

ESE 124: Programming Fundamentals

Fall online 2023

This course covers basic and advanced C programming concepts, with lectures delving into language constructs and practical applications. Additionally, it introduces key electrical and computer engineering concepts like bitwise operations, text file scanning, and stack-based computation. Scheduled lab sessions focus on creating, debugging, and validating C programs related to class material, and a final project requires students to utilize the learned concepts in a comprehensive program

Course Designation: Required Course

Credit Hours: 4

Text book: None

Attendance: Start on Mon Aug 28 - Dec.13

Lectures: MELVILLE LBRW 4525 on Mon./Wed. 5:30 p.m. – 6:50 p.m.

Labs are given Light building Room #281 on Tue 1:00 p.m. – 4:00 p.m.

Labs are given Light building Room #281 on Thurs 10:00 a.m. – 12:50 p.m.

Instructor: Jenny Chen, jenny.chen.4@stonybrook.edu

Office Hours: are offered on Mon/Wed 1:30 p.m. – 3:30 p.m.

Goals: Understand C fundamentals (syntax, data types, functions, pointers, bitwise operations, text file scanning, stack-based computation, table-based finite state machine implementation etc.), write clear programs, solve problems, and prepare for advanced computer science and engineering.

Grading:

Lab Activity 20%; Homework 15%; Midterm – 25%; Final – 25%; Final Project - 15%

Late Submissions: Grades will be deducted of one-quarter grade for each day a submission is overdue. point deduction per day. No make up midterm & Final.

Exams: there are 1 midterm and 1 final exam.

How to succeed in this course?

- All modules will begin on Mon and end before the next nodules. All activities and assignments on this course are required, unless otherwise noted.
- Plan to log in everyday at least 2 hours each day to gain access to materials and participate.
- Deadline on lab activity and HW will be before the next lab.

Module 1	Week 1-Mon Aug. 28	Build Strong Foundation - syntax, overview of compilers, IDEs, variables, data types, operators and expressions. Command line and debug tools.	
	Week 2 -Wed Sep.6	Problem Solving: Tackle Complex Issues – type of operators, char type, ASCII values, sizeof(), hexadecimal numbers, bitwise operators: &, , ^ etc. Control statement.	Lab 1 is due
Module 2	Week 3-Mon Sep.11	Get Creative - Taylor Series, Array and C String.	Lab 2 is due
	Week 4-Mon Sep.18	Built exciting programming in C - One-dimensional arrays. Bubble sort. Reading and writing data to files by the FILE pointer.	Lab 3 is due
Module 3	Week 5-Mon Sep.25	Build your own C function, and file handling. Defining functions, function prototypes, function call and File I/O.	Lab 4 is due
	Week 6-Mon Oct.4	Midterm Exam 1	Lab 5 is due
Module 4	Week 7-Wed Oct.11	Putting it All Together 1: Making a copy of an input text file. Finding and copying identifiers in an input text file. C String functions.	Lab 6 is due
	Week 8-Mon oct.16	Putting it All Together 2: Program using 2D arrays. Arrays and pointers: passing arrays to functions, pointers to arrays, and function pointers.	Lab 7 is due
Module 5	Week 8-Mon Oct.23	Develop Practical Applications 1: FSM implementation using 2D arrays - table-based finite state machine. Building functions such as myStringCopy(), myStringCat(), myFlip()	Lab 8 is due
	Week 10-Mon Oct.30	Develop Practical Applications 2: ADT: Data structure to organizing and storing data for efficient access and modification (queue and stack).	Lab 9 is due
Module 6	Week 11-Mon Dec.4	Data Structure and algorithm. Stack-based computation samples, and discuss final project requirements.	Lab 10 is due
	Week 12-Wed Dec.13	Final Exam	

How to Submit your lab activity & HW?

- All submissions on BS.
- During the lab, submit C file and a to-do Google form.
- Due Date: Complete Lab questions and HWs before the next lab starts.
- Submission Format: Submit in .c files (NOT cpp files!). Compress problems in a .zip file.
- Naming Convention: Use LABXX_E1_P1/HW XX_PartX_QX format.
- When Submitting: Include First Name, Last Name, and Student ID at the top of each program using C comments.

Student Accessibility Support Center Statement

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or via e-mail at: sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Academic Integrity Statement

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Critical Incident Management

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.

Document Prepared by:

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