

CSE 2451 (Approved): Advanced C Programming

Course Description

Advanced C features for students with significant programming experience in another language.

Transcript Abbreviation: Advanced C Prgmg

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad

Student Ranks: Sophomore, Junior

Course Offerings: Autumn, Spring

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 14 Week

Credits: 2.0

Repeatable: No

Time Distribution: 2.0 hr Lec

Expected out-of-class hours per week: 4.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: CSE 2221 or CSE 222; co-req: CSE 2231

Exclusions: Not open to students with credit for CSE 2421

Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.0901

Subsidy Level: Baccalaureate Course

Course Goals

To master programming with pointers in C
To be competent with application development and debugging in Unix environments
To be competent in using C string and I/O features, bit operations, and function pointers
To be competent with key data structures like linked lists, (multi-dimensional) arrays, trees, stacks, and queues.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Transitioning to C, Basic C syntax, working in Unix Environments	6.0							
C pointers and memory (de)allocation. Programming dynamic data structures with C (linked lists, arrays, including multi-dimensional arrays accessed through pointers, trees, possibly queues and stacks), pointer casting and null and void pointers.	8.0							
String manipulation and I/O in C	3.0							

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Other misc C features: function pointers, command line argument passing	3.0							
Debugging in Unix with gdb/xgdb, Use of Makefile, Other Unix features	4.0							
Bit operations and representative computer arithmetic algorithms	4.0							

Representative Assignments

Introductory C programming (for students with significant prior programming experience)
Dynamic data structure based programming in C
Use of command line argument passing and function pointers, advanced string/buffer manipulation
Using bit operations in C to simulate hardware computer arithmetic algorithms

Grades

Aspect	Percent
Programming Assignments (4-5 assignments)	45%
Mid-term	20%
Final	35%

Representative Textbooks and Other Course Materials

Title	Author
<i>Pointers with C</i>	Kenneth Reek

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
*	a	An ability to apply knowledge of mathematics, science, and engineering.
**	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.
**	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Prepared by: Gagan Agrawal