CIIC 4030 - Course Syllabus

1. **General Information:**

   Alpha-numeric codification: CIIC 4030
   Course Title: Programming Languages
   Number of credits: 3
   Contact Period: 3 hours of lecture per week

   Equivalent Course: ICOM 4036

2. **Course Description:**

   English: Comparative study of programming styles, including imperative, object-oriented, functional, logic, and concurrent programming; data encapsulation and inheritance; formal specification of the syntactic structure of a language; context-free grammars and parse trees.

   Spanish: Estudio comparativo de paradigmas de programación que incluye programación imperativa, de objetos, funcional, lógica y concurrente; encapsulación de datos y herencia; especificación formal de la estructura sintáctica de un lenguaje; gramáticas de contexto libre y árboles sintácticos.

3. **Pre/Co-requisites and other requirements:**

   Prerequisites: CIIC 4020 or ICOM 4035

4. **Course Objectives:**

   Students will learn how to classify programming languages based on their underlying structures and judge their efficiency for a given application.

5. **Instructional Strategies:**

   ☒conference ☐discussion ☒computation ☐laboratory

   ☐seminar with formal presentation ☐seminar without formal presentation ☐workshop

   ☐art workshop ☐practice ☐trip ☐thesis ☐special problems ☐tutoring

   ☐research ☐other, please specify:

6. **Minimum or Required Resources Available:**

   Students will use the Departmental computer laboratories to complete course projects.

7. **Course time frame and thematic outline**

Outline	Contact Hours
Introduction	1
DFA and NFA	4
Syntactic structure	5
Imperative programming	6
Object-oriented programming	6
Functional programming	6
Logic programming	6
Concurrent programming	6
Final presentations	3
Exams	2
Total hours: (equivalent to contact period)	45

8. Grading System

☒Quantifiable (letters) ☐ Not Quantifiable

9. Evaluation Strategies

	Quantity	Percent
☒ **Exams**	**2**	**25%**
☒ **Final Exam**	**1**	**25%**
☐ **Short Quizzes**		
☒**Oral Reports**	**3**	**25%**
☐ **Monographies**		
☐ **Portfolio**		
☒ **Projects**	**2-3**	**25%**
☐**Journals**		
☐**Other, specify:**		
TOTAL:		**100%**

10. Bibliography:

1.   Robert W. Sebesta, *Concepts of Programming Languages*, 10th ed., Addison-Wesley, 2012.

2. Kenneth C. Louden, *Programming Languages: Principles and Practice,* 3rd ed., Cengage Learning, 2011.
3. Peter Sestoft, *Programming Language Concepts*, Springer, 2012.

11. Course Outcomes

Upon successful completion of this course the student will be able to:	Program Outcomes
1. select appropriate programming language for specific applications	1
2. design and implement scanners, parsers, programming language translators, and interpreters	2, 6
3. work in a team to design and implement a programming language interpreter	3, 5

12. According to Law 51

Students will identify themselves with the Institution and the instructor of the course for purposes of assessment (exams) accommodations. For more information please call the Student with Disabilities Office which is part of the Dean of Students office (Office #4) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

13. Academic Integrity

-The University of Puerto Rico promotes the highest standards of academic and scientific integrity. Article 6.2 of the UPR Students General Bylaws (Board of Trustees Certification 13, 2009-2010) states that academic dishonesty includes, but is not limited to: fraudulent actions; obtaining grades or academic degrees by false or fraudulent simulations; copying the whole or part of the academic work of another person; plagiarizing totally or partially the work of another person; copying all or part of another person answers to the questions of an oral or written exam by taking or getting someone else to take the exam on his/her behalf; as well as enabling and facilitating another person to perform the aforementioned behavior. Any of these behaviors will be subject to disciplinary action in accordance with the disciplinary procedure laid down in the UPR Students General Bylaws.⸺