ESE 124: Programming Fundamentals
Fall 2024: 92042 (Lecture), 92044/92043(Labs)

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 such as 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: Mon Aug 26th - Wed Thurs.17th

Lectures: STALLER CENTER 3220 WEST CAMPUS on **Mon./Wed. 9:30 a.m. – 10:50 a.m.**

Labs 1: Light Engineering Room **#281 on Tue 9:30 a.m. – 12:20 p.m**.

Labs 2: Light Engineering Room **#281 on Thurs 9:30 a.m. – 12:20 p.m.**

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

Office Hours: Mon/Wed 1:30 p.m. – 3:30 p.m.or by appointment.

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%; Pop Quizzes 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. No make up midterm & Final.

Exams: there are 1 midterm and 1 final exam. **No make up exam.**

How to succeed in this course?

- Modules start on Monday and end before the next ones begin. All lab activities and assignments are mandatory unless stated otherwise.

- Study for at least 2 hours daily, use resources on the BS reference tab, and think about answers before checking solutions.

- Complete one lab activity each week with submissions to **GitHub** (link is in the BS Assignment tab) due by **Sunday 11:59 pm. Late submissions lose one-quarter grade per day.**

Week 1-Aug. 26th/Aug 30th	Build Strong Foundation - syntax, overview of compilers, IDEs, variables, data types, operators and expressions. Command line and debug tools.	
Week 2 - Sep. 2nd No class	Labor day	
Week 2 -Sep.4th	Problem Solving: Tackle Complex Issues – type of operators, char type, ASCII values, sizeof(), hexadecimal numbers, bitwise operators: &, |, ^ etc. Control statement.	Lab 1 due
Week 3-Sep.9th /Sep.11th	Get Creative - Taylor Series, Array and C String.	Lab 2 due
Week 4-Sep.16th / Sep.18th	Programming in C: One-dimensional arrays, bubble sort, and file I/O with the FILE pointer.	Lab 3 due
Week 5-Sep.23rd /Sep.25th	Build your own C function, and file handling. Defining functions, function prototypes, function call and File I/O.	Lab 4 due
Week 6-Sep. 30th / Oct.2nd	Review/ Midterm Exam 1 (Oct.2nd)	Lab 5 due
Week 7- Mon. Oct.7th/Oct 9th	Modified C files: Copying text files, finding and copying identifiers, and using C string functions.	Lab 6 due
Week 8 - Mon Oct.14th/Tue Oct 15th No class	Fall Break	
Week 8-Oct.16th	Putting It All Together: 2D arrays, pointer, and function pointers.	Lab 7 due
Week 9-Oct.21st /Oct.23rd	Develop Practical Applications: Implement FSMs using 2D arrays and create functions like myStringCopy(), myStringCat(), and myFlip().	Lab 8 due
Week 10-Oct.28th /Oct 30th	Develop Practical Applications 2: ADT: Data structure to organizing and storing data for efficient access and modification (queue and stack).	Lab 9 due
Week 11-Nov.4th /Nov.6th	Define and use structure.	Lab 10 due
Week 12-Nov.11th /Nov.13th	Data Structure and algorithm. Stack-based computation samples.	Lab 11 due
Week 13-Nov.18th /Nov. 20th	Discuss final project requirements.	Lab 12 due
Week 14 - Nov 27th/28th/29th No class	Thanksgiving Break	
Week 14-Nov.25th	Final Review and Practice 1	
Week 15 - Dec.2nd	Final Review and Practice 2	
Week 16-Wed Dec 17	Final Exam (Dec. 11th)	Project due

Submit your lab activity
● All submissions on **GitHub** through the BS assignment tab.
● During the lab, submit a C file on **GitHub** through the link on BS.
● Due Date: Each week, we have one lab with activity deadlines set for **Sunday at 11:59 PM**

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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