CSC 330 / F22
Structure of Programming Languages

Prof. Andrew J. Pounds, Ph.D.

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Office Meeting:	MW 12:15-1:00 p.m., F 10:15-11:00 a.m., or arranged via *ZOOM*

"We do no know what the computer language will look like in the year 2000, but it will be called FORTRAN." – Seymour Cray

CSC 330 is a course that considers the underlying factors that drive the design and implementation of programming languages. Topics such as grammars, ambiguity, control structures, scope and typing of variables, precedence, recursion, concurrency, and input/output facilities will be considered. Different programming paradigms (procedural, object oriented, functional) and how these are implemented in languages will also be discussed. Examples will be drawn from high level Von Neumann programming languages as well as languages based on the λ-Calculus functional programming model. In addition, students will be introduced to the standard practices and tools of the professional programmer.

Students taking CSC 330 are expected to have a working knowledge of JAVA and C/C++ commensurate with completion of CSC 245 and be able to read at the college level.

Upon completion of this course, a student will demonstrate competence in each of the following areas:

- Students will understand what factors guide the choice of a computer language for a particular task.
- By examining the commonalities among languages, students will gain an ability to quickly learn new computer languages.
- Students will have the ability to program in multiple computer languages.
- Students will have been exposed to software repository management and working as a team using these tools to construct software solutions.

Class Meeting Times and Locations

Lecture: TR 11:00 a.m.– 12:15 p.m., Room 212 WSC.

Course Materials

Required: *CodeCraft : The Practice of Writing Excellent Code.* Pete GoodLiffe

Grading

Class/Homework Assignments (CANVAS)	100 pts
Programming Projects (3 @ 200 pts)	600 pts
Annotated Bibliography	100 pts
Group Programming Project	100 pts
Final Exam	100 pts
Total Possible	1000 pts

The following grading scale is assured but *may* be *slightly* lowered based on test results.

A	$\geq$900 pts
B+	$\geq$880 pts
B	$\geq$800 pts
C+	$\geq$780 pts
C	$\geq$700 pts
D	$\geq$600 pts
F	<600 pts

General Information

Honor Code: All students in CSC 330 are expected to adhere to the Mercer University Honor Code. Any suspected violations will be reported to the Honor Council for further investigation.

Many students have difficulty in determining how to apply the Mercer honor code to computer science courses. A few general guidelines should help you in deciding whether you are violating the honor code or not.

1. You are allowed to receive help on your programs from other students, provided the purpose of the help is to help you understand your own program better, not to write your program for you.

2. You are NOT allowed to give copies of your programs, or parts of your programs, to other students in any form. I will be checking code to see how much is derived from others in the class and from prior student work.

Any violation of the above policies will be treated as academic dishonesty and a violation of the Mercer Honor Code.

Attendance: Attendance will be taken on the first six class days and on days designated "group project work days". Otherwise attendance will not be taken. However, students are still accountable for all material covered in class as well as any announcements made during the lecture period.

Missed Exams: Anyone missing an exam for *any* reason (personal illness, death in the immediate family, or other emergency) must notify Dr. Pounds in advance. The absence will be considered unexcused otherwise. Make-up exams will be individually scheduled.

Final Exam: The final exam will be on December 12, 2022 at 9 a.m. It will be an in-person "practicum" exam requiring you to answer some questions in a written format and submit code you write for the final to the departmental GitLab server named *anvil*.

Partial Credit: Partial credit will not be awarded on any submitted work unless individuals show their work and clearly delineate how they arrived at their answers.

Re-grading Policy: If a student suspects that an error was made in the grading of a submitted work, they may return the paper for re-grading with the understanding that the entire work will be re-graded and not only the portion in question.

Posting of Grades: Grades will not be posted. If you are curious about your cumulative grade, see Dr. Pounds.

E-mail Listserve: I maintain an e-mail listserve which I use use copiously to send information to the class and which you can use to communicate with each other. To sign up for the listserve and to learn how to send information to it, please go to: `http://theochem.mercer.edu/mailman/listinfo/csc330`.

Departmental Computing Facilities: While students may work on their own computer systems to develop code for the class, students are encouraged to work on the departmental server named *cobra* (`cobra.cs.mercer.edu`). This server is guaranteed to have all of the requisite compilers and software libraries required to build code for this course. All programs will be tested on *cobra* – SO MAKE SURE YOUR CODE RUNS ON *cobra*. Students who need to use *Mathematica* can access it from the computer labs in the Computer Science Building or the Chemistry Department. If you need information on how to transfer code to *cobra*, just ask me.

GitLab: Students must maintain their programming projects on the departmental *GitLab* server name `anvil.cs.mercer.edu`. Specific instructions on how the repositories should be structured will be included in in each assignment description. Code for this class will be submitted via `anvil`.

Platforms and Editors: I get asked this question every year – so I am going to go ahead and answer it here. I don't care what editors you use to develop your code. You can use *eclipse*, *Visual Studio*, *Emacs*, *vim*, *sublime*, *Atom*, *nano*, *gedit*, etc. Just know that all of those are not available on all systems. You are GUARANTEED to find *vi* on any Unix box. The FINAL version of your program will be tested on *cobra* and therefore must be able to be compiled and run in a normal command line environment. If your code ONLY runs inside *eclipse* or *Visual Studio*, then it does not meet these requirements.

Group Programming Project: The class will be broken into teams for the group programming project with the entire group working on one larger assignment using multiple languages. Some portion of the each persons grade (not to exceed 50% of the total grade on the group project) will be determined by the other students on their team.

University Compliance Statements

Accommodations and ADA/504: "Students in need of accommodation due to a disability should contact the Access and Accommodation Office to complete the verification process to become approved for services. In order to receive accommodations, each term, students will request accommodation and faculty notification forms through the Access Office online system Accommodate. Students are strongly encouraged to schedule a meeting with each professor in a timely manner to discuss arrangements. Accommodations are not retroactive in nature. Note - Disability accommodations or status are not reflected on academic transcripts. Students with a history of a disability, perceived as having a disability or with a current disability who do not wish to use academic accommodations are also strongly encouraged to complete the verification process with the Access Office. Students must request accommodations in a timely manner to receive accommodations in a timely manner.

The Access Coordinator for Macon Campus is

Katie Johnson, Director and ADA/504 Coordinator.
Phone: (478) 301-2778; email: `johnson_kc@mercer.edu`
Website:
https://access.mercer.edu

Please note the following additional information from the Access and Accommodation Office (AAO):

In compliance with Section 504 of the Rehabilitation Act of 1973 (504) and the Americans with Disabilities Act Amendments Act of 2009 (ADAAA), "otherwise qualified" students with disabilities are protected from discrimination and may be entitled to "reasonable accommodations" intended to ensure equal access to all courses, programs, and services without a change of curriculum. Examples of accommodations include but are not limited to: testing accommodations, providing alternative format textbooks and tests, note-taking support, and modifications of policies or procedures. Equal Access may require moving a class or event to a physically accessible room, making websites accessible to screen readers, providing sign language interpreters, and captioning videos. All students requesting to be recognized as a student with a disability or requiring accommodations must first self-identify by requesting accommodations with the designated Access Coordinator for their campus or program and complete the verification process."

Mental Health and Wellness: "Mercer University faculty and staff recognize that mental health concerns can impact academic performance and interfere with daily life activities. Because stress is a normal part of the college experience, learning to manage stress effectively is crucial to your well-being and overall success. Please notify your faculty member or academic advisor for academic assistance, as needed. CAPS can also provide support if you are feeling anxious, overwhelmed, depressed, lost or are struggling with personal issues. Please call or visit the Counseling and Psychological Services (CAPS) website at `https://counseling.mercer.edu/` for more information. These services are free and confidential, and support non-traditional, graduate, and undergraduate students. Students may access CAPS at the location of their academic program: MACON – Counseling Center (formerly the Honors House), 478-301-2862; ATLANTA – 215 Sheffield Student Center, 678-547-6060. Students at Regional Academic Center and other locations may obtain assistance in finding local services by contacting the CAPS Office nearest them. We also encourage students to call or text 988 to reach the National Suicide & Crisis Line if needed."

Electronic Submission of Materials: "Students bear sole responsibility for ensuring that papers or assignments submitted electronically to a professor are received in a timely manner and in the electronic format(s) specified by the professor. Students are therefore obliged to have their e-mail client issue a receipt verifying that the document has been received. Students are also strongly advised to retain a copy of the dated submission on a separate disk. Faculty members are encouraged, but not required, to acknowledge receipt of the assignment."

Cell Phones and Pagers: "Out of courtesy for all those participating in the learning experience, all cell phones and pagers must be turned off, or placed on vibrate, before entering any classroom, lab, or formal academic or performance event."

FERPA and Assessment: The College of Liberal Arts is keenly interested in assuring the quality and integrity of its general education program. Every semester, randomly selected samples of student work from general education courses will be independently and objectively assessed. No personally identifiable information about any student will be used for the purposes of this assessment, and assessment results will have no bearing whatsoever on student grades.

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University Health and Safety Protocols for the Fall 2022 Semester
Syllabus Statement for All Students

Office of the Provost 478-301-2110   Campus Health's COVID-19 Hotline 478-301-7425

In order to promote safe campuses, students are required to follow these COVID-19 protocols:

- Check the University COVID-19 website and your Mercer email for important updates and messages.

- Masks are not required on campus, except at the Campus Health Centers on the Macon and Atlanta campuses. Of course, anyone who chooses to wear a mask on campus for their own protection is welcome to do so. Faculty may require masks when meeting in their individual offices with students, colleagues, or guests. Health science students and employees may be required to wear masks in clinical settings.

- **If you are symptomatic of COVID-19, regardless of vaccination status, you cannot attend** in-person classes, labs, orientations, clinical/field experiences, other on-campus activities, or employment on campus. You should immediately call Campus Health's COVID-19 Hotline at (478) 301-7425 for a testing appointment during regular business hours or get tested immediately at an off-campus location. If symptomatic and tested off campus, please call to inform Mercer Medicine at (478)-301-7425.

- If you are asymptomatic (showing no symptoms) and would like to get tested, go to go.mercer.edu/covidappt to schedule an appointment at the Macon or Atlanta Campus Health Center.

    There have been changes to insurance coverage for COVID-19 testing. As a result, Mercer Medicine will bill your insurance company for COVID-19 testing if you are symptomatic or have been exposed recently to someone who has tested positive for COVID-19. The University covers the costs of COVID-19 testing for Mercer on Mission, Study Abroad, and other University-related international travel programs. If you are tested for other reasons, you will be required to pay $90 at the time of testing.

- Testing locations:
    - Macon – Campus Health Center, Drake Field House, Macon Campus
    - Atlanta – Campus Health Center, Sheffield Building, Atlanta Campus
    - Savannah – Memorial University Medical Center, Savannah Campus (Dr. Kirkpatrick)
    - Columbus – Mercer University School of Medicine, Columbus Campus (Dr. House)

- Mercer Medicine accepts off-campus PCR test results and **positive** antigen test (known as rapid test) results from reputable testing facilities.

    Mercer Medicine does NOT accept
    - negative antigen test (called rapid test) results;
    - home/self test results; and
    - antibody test results.

- All students must submit **off-campus**, **positive COVID-19 results** immediately to Campus Health at mytestreport@mercer.edu. In the subject line of the email, type "Macon Test" (for Macon, Savannah, and

Columbus students) or type "Atlanta Test" (for Atlanta, Henry, and Douglas students). Be sure to include your full legal name and Mercer ID in the body of the email.

Off-campus positive results must be submitted to Campus Health as soon as you receive them. If you fail to submit your results in a timely manner, excused absences and academic accommodations will not be provided beyond the five days after testing.

- If you test at the Campus Health Center and test **positive**, a Campus Health staff member will call you from a Mercer phone number with the positive result. With a **negative** result, you will receive an email in your Mercer email account.

- Do not submit COVID-19 results directly to faculty, the Dean's Office, or Student Affairs for COVID-related, excused absences. All COVID-related absences must be processed through Campus Health and the Office of the Provost. Faculty are then notified of a student's COVID-related, excused absence(s).

- Faculty are required to provide academic accommodations to students who are in isolation after either testing positive at the Campus Health Center or submitting off-campus, positive test results to Campus Health at mytestreport@mercer.edu.

- If you **are symptomatic and awaiting test results**, you must isolate and be provided academic accommodations during this brief isolation period. If you tested on campus, faculty will be notified. If you are symptomatic, tested off campus, and are awaiting results, contact Campus Health immediately at 478-301-7425 so that faculty can be notified. If you do not receive your results within two (2) business days, contact Campus Health at 478-301-7425 for a testing appointment on campus.

- The isolation period for COVID-19 has been reduced to **five days**. While in isolation, you must complete your daily **Bear Check** as a way for Mercer Medicine to monitor your symptoms. The Bear Check is located in MyMercer > Dashboard > Action Items.

  You must remain in isolation until you are cleared by Mercer Medicine.

- **Residential students** who test positive have these isolation options:
  o Recover at home, if possible.
  o Isolate in place in your own room. Isolating in place means that you stay in your current residence, distance yourself from roommates/suitemates as much as possible, and wear a mask inside the residence as often as possible. Roommates/suitemates should also wear masks inside the residence as often as possible.

  You may leave your assigned room, while wearing a mask, **only** to seek medical care and pick up to-go or delivery meal options to eat in your room. For students on the Macon campus, Aramark provides to-go meals.

  Contact the Office of Housing and Residential Life with questions or concerns:
  Macon: (478) 301-2687
  Atlanta: (678) 547-6104