

COLLEGE OF ENGINEERING MECHANICAL AND ELECTRICAL DEPARTMENT



COURSE NAME: PROGRAMMING I
COURSE ID:
COLLEGE COURSE ID: 5707
UNIVERSITY COURSE ID.:
CACEI ID: ES
STUDY PLAN LEVEL: IMT:II
CREDITS: 8
NORMAL HOURS PER WEEK: 3
TOTAL HOURS COURSE: 48
LAB HOURS PER WEEK: 2
COMPLEMENTARY PRACTICES:
EXTRA-CLASS WORK HOURS / WEEK: 2
COURSE TYPE: REQUIRED
APPROVED CREDITS NEEDED:
CURRICULAR LAST REVISION DATE: DECEMBER 2012
PREREQUISITE COURSE: NONE

COURSE JUSTIFICATION

THIS COURSE IS AIMED AT DEVELOPING LOGICAL REASONING TO SOLVE PROBLEMS, PROVIDING A FIRM FOUNDATION FOR THE KNOWLEDGE OF PROGRAMMING LANGUAGES ACCORDING TO THE STRUCTURED PROGRAMMING PARADIGM AND INTRODUCING THE C LANGUAGE IN SOLVING PROBLEMS RELATED TO ENGINEERING.

COURSE OBJECTIVE

STUDENTS WILL DEVELOP THE NECESSARY LOGICAL REASONING AND LEARN THE BASIC SYNTAX OF C PROGRAMMING LANGUAGE. WITH THESE SKILLS, STUDENTS WILL BE ABLE TO STRUCTURE AND DEVELOP SOLUTIONS TO BASIC ENGINEERING PROBLEMS WITH THE HELP OF COMPUTERS, USING THE STRUCTURED PROGRAMMING PARADIGM.

COURSE TOPICS

UNIT 1 INTRODUCTION BASIC CONCEPTS		4.2.2 FUNCTIONS RETURNING VALUES	
		4.3 PASSING ARGUMENTS BY VALUE	1.0 HR.
		4.4 PASSING ARGUMENTS BY REFERENCE	3.0
		HRS.	
TOPICS:		UNIT 5 CONTROL STRUCTURES	
1.1 DATA TYPES AND OPERATORS	1.0 HR.	TOPICS:	
1.2 INTRODUCTION TO BOOLEAN LOGIC	1.0	5.1 CONDITIONAL STRUCTURE	6.0
HR.		HRS.	
1.3 ASYMPTOTIC NOTATION (O AND Θ)	2.0	5.2 ITERATION STRUCTURES	6.0 HRS.
HRS.			
UNIT 2 C LANGUAGE INTRODUCTION		UNIT 6 ARRAYS	
TOPICS:		TOPICS:	
2.1 PROGRAM STRUCTURE	1.0 HR.	6.1 INTRODUCTION	1.0
2.2 COMPILING AND LINKING PROCESSES	1.0 HR.	HR.	
		6.2 ARRAYS AS PARAMETERS	1.0
UNIT 3 BASIC CONCEPTS		HR.	
TOPICS:		6.3 ONE-DIMENSIONAL ARRAYS	3.0 HRS.
3.1 DATA TYPES	0.25 HR.	6.4 BIDIMENSIONAL ARRAYS	3.0
3.2 VARIABLES	0.5 HR.	HRS.	
3.3 CONSTANTS	0.25 HR.		
3.4 OPERATORS AND EXPRESSIONS	1.0 HR.	UNIT 7 DATA STRUCTURES	
3.4.1 PRECEDENCE AND ASSOCIATIVITY RULES		TOPICS:	
3.5 CHARACTER STRINGS	1.0 HR.	7.1 DATA STRUCTURES	1.0 HR.
3.6 CONSOLE INPUT/OUTPUT	1.0 HR.	7.2 DATA STRUCTURES AS PARAMETERS	1.0
		HR.	
UNIT 4 FUNCTIONS		7.2.1 STACK	3.0 HRS.
TOPICS:		7.2.2 QUEUE	3.0 HRS.
4.1 DECLARATION	1.0 HR.	7.3 ARRAYS OF DATA STRUCTURES	3.0 HRS.
4.2 DEFINITION AND CALL	2.0 HRS.		
4.2.1 VARIABLE AMBIT			

METHODOLOGY

THE TOPICS ARE PRESENTED WITH TRADITIONAL AND AUDIOVISUAL EXHIBITIONS. THE TEACHER PRESENTS EACH PROBLEM FOR STUDENTS TO POSE A SOLUTION. ONCE THE SOLUTION IS FEASIBLE, THE CORRESPONDING BLOCK DIAGRAM IS PRESENTED. FINALLY, THE CODE CORRESPONDING TO THE POSTED SOLUTION IS DEVELOPED. THE TEACHER POINTS THE TOPICS OUT TO BE DEVELOPED WITH COLLABORATIVE WORK AND/OR PROBLEM-BASED LEARNING TECHNIQUES, AS WELL AS IN LABORATORY. BESIDES, THE TEACHER USES THE VIRTUAL LEARNING ENVIRONMENT (VLE) OF THE ACADEMIC AREA TO POSE ACTIVITIES THAT COMPLEMENT THE CLASSROOM WORK, SUCH AS: HOMEWORKS, LECTURES, PROGRAMS AND A FINAL PROJECT. THE TEACHER POINTS OUT AT LEAST ONE ACTIVITY AS MANDATORY FOR APPLYING EXAM.

THIS COURSE HAS A TWO-HOUR WEEKLY LABORATORY SESSION. IN EACH SESSION, STUDENTS COPE WITH PROBLEMS, WHICH ARE DIFFERENT FROM THE PRESENTED AT THE THEORETICAL CLASS. STUDENTS THEN WRITE THE CORRESPONDING CODE.

EVALUATION CRITERIA

EVALUATION ACCORDING TO THE INSTITUTIONAL RULES MUST INCLUDE THREE DEPARTMENTAL EXAMS. EACH PARTIAL EXAM IS CONDITIONED TO THE DELIVERY OF ACTIVITIES MARKED AS MANDATORY. THE EXAM GRADE IS ESTABLISHED AS FOLLOWS:

EXAM	80%
ACTIVITIES	20%

THE COURSE GRADE IS SUBJECT TO THE LABORATORY ACCREDITATION, WHICH INCLUDES DELIVERY, CORRECT OUTPUT AND REPORT OF EACH PRACTICE. IN PARTICULAR, REPORTS MUST CONTAIN THE FOLLOWING SECTIONS:

- a) STATEMENT OF THE PROBLEM
- b) PROPOSED SOLUTION
- c) COST ANALYSIS
- d) CONCLUSIONS

BIBLIOGRAPHY

TEXT BOOK:

GOTTFRIED BYRON S. "SCHAUM'S OUTLINE OF PROGRAMMING WITH C". MCGRAW-HILL, 1997

COMPLEMENTARY BIBLIOGRAPHY:

CAIRÓ BATTISTUTTI, OSVALDO. "ESTRUCTURAS DE DATOS", 3A. EDICIÓN. MCGRAW-HILL 2006

CORMEN, LEISERSON, RIVEST, STEIN. "INTRODUCTION TO ALGORITHMS". MIT PRESS, 2001

SOFTWARE AND VLE (Virtual Learning Environment)

SOFTWARE TO USE:

NETBEANS INTEGRATED DEVELOPMENT ENVIRONMENT

INTERNET SITES:

[HTTP://NETBEANS.ORG](http://netbeans.org)

MULTIMEDIA MATERIALS TO USE:

[HTTP://AME.UASLP.MX/MOODLE](http://ame.uaslp.mx/moodle)