CMP 567 Programming Methods I Syllabus

Semester	Class Section	Meeting ID	Passcode
Spring 2024	CMP 567 - OA01	819 1319 1163	749488

Instructor	Email	Office Hours
Yanilda Peralta Ramos	yanilda.peraltaramos@lehman.cuny.edu	By appointment by email

Course Description: *3 hours, 3 credits* This course is designed to provide the technical skills, pedagogical best practices, and real-world applications needed to lead Computer Science lessons and units in the K-12 setting. Activities include an introduction to the history of computer systems, front-end web development with HTML, CSS, and JavaScript followed by structured computer programming using Java, a modern high-level programming language. Topics include console I/O, variables, data types, decision branches, iteration, arrays, functional decomposition, function definitions, calls, and parameter passing. No previous programming knowledge is needed.

Prerequisite: MAT 172 or Department of Computer Science permission.

Course Objectives:
By the end of the course students should be able to do the following:
- Summarize the relationship between computer systems and programs.
- Independently design and develop structured websites with dynamic content using HTML, CSS, and JavaScript
- Independently design, create, and debug simple Java applications
- Use HTML5 to develop properly structured web pages
- Use CSS3 to apply proper style to web pages
- Use JavaScript to respond to events
- Manipulate the DOM and CSSOM through JavaScript
- Demonstrate proper use of variables and functions/methods in both JavaScript and Java
- Demonstrate the use of parameters and information passing in programs
- Perform Logical Decisions using both JavaScript and Java
- Perform Iteration using both JavaScript and Java
- Manipulate Strings in both JavaScript and Java
- Manipulate Arrays in both JavaScript and Java
- Use libraries from the java.util package such as Scanner, Math

Grading Policy:

- Participation & Challenge Activities From Textbook: 10%
- Homework Problems: 15%
- Projects: 15%
- Quizzes: 10%
- Midterm Assessment: 25%
- Final Assessment: 25%

Expectations: Students are expected to learn the material covered in class, the material in the textbook and other assigned reading. Completing homework is an essential part of the learning experience. Students should review topics from prior courses as needed using old notes and books.

Honor Code: You are encouraged to work together on discussing and planning the overall design of the programs and homework. However, for specific programs and homework assignments, all code written must be your own creation. All submissions must be your own independent work. You are responsible for knowing and following Lehman's academic integrity code (available from the Undergraduate Bulletin, Graduate Bulletin, Office of Academic Standards and Evaluations, or the Smart Catalog). All incidents of cheating will be reported to the Vice President of Student Affairs.

Communication: We will be communicating with you on a regular basis throughout the semester using the email address listed on Blackboard for this course. You are required to make sure that the email address on Blackboard is your current Lehman email address and you must check it on a regular basis. **There will be no acceptable excuse for missing an email announcement.**

Homework: Programming problems are due most weeks.Problems will be in your online textbook (see below). These programming problems reinforce concepts covered in class. To receive full credit for a program, it must be completed by the specified due date and the program must perform correctly. You will be allowed to submit your solution multiple times; the submission with the highest grade will count as your grade.
No late homework will be accepted.

Materials and Resources:

Textbook:
https://learn.zybooks.com ZyBook code: CUNYCMP567Spring2024

Technology:
Access to personal computers with Visual Studio, Eclipse IDE, JDK 8, Java 8 Documentation

Computer Access:
Access to a computer capable of running the necessary software packages will be required. The college has computer laboratories available with the necessary configurations. These machines are for work related to this course only and a code of conduct applies to computer use in the department and on-campus. Misusing university computers could result in losing your computer access for the rest of the term, making it exceedingly difficult to complete this course.

Additional Online Resources:
Oracle Documentation: https://docs.oracle.com/javase/tutorial
Oracle JavaDoc: https://docs.oracle.com/javase/8/docs/api
GitHub Repository https://github.com
Additional Book: http://math.hws.edu/javanotes
Videos: Free Java Videos
Interactive Online Coding Practice:
     CodingBat code practice
     Practice-It!
     CodingGame
     Learn Java Online
     Visualize Java code execution
     Tutorialspoint.com/java

Accommodating Disabilities:
Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may require accommodations are encouraged to register with the Office of Student Disability Services located in Shuster Hall, Room 238. http://www.lehman.edu/student-disability-services

Telephone: 718-960-8441 Email: disability.services@lehman.cuny.edu

Topics:

Class 1:

LESSON: History of the Internet, Basic HTML
a. Internet, Network, World Wide Web
b. HTML Definition and History (What is HTML?)
c. Domains, Domain Name Server
d. URI, URL
e. IP Addresses (IPv4, IPv6)
f. Protocols HTTP, HTTPS
g. Installing text editor (Sublime, VS CODE, Atom, Notepad++)
h. HTML Document Structure and Syntax
   ○ HTML Basic Elements/Tags
      ▫ html
      ▫ head
      ▫ title
      ▫ body
      ▫ h1,h2,h3,h4,h5,h6
      ▫ p

Class 2:

LESSON: HTML Continued
a. header
b. footer
c. main
d. aside
e. Attributes
f. Whitespace
g. Comments

Class 3:

LESSON: HTML Continued
a. Links
b. Lists
   ○ ul
   ○ ol
   ○ dl
c. Tables
   ○ tr
   ○ th
   ○ td
d. Embedded content
   ○ image audio video (relative path on local file system , remote URL)

Class 4:

LESSON: HTML Forms

      a. input (text, tel, email, number, password, date, url, checkbox, file, reset, submit)
      b. label
      c. optgroup option (radio button)
      d. select option (dropdown list)
      e. textarea
      f. button submit
      g. fieldset, legend

Class 5:

LESSON: CSS3
      a. CSS Definition and History (What is CSS? Why use CSS?)
      b. Basic Syntax
          ○ General Selector selector{property:value;}
          ○ Class Selector
          ○ ID Selector
          ○ Dependent & Independent Selectors

Class 6:

LESSON: CSS3 Continued
      a. More Properties
          ○ Pseudo ClassesColor and background properties
          ○ Font and Text properties
          ○ List properties
          ○ Box properties (Border, Margin, Padding)
          ○ Display properties(inline, block, none…)
      b. CSS Application: External, Internal, Inline
      c. Responsive Web Design
      d. Media Queries

Class 7:

LESSON: Introduction to JavaScript
      a. JavaScript Definition and History (What is JavaScript?)
      b. Basic Syntax
      c. Comments and Whitespace
      d. Errors and warnings
      e. console.log("hello logging world"), document.write("hello visible world")
      f. Variables (Declaration, Initialization, Usage)
      g. Arithmetic Expressions
      h. String concatenation
      i. Dynamic Types - Automatic type conversion

Class 8:

LESSON: Introduction to JavaScript Functions

a. Reasons for defining functions
b. Declaring a Function
c. Calling a Function
d. Variable Scope
e. Parameters
f. Returning Values
g. Call Stack

Class 9:

LESSON: JavaScript Functions and the Browser
a. Event Driven Programming - (i.e. Button Click calls Function)
b. BOM and DOM (Browser Object Model and Document Object Model)
c. Using Javascript to manipulate the DOM, CSSOM

Class 10:

LESSON: JavaScript Logical Decision Branches
a. Boolean data type
b. Equality operators on primitive and non-primitive types
c. Relational operators
d. Comparing floating-point types
e. Detecting ranges with if-else statements
f. Logical operators
g. Order of evaluation
h. If-else branches

Class 11:

LESSON: JavaScript Logical Decision Branches Continued
a. Multi-branch if-else statements
b. Nested if-else statements
c. Switch statement

Class 12:

LESSON: JavaScript Logical Decision Branches in Functions
a. Functions containing logic
b. Using Javascript logic to validate user input
c. Using Javascript to manipulate the DOM, CSSOM
d. Event Driven Programming - Form Validation, Timers, Alerts

Class 13:

LESSON: JavaScript Loops
a. While loops
b. For loops
c. Do-while loops

Class 14:

LESSON: JavaScript Loops Continued
   a. Nested Loops
   b. Loops nested within logical decision branches
   c. Logical decision branches nested within loops
   d. Break and continue

Class 15:

LESSON: JavaScript Loops in Functions
   a. Functions containing loops
   b. Using Javascript loops to manipulate the DOM, CSSOM
   c. Build Content Dynamically
   d. Event Driven Programming - Form Validation, Timers, Alerts

Class 16:

LESSON: Introduction to Java
   a. Installation of JDK and IDE
   b. Hello World Program
   c. Input / output basics
   d. Comments and Whitespace
   e. Errors and warnings
   f. Computer and computer programs
      o Machine language
      o Assembly language
      o High-level language (Java, JavaScript, Python, C, C++)
      o Compiler
      o Interpreter
      o JVM
   g. Computer tour (computer components)
      o Input/output Devices
      o Storage
      o Memory
      o CPU(Processor

Class 17:

LESSON: Java Variables and Data Types
   a. Primitive Data Types
   b. Variable identifiers, Declaration, Initialization, assignments
   c. Integer Variables
   d. Arithmetic expressions integers
   e. Floating-point numbers
   f. Arithmetic expressions floating-point numbers
   g. Constants
   h. Integer division and modulo
   i. Math class
   j. Character variable

k. String
l. Type conversions

Class 18:

LESSON: Java Strings and Console I/O
a. String and string methods
b. Formatting strings
c. Input methods
d. Output methods
e. Output formatting
f. Formatting integer values
g. Formatting floating-point values

Class 19:

LESSON: Java Logical Decision Branches
a. Boolean data type
b. Equality operators on primitive and non-primitive types
c. Relational operators
d. Comparing floating-point types
e. Detecting ranges with if-else statements
f. Logical operators
g. Order of evaluation
h. If-else branches
i. Multi-branch if-else statements
j. Nested if-else statements
k. Switch statement
l. Using logic to validate user input via the console

Class 20:

LESSON: Java Loops
a. While loops
b. For loops
c. Do-while loops
d. Nested loops
e. Loops nested within logical decision branches
f. Logical decision branches nested within loops
g. Break and continue
h. Using loops when interacting with the user via the console

Class 21:

LESSON: Java Methods
a. Reasons for defining methods
b. Method signature
c. Void methods

       d. Parameters

       e. Variable scope within methods

Class 22:

    LESSON: Methods Continued

       a. Value methods

       b. Parameters

       c. Method call stack

       d. Method overloading

Class 23:

    LESSON: Methods Containing Logic & Loops

       e. Methods containing Logic

       f. Methods containing Loops

Class 24:

    LESSON: Introduction to Arrays

       a. Declaring and initializing arrays

       b. Accessing and modifying array elements

       c. Swapping values in arrays

       d. Iterating through arrays