1. Course number and name
   (a)TC1005 Programming and Data Structure

2. Credits and contact hours
   (b)3 - 4 - 12

3. Instructor’s or course coordinator’s name
   (c)Armandina Leal Flores

4. Text book, title, author, and year
   (d)* Luis Joyanes Aguilar, Programación en Java 2: algoritmos, Estructura de Datos y Programación Orientada a Objetos, , McGraw Hill, , , ,
   * William Ford, Data Structures with Java, , Pearson Prentice Hall, , , ,
   * Weiss, Mark Allen, Data structures & problem solving using Java / Mark Allen Weiss, 3a ed., Boston, MA. : Pearson/Addison-Wesley, c2006, Massachusetts, c2006, eng, [0321322134]
   a. other supplemental materials
      (e)

5. Specific course information
   a. brief description of the content of the course (catalog description)
      (f)This basic course focuses on the importance of using data structures as a means for handling information efficiently. Students consolidate their skills in developing object-oriented programs by implementing the different data structures. As a result of the course, students complete a portfolio project on advanced OOP laboratories and assignments.
   b. prerequisites or co-requisites
      (g)TC1002
   c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program
      (h)Required

6. Specific goals for the course
   a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
      (j)By the end of the course, students will be able to: Understand an object-oriented programming language. Apply the concepts of the diverse abstract data types.
   b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.
      (k)1. The student will be able to identify, evaluate, propose and implement business solutions supported with information technologies in organizations and based on the analysis of information about customer's satisfaction, cost, response time and risks

7. Brief list of topics to be covered
   (l)1. Object-oriented programming
   1,1 Arrays
   1,2 Strings
   1,3 Archives
   1,4 Exceptions
   1,5 Recursion
   1,6 Sorting and Searching
   1,7 Heritage and Polymorphism

2. Basic data structures
2,1 Abstract Data type.
2,2 Linked lists.
2.3 Stack.
2,4 Queues.
3. Advance data structures
3,1 Binary trees and AVL.
3,2 Hashing
3,3 Graphs.