Course Syllabi

1. TICS-00050 PROGRAMMING LANGUAGES
2. 192 credits hours.
3. Bibliography
   - Programming in Scala: a comprehensive stepby-step guide., Odersky, Martin, Lex Spoon, and Bill Venners, 2012
   - Advanced guide to Python 3 programming, Hunt, J. , 2019
   - Foundations of programming languages, Lee, K. D., 2017
   - Logic programming with Prolog, Bramer, M. A. , 2005
   - Lenguajes de Programación Principios y Paradigmas, Tucker, A., 2011
4. Specific Course Information
   a. This subject will allow the student to select a programming language according to the problem he needs to solve for which he will know the characteristics of each of the paradigms of the programming languages (LP).
   b. Corequisites:
      - TICS-00035 DATABASES I: DESIGN AND PRINCIPLES
   c. Prerequisites:
      - TICS-00058 PROGRAMMING III (FILE STRUCTURES)
5. Learning Objectives of the Course
   a. Implement applications using the appropriate programming language according to the problem to be solved, through the programming paradigms Object
      -Oriented, Functional and Logic.
      - Provide the student with the theoretical concepts that underpin the programming languages by comparing the different programming paradigms to train the student in the use of Python, PROLOG and SCALA programming languages.
      - Study the characteristics of the p aradigmas of programming languages
      - Understand the syntax and semantics of LPs
      - Compare the types of data, structures and other programming languages such as C, C++ and Java
      - Review the basic concepts of Object
      -oriented Programming using Java
      - Use the Python multiparadigm programming language (imperative, object
      -oriented and functional)
      - Use the logical programming language PROLOG
      - Use the functional and object
      -oriented programming language SCALA, which allows interoperability with Java
   b. Learning Outcomes
      - Compare iterations and subprogrammes in different lps
      - Identify the basic concepts of lexicon, syntax and semantics of lps and use the methods of representation
      - Understands the different paradigms of programming languages and recognizes the genealogy of the most popular languages
      - Compare the types of data, scope, control structures, expressions and allocation of the most popular

languages
- Properly apply the characteristics of a logical language
- Identify the basic concepts of lexicon, syntax and semantics of lps and use the methods of representation
- Properly apply the features of an object-oriented programming language
- Properly apply the characteristics of a functional language
- Understands the different paradigms of programming languages and recognizes the genealogy of the most popular languages

6. Course Topics

- Introduction and general concepts
- Lexic, syntactic and semantic analysis
- Data types, scope, control structures, expressions and allocation
- Iterations and subprogrammes
- Programming guided to objects with python
- Functional programming
- Logical programming