CIIC 3011 - Course Syllabus

1. General Information:

Alpha-numeric codification: CIIC 3011
Course Title: Introduction to Computer Programming I
Number of credits: 3
Contact Period: 3 hours of lecture per week

2. Course Description:

English: Introduction to computer science and its impact in society, analysis of algorithmic problems, analyzing problems and artifacts, basic concepts of computer science, abstraction, development of solutions, and their implementation in a high level programming language using object-oriented programming techniques.

Topics: principles and impacts of computing, abstraction and models, data representation, numerical systems, general architecture and organization of a simple uniprocessor, principles of programming languages and the three levels: machine level language, assembly level language, and high level language computer problems-solving solution strategies, data representation: constants, variables, and data types, selection, and iteration control structures, functions, and data passing mechanisms, basic data structures, pointers, and dynamic memory management, data input/output, files, and software development environments.

Spanish: Introducción a la ciencia de computation and su impacto en la sociedad, análisis algorítmico de problemas, abstracción y modelos y su us para el desarrollo de soluciones, creación de artefactos computacionales, lenguaje de programación como una herramienta para la solución de problemas.

Temas: principios de la ciencia de computación y su impacto en la sociedad, abstracción, representation de la información, organización de un procesador introducción a los niveles de programación, sistemas numéricos, representación de la información: constantes, variables, tipos de datos. Estructuras de control e iteración, funciones, métodos para paso de parámetros, estructuras de datos básicas, apuntadores, archivos, y sistemas de desarrollo de software.

3. Pre/Co-requisites and other requirements:

None

4. Course Objectives:

Students will get an overview of the computing discipline by studying introductory, but fundamental, topics that are needed for future courses in the program and by every professional in the discipline. Students will become proficient in the development of computer programs using object-oriented techniques.

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 to Computing and algorithms	5
Software Development Process and environments, mobiles apps and pair programming	4
Abstraction and data types and Representation	4
Operations and Expressions	4
Analyzing problems and algorithms	4
Functions	4
Objects and Classes	4
Files and I/O Streams	3
Arrays and Vectors	2
Classes and ADT	4
Pointers and Dynamic Memory	4
Exams	3
Total hours: (equivalent to contact period)	45

8. Grading System

☐Quantifiable (letters) ☐ Not Quantifiable

9. Evaluation Strategies

Activity	Quantity	Percent
☒ Exams	3	40%
☒ Final Exam	1	25%
☒ Short Quizzes		
☐ Oral Reports		
☐ Monographies		
☐ Portfolio		
☒ Projects	variable	35%
☐ Journals		
☐ Other, specify:		
TOTAL:		100%

10. Bibliography:

1. Tony Gaddis, *Starting out with C++*, 7th ed., Addison Wesley, 2011.
2. Tony Gaddis, Starting out with Python, 2nd ed., Addison Wesley, 2012.
3. John Zelle, *Python Programming: An Introduction to Computer Science*, 2nd ed., Franklin, Beedle & Associates, 2010.
4. Mobile CSP - *An AP Computer Science Principles*
5. Blown to Bits - *Your Life, Liberty, and Happiness After the Digital Explosion*
6. Hal Abelson Ken Ledeen Harry Lewis
7. Diane Zak, *An Introduction to Programming With C++,* 7th ed., Cengage Learning, 2012.

11. Course Outcomes

Upon successful completion of this course students will be able to:	Program Student Outcomes Impacted
1. explain the meaning of the discipline of computer science, basic computer terminology and the impacts of computing in the society	a, e, g
2. design and develop computational artifacts such as mobile apps using algorithms, and appropriate techniques with a practical, technical, or societal intent.	b, c, d, f, g, l
3. apply programming language concepts; such as, variables, data types, flow control structures, memory management principles, memory representation of data, files, and the compiling process	a, b, c

4. use software to solve problems: including basic algorithmic problem-solving techniques (decision structures, loops, functions), strategies for structuring and reusing code to solve problems	a, b, j
5. apply the concept of data structures and use them for more efficient problem solving	a, b, c
6. apply contemporary software development and management tools (design, documentation, implementation and testing solutions) to design and develop software applications.	a, b, i, j, l

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.–