-on programming to experience and practice these topics. Please come to class each day having done the reading and also with questions to ask about what you have read.

Course personnel

Include graduate teaching assistants (TAs), undergraduate learning assistants (LAs), and the instructor. They have the following duties:

- LA: LAs will hold regularly scheduled office hours and will assist in the grading of your programming assignments and exams. Office hours will be to assist you with your programming assignments or with any other understanding of class materials.
- TA: TAs will hold regularly scheduled office hours; they will be available by email as well as at their office. The graduate TAs will be reviewing the Piazza site as well and will assist with discussions there. Programming questions about algorithm design as well as any questions that cannot be handled by any attendants in campus computing labs should be taken to the TAs or LAs (or to the instructor). Problems with, or questions about, course details and administration should be initially discussed with a TA. Grading questions on assignments should be directed to the TAs before discussing it with the instructor.
- The instructor: The instructor is available for assistance with any academic or administrative problem that your TAs can't handle, or to discuss issues of academic performance or class

problems. Grading issues with exams that are not satisfied by the TAs should be addressed to the instructor. Office hours are shown above.

- *PLEASE DO NOT CALL THE INSTRUCTOR or TAs or LAs AT HOME.*

Learning Objectives

This course will be conducted seminar style and will examine programming paradigms, languages, and techniques that go beyond the well-known OO model.

- You will gain familiarity with programming paradigms that add to, or differ significantly from, basic OO models like Java and C++.
- You will learn how newer language models offer software engineering organizational capabilities found in earlier OO models
- You will learn the basics of concurrent computation – the motivations, the analytical issues, the mechanisms to expressing solutions
- You will learn different concurrency models and how they are expressed in several different programming languages
- You will learn the basics of how to analyze programs
- You will write code in several of the languages we study, and run the analysis tools on programs.
- You will read first sources (research papers) for many of these concepts
- You will gain experience in team work
- You will gain experience in classroom presentation

Calendar and Deadlines

See the class website for the class calendar. It contains topics to be covered each class day and linked supporting materials (PPTs, readings, etc.). See the website also for due dates of each programming assignment, along with detailed specifications.

Requirements and Policies

Exams: There are no formal/traditional in-class midterm exams. We will be evaluated by class work (homework assignments) and possibly presentations assigned for giving to the class. We will have periodic smaller evaluations on class material via tools like PollEverywhere. Also, attendance is required and will be kept. *Attending class is the “payment” for no formal midterm exams.*

The school does require a final exam for all classes, so we will have a designated larger project/assignment as the final exam. It will be something you do on your own time, and it will not take place in the scheduled final exam slot for the class.

Grading: Approximately 60% of your grade will be based on homework/programming assignments; approximately 20% on the final exam assignment; approximately 15% will be periodic midterm evaluations; and 5% will be awarded based on participation and correctness in the PollEverywhere review/discussion questions. *This is subject to revision.*

Honor Code and Joint Work: I am very serious about the honor code. It's easy to cheat in many COMP courses thanks to the digital world; it's also very easy for us to detect plagiarism. So don't do it! Observe the University Honor Code. You are

encouraged to discuss your work together for better understanding of the course material and assignments. ***But do your own actual coding by yourself (your team).*** Unless specifically instructed otherwise on an assignment, you may NOT collectively write a program with a friend or classmate and then two or more people submit copies (or near copies) of the same code. We have software that searches for code that is plagiarized. We use it.

We will do joint work in this class. You may work in teams (of two or perhaps three) Obviously in joint work, the comments about do your own work means do not submit team work that was done by people or technology other than that of the team members. Also, in team work, we expect all team members to participate in producing the solutions.

Incompletes: Incompletes will be given only in dire emergencies such as illness or a family emergency. Documentation (such as a physician's note, dean's note, etc.) will generally be required. Falling behind in your work is not an emergency. Also, incomplete grades are only given if the work remaining to be done is small... an assignment or two. It cannot be given if you have done little class work and bring this up late in the semester.

Class Attendance: Attendance is required. You are responsible for material we discuss in class. Attendance will assist you in learning the material.

TA assistance: Our TA/LA staff will be happy to assist you in their office hours with your work. Please come prepared to ask questions to receive assistance. This means being with you the programming that you have done. Do not come to office hours to begin your work. Bring work with you so you can ask meaningful questions about your work and your progress. Start your assignments early. Do not wait until a couple days before they are due – you may not be able to get assistance if you wait.

We use the following letter grade scale based on percentage:

[93-100] A
[90-93) A-
[88-90) B+
[83-88) B
[80-83) B-
[78-80) C+
[73-78) C
[70-73) C-
[68-70) D+
[60-68) D
[00-60) F

Disclaimer

The instructor reserves the right to make changes to the syllabus as presented here, including assignment and exam dates. Any such changes will be announced as far in advance as possible.