

CS 1013: Computer Science Principles

Required Course: Auxiliary for CS I

Course Number: 1013

Course Name: Computer Science Principles

Credit Hours: 3

Instructor: Dr. Rittika Shamsuddin, *r.shamsuddin@okstate.edu*

TA: Abid Rasheed, *rabid@okstate.edu*

Office Hour: (Virtually through Zoom- Friday 2-4pm, or request appointment through email)

Zoom Link: <https://dasnr.zoom.us/j/97186933202>

(Optional Textbooks)

Book Title(s): Java: An Introduction to Problem Solving and Programming (8th Edition)

Book Author(s): Walter Savitch

Book Year(s): 2017

Book Title(s): Alice 3 in Action with Java (1st Edition)

Book Author(s): Joel Adams

Book Year(s): 2014

Course Description: What is computer programming. How to transform any problem into tasks that the computer can solve. Problem solving strategies Control structures in programming language. Programming basics e.g. variables, methods, arrays, basic sorting, comments. Get accustomed to different programming environments. Main Focus: Think like a programmer. Get familiar with object-oriented programming. Write your first Java program. Extra: Learn to work with 3D models and basics of virtual reality, and develop your own game.

Course Prerequisites: N/A

Course Goals: Students should be able to

- Break down a break and write their own pseudocode.
- Turn their pseudocode into algorithms and implement the solution.
- Test your code and debug!
- Understand the basic programming concepts such as class, objects
- Design and implement object-oriented problem-solving strategies appropriately.
- Use control structures, such as loops, if-else statements when appropriate.
- Understand how arrays work and implement rudimentary sorting.
- Understand Event Listeners.
- Get a lot of practice with programming!!!

Grading:

In-Class Lab work: 30%

Assignments: 30% (bi-weekly; 4)

Final Project: 40% (1)

Course Topics:

Knowledge Area	Total Hours of Coverage (approx.)
Algorithms (AL)	21.25
Programming Languages (PL)	23.75
Software Development Fundamentals (SDF)	17.5

Overview:

Knowledge Area	Knowledge Unit	Topics Covered
AL, SDF	Basic Analysis	Design Analysis, Implementation, Testing
PL, SDF	Basic Programming	Use in-built methods, Create own method, Decomposition/Refactoring
AL, SDF	Algorithmic strategies	Loops, Nested code blocks, Concept of Parallelism
AL, PL, SDF	Practice previous concepts; Knowledge accumulation; Algorithmic strategies	Stepwise Refinement, basic Inheritance
PL	Java Programming	Different IDE, Alice3 vs, NetBeans, Program in Java
PL	Basic Programming	Code Reuse, Parameters, Data Types, Variables, Arithmetic Expressions, Loops, Alice3
PL	Basic Programming; Knowledge accumulation;	Code Reuse, Parameters, Data Types, Variables, Arithmetic Expressions, Loops, Java
PL, AL	Basic Programming; Algorithmic strategies	If/Else statements, Interaction with events; On Mouse click (Alice3)
SDF, AL	Game Algorithm	While loops, more custom methods, Random Generators
SDF, AL, PL		Arrays, More Events, Interactive Control; More Arrays and Methods
AL, PL		Sorting
SDF, AL, PL	Advanced Game Controls	Event Driven Programming

COVID19 University Policy

COVID-19 related requirements include masking and social distancing. Existing campus policy requires you to wear masks, to maintain social distancing, and to self-monitor your health. If student do not comply, actions will be taken. These actions will be discussed during the first lesson in class, and will be present in very lecture for this course.