9/6/2023 DATE REQUIRED COURSE ELECTIVE COURSE

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## DIVISION NEW COURSE REVISION

## Lake Land College

Course Information Form											
COURSE NUMBER:		MAT-151		TITLE: (30 Characters	Max)	C Pro	gramming	g with Engineerir	ig Applica	itions	
SEM CR HRS:	3	Lecture:		2		Lab	2			ECH:	4
Course Level:		Gen Ed / IAI Baccalaureate /Non-IAI	Career/ Dev Ed/	Technical ' Not in Degree Audit	Clinic	cal Practicum:	0	Work-based Learning	0	WBL ECH:	0
COURSE PCS #		11 11.0202		IAI Code				Conta	ct Hours (M	inutes Per V	Veek)
Repeatable (Y/N):	Ν	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	И	Min:	Max:	16 Wks	200	8 wks	400
Prerequisites:		Co-requisite with MAT 241									
Catalog Description: (40 Word Limit) Introduction to the programming language C. Fundamental principles, concepts, and methods of computing with emphasis on calculus-based problem-solving techniques and applications from engineering and physical science.											
						Contact	1				

List the Major Course Segments (Units)	Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Introduction to Computer Hardware, Operating Systems, Compilers, Input/Output Devices	2	2		
General Operations - Language Features		14		
Problem Solving with Emphasis on Engineering Applications (At least 10 Programs in C)		14		
TOTA	30	30	0	0

		EVALUATION		
	EXAMS 🗹	ORAL PRES		PAPERS
LAB WORK	PROJECTS 🗹	COMP FINAL	1	OTHER

	COURSE MATERIALS	
TITLE:	C: How to Program	
AUTHOR:	Deitel and Deitel	
PUBLISHER:	Prentice Hall	
VOLUME/EDITION/URL:	7th	
COPYRIGHT DATE:	2013	

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:
Introductory Concepts of Computing	4	Demonstrate an understanding of basic computer components and algorithm design.
Basics of Computer Programming	5	Demonstrate a general understanding of a C program and make use of constants, variables, expressions, basic input/output methods, and built- in functions to create and modify C programs.
Structured Programming Methods	1	Demonstrate an understanding of sequences, selection, and iteration.
Selection Statements	3	Use relational and Boolean operators and IF statements in C programs.
Iteration Statements	5	Create and use counting and while loops in C programs.
ASCII Data Files	2	Write C programs that will create, modify, and retrieve data using data files.
Modular Programming	5	Use and write functions with and without return values.
Arrays, Matrices, and Vectors	5	Use arrays in C programs.
Characters and Character Strings	3	Use character strings in C programs.
Pointers and Addressing	4	Demonstrate understanding and application of dynamic memory allocation.

Numerical Methods and Problem Solving Techniques	23	Demonstrate a comprehension and an ability to use linear interpolation, linear regression, pseudo- random numbers, roots of functions, solutions of simultaneous linear equations by Gaussian elimination, and numerical integration in C programs. (This section is dispersed appropriately throughout the semester to illustrate the above techniques.)
Insert New Line Above this Line		
	60	

COURSE OUTCOMES* At the successful completion of this course, students will be able to:		
	•Use constants, variables, expressions, basic input/output methods, and built-in functions to create, modify, and execute C programs.	
	•Implement the selection structure of structured programming using the if, ifelse, and switch statements in C programs.	
	•Implement the iteration structure of structured programming using the while, dowhile, and for statements in C programs.	
	•Modularize a C program by writing their own functions that receive one or more values and may or may not return a value.	
	•Use arrays, both one-dimensional (vectors) and two-dimensional (matrices).	

\* Course Outcomes will be used in the Assessment Software for Outcomes Assessment. Limit to 3 - 5.