INSO 4117 - Course Syllabus

1. General Information:

Alpha-numeric codification: INSO 4117
Course Title: Software Reliability Testing
Number of credits: 3
Contact Period: 3 hours of lecture per week

2. Course Description:

English: Software testing and validation techniques with the aim of developing the skills required to design reliable and fault-tolerant software systems. Topics include: unit, integrated, performance, stress, usability, and fault tolerance testing. Practice with computerized testing and debugging tools.

Spanish: Técnicas de prueba y validación de software para desarrollar destrezas para el diseño de sistemas de software confiables y tolerantes a fallas. Los temas incluyen: pruebas de unidad, integración, desempeño, esfuerzo, uso y de tolerancia a fallas. Práctica con herramientas computarizadas de prueba y depuración.

3. Pre/Co-requisites and other requirements[1]:

Prerequisites: INSO 4101 OR ICOM 4009

4. Course Objectives:

Students will study and apply, in a term project, the techniques necessary to debug and test the code for a software system to ensure its quality and reliability.

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

[1] Incorporates changes approved on Certification #18-02 of Academic Senate at UPRM.

Outline	Contact Hours
Introduction	1
Software testing philosophy and ethics	3
The software testing process	12
Software testing methods and tools	20
Test management	4
Exams and discussions	5
Total hours: (equivalent to contact period)	45

8. Grading System

☒Quantifiable (letters) ☐ Not Quantifiable

9. Evaluation Strategies

	Quantity	Percent
☒ **Exams**	**2**	**35%**
☒ **Final Exam**	**1**	**25%**
☐ **Short Quizzes**		
☐**Oral Reports**		
☐ **Monographies**		
☐ **Portfolio**		
☒ **Projects**	**1**	**40%**
☐**Journals**		
☐**Other, specify:**		
TOTAL:		**100%**

10. Bibliography:

1. Glenford J. Myers, Corey Sandler, Tom Badgett, and Todd M. Thomas, *The Art of Software Testing*, 3rd ed., John Wiley, 2011.
2. Ron Patton, *Software Testing*, 2nd ed., Sams, 2005.
3. Lasse Koskela, *Effective Unit Testing: A guide for Java Developers*, Manning Publications, 2013.
4. Tomek Kaczanowski, *Practical Unit Testing with JUnit and Mockito*, Amazon Self-Publishing, 2013.
5. Association for Computing Machinery, Software Engineering Code of Ethics and Professional Practice, 1999, http://www.acm.org/about/se-code

6. Yingxu Wang, Software Engineering Foundations: A Software Science Perspective, CRC Press, 2007. [Classic Book] http://dx.doi.org/10.1201/9780203496091. [Available via CRCnetBASE, UPRM General Library Databases]
7. A. Rashid, J. Weckert, and R. Lucas, "Software Engineering Ethics in a Digital World," Computer, vol. 42, no. 6, pp. 34–41, 2009. http://dx.doi.org/10.1109/MC.2009.200 [Available via IEEE Xplore, UPRM General Library Databases]

11. Course Outcomes

Upon completion of this course the student will be able to:	Program Student Outcomes
1. Understand the need for the multiple levels of testing required to maximize the quality and reliability of a software system	1
2. Formulate a practical and effective testing plan for a software system given finite resources	2
3. Design and code automated software tests to address specific unit, system, and user interface requirements	6
4. Use modern automated tools to manage and carry out the multiple levels of test suites involved in a production quality software system	7

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.—