CS 390 Programming Languages Course Syllabus

Southeast Missouri State University

Fall 2020

Course Information

General Information

1. Course Number: **CS 390**
2. Course Title: **Programming Languages**
3. Catalog Description: Properties of algorithmic languages including scopes of declarations, storage allocation, grouping of statements, runtime behavior; introduction to Language and BNF Grammars.
4. Prerequisites: CS 300 with minimum grade of C.
5. Credit Hours: *3*
6. Semester: Fall 2020
7. Class Meeting Time: MWF DH127 9:00 – 9:50 AM
8. Instructor: Dr. Robert Lowe
   - **Email**: rlowe@semo.edu
   - **Phone**: 573-651-2764
   - **Office**: DH213
   - **Virtual Office Hours**: Weekdays 3:00 – 4:00 PM. (or by appointment)
   - **Zoom Personal Meeting ID**: 426 824 1927
9. Concerns: Questions, comments, or request regarding this course should be taken to the instructor. Unanswered questions or unresolved issues about the class can be directed to Dr. Charles McAllister (cdmcallister@semo.edu)

Course Learning Outcomes

1. Students, working in small groups, will learn the basics of programming languages new to them.

2. Students will compare and contrast programming languages based on programming language principles.

3. Students will write programs in a language of historical importance, and will write programs in at least one language which is quite unlike the programming languages they have previously used.

Course Materials

- *Concepts of Programming Languages (12th Edition)* by Robert W. Sebesta
- Laptop (Required software is all freely available on the internet.)

Tentative Schedule

- Mon August 24 – Introduction, Language Concepts, and Programming Domains
  - **Read** Chapters 1 & 2
  - **Assignment** The Four Programs (due *August 31*)
- Wed August 26 – Language Evolution, Evaluation, and Design
- Fri August 28 – Language Categories, Uses, and Implementation

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- Mon August 31 – Formal Languages and Their Description
  - **Read** Chapters 3.1 – 3.3.2
  - Introduction to FORTRAN
  - **Assignment** Four FORTRAN programs (due *September 14*)
- Wed September 2 – BNF and Ambiguity
- Fri September 4 – Restructuring Grammars and Extended BNF

- Mon September 7 – Grammar Recognition and Generation
  - **Read** Chapter 3.3.3 – 3.5
- Wed September 9 – Handling Semantics and Context
- Fri September 11 – Case Study: Looplang

- Mon September 14 – Regular Grammars
  - **Read** Chapters 4.1 – 4.2
  - Introduction to COBOL
  - **Assignment** Four COBOL programs (due *September 28*)
- Wed September 16 – Lexical Analysis
- Fri September 18 – Case Study: Looplang Lexical Analysis

- Mon September 21 – The Parsing Problem
  - **Read** Chapters 4.3 – 4.4
- Wed September 23 – Recursive Descent Parsing
- Fri September 25 – Case Study: Looplang Parser and Interpreter

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- Mon September 28 – Structured Programming and Selection Statements
  - Introduction to ALGOL 68
  - **Read** Chapter 8

- Wed September 30 – Looping Structures
- Fri October 2 – Unconditional Branches and Guarded Commands

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- **Mon October 5 – Midterm Exam**
- Wed October 7 – Names, Variables and Binding
    - **Read** Chapter 5
- Fri October 9 – Scope and Lifetime

- Mon October 12 – Scalar Data Types
    - **Read** Chapter 6
    - Introduction to Lua
- Wed October 14 – Collections
- Fri October 16 – Agregate Data Types

- Mon October 19 – Operators and Expressions
    - **Read** Chapter 7
- Wed October 21 – Evaluation and Assignment
- Fri October 23 – Assignment Operators

- Mon October 26 – Subprograms, Parameters, and Calling Considerations
    - **Read** Chapters 9–10
    - Introduction to Javascript
- Wed October 28 – Closures, Coroutines, and Other Considerations
- Fri October 30 – Implementation of Subprograms

- Mon November 2 – Data Abstraction
    - **Read** Chapter 11
- Wed November 4 – Examples and Constructs
- Fri November 6 – Encapsulation

- Mon November 9 – Mathematical Functions as Universal Computation
    - Introduction to Scheme
    - **Read** Chapters 15.1 – 15.5
- Wed November 11 – Functional Thinking and Pure Functional Programming
- Fri November 13 – Functional Programming Examples and Concepts

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- Mon November 16 – Functional Programming in Applications: It's Always About to Take Over!

- **Read** Chapters 15.6 – 15.11
- Wed November 18 – Example Functional Languages
- Fri November 20 – Introduction to Logical Programming
  - **Read** Chapter 10

- Mon November 23 – A Closer Look at Prolog
  - Introduction to Prolog
- Wed November 25 – Thanksgiving Break
- Fri November 27 – Thanksgiving Break

- Mon November 30 – *Online* Logical Programming
- Wed December 2 – *Online* Group Project Presentations
- Fri December 4 – *Online* Group Project Presentations

- **Wed December 9 – *Online* (8:00 AM) Final Exam**

Grading

Category	Weight
Programming Language Exploration	20%
Homework	15%
Group Project	20%
Quizzes	5%
Midterm Exam	20%
Final Exam	20%

Grading Scale

Letter Grade	Percentage
A	90–100
B	80–89
C	70–79
D	60–69
F	< 60

Fall 2020 Scheduling Considerations

Scheduling Updates

Please note that due to the revised Fall 2020 schedule, our class will meet on labor day (September 7) and on October 9.

The Week After Thanksgiving

Classes continue November 30 - December 4 via remote/online instruction. During this week, we will have one pre-recorded lecture followed by two days of class presentations via Zoom. Attendance on these days is mandatory in order to receive full credit for the group presentation. I will continue to hold virtual office hours to answer any of your questions, and to help you prepare for the final exam.

Final Exam Schedule

Finals for this semester will be remote or online. Our final exam will be given via Canvas, and is formatted as a "take-home" exam. The exam will be made available at midnight on the 9th of December, and you will have until midnight on the 10th of December to complete the exam. I will be available for questions reguarding clarification during our scheduled exam period on December 9th, and also during my normal office hour.

Additional Information

Professor Availability

I am usually on campus Monday thru Friday from 8:00 AM – 6:00 PM. My office hours are listed above, but I am available other times by appointment.

Email Responses

I will try to answer emails received during normal business hours on the day I receive them. If there is a backlog, you should expect a response by the next business day. I may respond during weekends, but generally email received over the weekend will be answered on Monday.

Course Website

All courses at Southeast Missouri State University will be hosted on Canvas beginning Spring 2021. Some courses have made this transition for Fall 2020, and we are one of these pilot courses for Canvas. As such our materials will all be uploaded to http://semo.instructure.com. We will not use moodle. The moodle course for this section simply contains a link to canvas.

Grades, assignments, and course materials will all be hosted on Canvas.

Paperless Classroom

In order to help reduce the risk of COVID-19, we will be using only electronic materials this semester. All exams, quizzes, and assignments will be electronically distributed and submitted through Canvas.

Policies

Classroom Guideline of Minimizing the Risk of COVID-19

- Practice social distancing (six feet of spacing), wear facial coverings, and follow proper prevention hygiene, such as washing your hands frequently and using alcohol-based (at least 60% alcohol) hand sanitizer when soap and water are not available.

- The wearing of a face covering is a *University* safety requirement under the current conditions *as well as a Cape Girardeau County Emergency Order pursuant to RSMo 192.300.* We hope that through modeling and a positive and encouraging environment, all will do their part. If a student refuses to wear a face covering, it would be handled in the same manner as if they refused to comply with a course requirement or adhere to the Code of Student Conduct. An instructor may ask a student to leave a class and an employee may ask a person to leave a meeting or event if they do not wish to comply with the Face Coverings and Social Distance Guidelines.

  - In the event that a student does not comply with this guidance and does not leave the space, faculty/staff should send the student's name and email address or Southeast ID to deanofstudents@semo.edu. If a student refuses to leave a classroom or other University facility upon request, **and/or becomes disruptive**, the Department of Public Safety can be contacted for assistance.

  - **If you are not able to wear face coverings due to health or ADA concerns, contact the office of Disability Services at ds@semo.edu or 573-651-5927 for information on how to obtain an exemption. Affected individuals should also consult with their physicians before wearing a face covering.**

- Avoid sharing electronic devices, books, pens, and other learning aids unless thoroughly cleaned between users.

- Students are encouraged to clean and disinfect before and after class, any contact surfaces such as chairs, desks, and equipment utilized for the class. Students will follow the prototocol established for the classroom.

- Appropriate signage will be displayed in the classroom or adjacent areas

on protocols to follow that protect our community members during classes. Please become familiar with this information and follow it in our shared community.

- The seating in your classroom may be positioned to maintain social distancing or signs may be posted with seating direction. Do not move seating or signs unless instructed to do so by your instructor.

- Social Distancing minimizes risk. When in buildings, hallways and entering or exiting buildings or classrooms, maintain at least six feet of social distancing space and avoid gathering in groups.

- The week of instruction following Thanksgiving will be delivered completely online. Expectations and any work required are outlined in this syllabus.

- The final exam will be online, and instructions are provided in the final exam section of the syllabus.

Academic Honesty

Southeast Missouri State University expects all students, faculty and staff to operate in an honest and ethical manner. Academic dishonesty is a very serious offense because it undermines the value of your education and the education of others. Students who engage in academic dishonesty face significant penalties. Forms of academic dishonesty include, but are not limited to, plagiarism, cheating, contract cheating, misrepresentation, and other actions you take. Some of these are defined below:

- Plagiarism means passing off someone else's work as your own, whether it is intentional or unintentional.
- Cheating includes copying from another person or source of information to meet the requirements of a task.
- Contract cheating is paying someone else or a company to do your work.
- Misrepresentation means you are posing as someone else or someone else is posing as you to complete a task.
- Collusion means working with one or more people to cheat. If you help someone cheat or plagiarize you will face the same penalties.

For more information, visit the Responsible Redhawks Code of Conduct http://www.semo.edu/responsibleredhawks/code-of-conduct.html or the Faculty Handbook Section (D) on Academic Honesty http://www.semo.edu/facultysenate/handbook/5d.html

Accessibility

Southeast Missouri State University and Disability Services are committed to making every reasonable educational accommodation for students who identify as people with disabilities. Many services and accommodations which aid a student's educational experience are available for students with various disabilities. Students are responsible for contacting Disability Services to register and access

accommodations. Accommodations are implemented on a case by case basis. For more information, visit http://www.semo.edu/ds/ or contact Disability Services at 573-651-5927.

Civility

Your university experience is purposely designed to introduce you to new ideas, help you think effectively, develop good communication skills, evaluate information successfully, distinguish among values and make sound judgements. Doing this well requires respectful and courteous discussion among and between students and the instructor. Together, we must create a space where we acknowledge and respect others have different experiences, perspectives and points of view. Disagreements are likely. Mutual respect for one another and a willingness to listen are important. Remember, you are responsible for your behavior and actions. There is a no tolerance policy on bullying or harassment of any kind. Additional information on student conduct may be found at: http://www.semo.edu/pdf/stuconduct-code-conduct.pdf?ver=1.0 and http://www.semo.edu/pdf/Conduct_Faculty_Resource_Guide.pdf

Mandatory Reporting

I will keep information you share with me confidential to the best of my ability, but as a professor I am legally required to share information about sexual misconduct and crimes I learn about to make our campus and community safe for everyone.

Student Success

This course uses SupportNET, Southeast's student success network, to improve communication between students, faculty and staff on campus. You'll get emails through SupportNET with information about resources or concerns. Please read these emails—they are sent to help you succeed! You can access SupportNET through your portal, Moodle or directly at https://supportnet.semo.edu to see any academic alerts, ask for help and to access resources to support your success at Southeast.