

COLLEGE OF ENGINEERING MECHANICAL AND ELECTRICAL DEPARTMENT



COURSE NAME: PROGRAMMING II
COURSE ID:
COLLEGE COURSE ID: 5708
UNIVERSITY COURSE ID.:
CACEI ID: ES
STUDY PLAN LEVEL: MT: III
CREDITS: 8
NORMAL HOURS PER WEEK: 4
TOTAL HOURS COURSE: 64
LAB HOURS PER WEEK: 0
COMPLEMENTARY PRACTICES:
EXTRA-CLASS WORK HOURS / WEEK: 4
COURSE TYPE: REQUIRED
APPROVED CREDITS NEEDED:
CURRICULAR LAST REVISION DATE: DECEMBER 2012
PREREQUISITE COURSE: PROGRAMMING I (5707)

COURSE JUSTIFICATION

THIS COURSE IS AIMED AT IMPROVING LOGICAL REASONING, WHICH WAS DEVELOPED IN PROGRAMMING I BY ADDING METHODOLOGIES AND TECHNIQUES TO BETTER MANAGE DATA AND BETTER CODE ORGANIZATION.

COURSE OBJECTIVE

STUDENTS WILL IMPROVE PROGRAMMING SKILLS BY WRITING PROGRAMS THAT SOLVE PROBLEMS IN ENGINEERING. STUDENTS WILL APPLY GENERAL CONCEPTS OF THE OBJECT ORIENTED PROGRAMMING (POO) PARADIGM. STUDENTS WILL ALSO KNOW PREPROCESSOR DIRECTIVES TO USE THEM IN WRITING LIBRARIES.

COURSE TOPICS

OBJECT ORIENTED PROGRAMMING
UNIT 1 CONCEPTS AND ISSUES

TOPICS:

- 1.1 OBJECT
- 1.2 CLASS
- 1.3 METHOD
- 1.4 MESSAGE PASSING
- 1.5 INHERITANCE
- 1.6 ABSTRACTION
- 1.7 ENCAPSULATION
- 1.8 POLYMORPHISM
- 1.9 GARBAGE COLLECTION

UNIT 2 POO WITH C++

TOPICS:

- 2.1 INTRODUCTION
- 2.2 PREPROCESSOR DIRECTIVES
 - 2.2.1 WRITING LIBRARIES
- 2.3 CONCEPTS
 - 2.3.1 WRITING CLASSES
 - 2.3.2 CONSTRUCTORS AND DESTRUCTORS
 - 2.3.3 ACCESSING MEMBERS
 - 2.3.3.1 PROTECTION MODIFIERS (PRIVATE, PUBLIC, PROTECTED)
- 2.4 OVERLOAD
- 2.5 INHERITANCE

2.5.1 BASE DERIVATIVE CLASSES

2.5.2 REDEFINING MEMBERS IN DERIVATIVE CLASSES

2.6 POLYMORPHISM

2.6.1 VIRTUAL METHODS

2.6.2 ABSTRACT CLASSES

2.7 GENERICITY

UNIT 3 USING STANDARD TEMPLATE LIBRARIES (STL)

TOPICS:

- 3.1 ITERATORS
- 3.2 CONTAINERS
 - 3.2.1 LIST
 - 3.2.2 STACK
 - 3.2.3 QUEUE

VISUAL C++ PROGRAMMING

UNIT 4 INTEGRATED DEVELOPMENT ENVIRONMENT

TOPICS:

- 4.1 WIDGETS
- 4.2 EVENTS
- 4.3 EXCEPTIONS
 - 4.2.1 TRY, THROW AND CATCH SENTENCES
 - 4.2.2 EXCEPTION HANDLING
 - 4.2.2.1 FAILURE RECOVERY
- 4.4 PROJECT

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 CLASS AND/OR OBJECT 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.

EVALUATION CRITERIA

EVALUATION ACCORDING TO THE INSTITUTIONAL RULES MUST INCLUDE FOUR 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 FOURTH-EXAM GRADE IS SUBJECT TO THE DELIVERY AND ACCOMPLISHED REQUIREMENTS OF THE FINAL PROJECT, WHICH ARE DEFINED BY THE TEACHER.

BIBLIOGRAPHY

TEXT BOOK:

JAMSA, KRIS. "APRENDA Y PRACTIQUE C++". OXFORD UNIVERSITY PRESS, 1999

SOFTWARE TO USE:

MICROSOFT VISUAL C++ FREE EDITION

COMPLEMENTARY BIBLIOGRAPHY:

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

INTERNET SITES:

[HTTP://CPLUSPLUS.COM](http://cplusplus.com)
[HTTP://MICROSOFT.COM](http://microsoft.com)

SCHILDT, HERBERT. "C: THE COMPLETE REFERENCE". MCGRAW-HILL-OSBORNE 2990

MULTIMEDIA MATERIALS TO USE:

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

SOFTWARE AND VLE (Virtual Learning Environment)