CpS 350
Programming Language Design
Fall/2024

Instructor:	James A. Knisely, Ph.D.
Office:	Alumni 64
Office Hours:	MWF 8:00 – 8:50 a.m. | Tu 1:30 – 2:45 p.m. | Th 8:00 – 9:15 a.m. Please email or text to confirm availability
Email/Text/Teams:	jknisely@bju.edu / Cell 864-517-2437 / CpS 350 F24
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Communication Policy:	Feel free to email or contact me via Microsoft Teams for questions and/or extended help. You may text where appropriate (not during class).
Classroom:	AL 307
Meeting:	MWF 2:00 - 2:50 p.m.
Credit/Load:	3/3
Textbook/Resources:	*Modern Programming Languages: A Practical Introduction* by Adam Webber. 2nd ed. Franklin, Beedle & Associates, 2011. [amazon]

Catalog Description:

A study of programming language concepts from the imperative, functional, logic and object-oriented paradigms, with an analysis of their suitability to various problem domains. Includes a study of formal theory, as well as language efficiency and implementation details. Students will analyze an unfamiliar language in a significant research paper.

Course Context:

This course supports the following objectives of the Computer Science and Information Technologies programs:

CS 1. Design and implement solutions to practical problems

CS 2. Use appropriate technology as a tool to solve problems in various domains

CS 5. Demonstrate an ability to communicate technological information effectively both in written and oral forms

CS 6. Demonstrate an ability to acquire new knowledge in the computing discipline

CS 8. Demonstrate understanding of fundamental concepts in the student's discipline

CS 9. Prepare students for graduate school or to secure employment in a related area

Course Goals:

The goals this semester are to improve your
- understanding of the different types of programming languages and their relative strengths
- ability to understand and program in a new language more quickly, as well as improve your understanding of the languages you already know
- ability to evaluate language options for solving a given problem
- insight into the run-time environments for different languages
- vocabulary of useful programming constructs
- ability to conduct research in computer science and present your findings

Learning Objectives:

Objective	Content	Assessment
List and describe the programming paradigms covered in this unit (CS 8)	Chapter 1	Test 1
Demonstrate a grasp of fundamental concepts of the programming paradigms covered (CS 1, 2, 8)	Chapters 2-3, 5, 7-20	Programming Exercises; Test 1; Test 2; Final Exam
Differentiate between formal and informal semantics, and explain the importance of formal semantics (CS 8)	Chapter 23	Test 2
Describe the phases of program translation from source code to executable code and the files produced by these phases (CS 8)	Chapter 4	Test 1

Defend the importance of types and type-checking in providing abstraction and safety (CS 8)	Chapter 6	Test 1
Conduct independent research in the field of programming languages and communicate results effectively in written and oral form (CS 5, 6, 9)		Paper

Course Requirements:

A 10-point grading scale, with 1-digit rounding, will be used. The grade for this class will be based upon the following categories:

Category	Points	Description
Exercises	300	Eight exercises ranging in worth from 20 to 50 points
Research Project	300	A paper and presentation is produced on a previously unstudied language.
Tests	300	Two tests are scheduled. They will be a mix of essay and short answer questions.
Final Exam	150	Emphasizes the application of the knowledge gained during the semester

General Policies:

Class Deportment
Compliance with student handbook policies is expected during class. All class deportment should reflect your intention to pay attention, to be polite, and to be professional. Laptops may be used to take notes and to perform calculations and constructions during class. Please do not use the laptop for other purposes during class since studies have demonstrated that one's student's misuse of a laptop during class tends to diminish the learning of the surrounding students.

Accommodations for Students with Disabilities
Any student with disabilities or any additional needs is encouraged to contact the instructor within the first week of the course to discuss accommodations that may be necessary.

Attendance Policies and Academic Penalty for Absences
- Attendance will be tracked and reported according to the university attendance policy:
  - Students are expected to attend and arrive on time for all scheduled class sessions, including the final exam.
  - Students are to use effective time management in order to meet their class attendance responsibilities.
  - Up to three (3) personal Absences may be taken for funerals, for sickness, for doctor's or dentist's appointments, for visits and interviews at graduate schools or for interviews for future employment.
  - Up to four (4) Service Absences may be taken to attend approved academic functions or conferences, approved Christian service projects, required military duty or as part of an intercollegiate athletic team. However, students who exceed the Personal Absence limit due to a chronic illness are not eligible to participate in events that require Services Absences. Also, students who are on any type of academic restriction (including probation) or who have a current grade report with a cumulative GPA below 2.0 are not eligible to participate in events that require Service Absences.
  - Arriving late or leaving early is marked as a partial attendance. Three (3) partial attendance marks count as a personal absence.
  - Missing more than 15 minutes of class is marked as an absence.
  - For more details and information about chronic illness, please see the Class Attendance Policy on the BJU Policies page.
- Students are responsible for all material and announcements given in class.
- If a student is absent for an exam and has a good reason, the student is to notify the instructor before the exam is covered in the next class.

Late Work
Work is due at the specified deadline. Late work is accepted at the instructor's discretion. Notify the instructor immediately if a situation arises necessitating an extension. Early, impressive work is encouraged and may be rewarded.

Academic Honesty
You are expected to uphold the school standard of conduct relating to academic honesty:
- School-wide – The link can be found on the BJU Policies page.
- CpS Department clarifications – What is allowed/disallowed in code submissions.

You must assume full responsibility for the content and integrity of the academic work you submit. The guiding principle of academic integrity is that your submitted work; examinations, reports, and projects must be your own work. You are guilty of violating this policy if you:
- Represent the work of others as your own.
- Use or obtain unauthorized assistance in any academic work.
- Give unauthorized assistance to other students.
- Modify, without instructor approval, an examination, paper, record, or report for the purpose of obtaining additional credit.
- Misrepresent the content of submitted work.

Misrepresenting your work is unethical in any setting. In an academic setting, it is a breach of the university policies. The penalty for

cheating is severe. Any student cheating is subject to receive a failing grade for the assignment and will be reported to the Dean. If you are unclear about whether a particular situation may constitute cheating, consult with your instructor about the situation. For this class, it is permissible to assist classmates in general discussions of construction techniques. General advice and interaction are encouraged. Each of you must develop your own solutions to the assigned projects, assignments, and tasks. In other words, you may not "work together" on graded assignments with other students unless instructed to work as a group on a particular assignment. Such collaboration constitutes cheating. You may not use or copy (by any means) another's work (or portions of it) and represent it as your own.

Learning how to use sources appropriately is a vital part of your development as a student. To assist you in this endeavor, the university uses Turnitin, an academic plagiarism checker. Registration in this course constitutes permission for the teacher to submit any or all assignments to Turnitin.

Need Help?
You must seek help when needed because you are the only one who knows when you need it. If you need help, reach out to one of the following ways:

- Teacher – It is always best to seek help in person, either in my office or before class, if time allows. You may also text me or email me in order to set up a time in which to come see me if you have a class or are working during my announced office hours. My door is always open during my office hours. I encourage you to come see me for help.

- Classmates – Studying for tests with other students is helpful. You may work together on the labs. The four programming assignments are to be completed individually. The Academic Honesty CS-specific link above describes the help allowed for programs.

Planned Lecture Schedule:

- Schedule

Copyright Policy:

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