

University of Puerto Rico  
 Mayagüez Campus  
 College of Engineering  
 Department of Electrical and Computer Engineering  
 Bachelor of Science in Computer Engineering

**Course Syllabus**

<b>1. General Information:</b>	
Alpha-numeric codification: ICOM4009 Course Title: Software Engineering Number of credits: 3 Contact Period: 3 hours of lecture per week Elective in ICOM	
<b>2. Course Description:</b>	
English: Techniques used during the software development cycle; specification, design, testing, documentation and maintenance. Use of a procedure oriented language in the design and implementation of a software project.	
Spanish: Técnicas usadas durante el ciclo de desarrollo de software; especificación, diseño, prueba, documentación y mantenimiento. Uso de un lenguaje procedimental en el diseño e implementación de un proyecto de software	
<b>3. Pre/Co-requisites and other requirements:</b>	
Prerequisite ICOM4035	
<b>4. Course Objectives:</b>	
Provide the students with analysis, design, coding, testing and documentation skills and techniques necessary in the software development process. Learn to use the UML language in requirements specification and design.	
<b>5. Instructional Strategies:</b>	
<input checked="" type="checkbox"/> conference <input checked="" type="checkbox"/> discussion <input checked="" type="checkbox"/> computation <input checked="" type="checkbox"/> laboratory  <input type="checkbox"/> seminar with formal presentation <input type="checkbox"/> seminar without formal presentation <input type="checkbox"/> workshop  <input type="checkbox"/> art workshop <input type="checkbox"/> practice <input type="checkbox"/> trip <input type="checkbox"/> thesis <input type="checkbox"/> special problems <input type="checkbox"/> tutoring  <input type="checkbox"/> research <input checked="" type="checkbox"/> other, please specify: Team Project	
<b>6. Minimum or Required Resources Available:</b>	
<b>7. Course time frame and thematic outline</b>	
<b>Outline</b>	<b>Contact Hours</b>
Introduction to the course	1
The Software Lifecycle	3
Estimation: Cost, Effort and Agenda	3
Planning and Tracking	3
Risk Analysis and Management	2
User Interface Design	1
The UML Language	4
Requirements Analysis and Specification	5

Design Principles and Concepts, System Design	6
Testing	4
Exams, Lab Sessions and Discussions	13
<b>Total hours: (equivalent to contact period)</b>	<b>45</b>

### 8. Grading System

Quantifiable (letters)  Not Quantifiable

**9. Evaluation Strategies** (Suggested): The faculty member teaching the course will provide the student with the evaluation strategy he/she will be using throughout the semester. This will be done within the first week of classes.

	Quantity	Percent
<input checked="" type="checkbox"/> Exams	3	30%
<input checked="" type="checkbox"/> Final Exam	1	15%
<input type="checkbox"/> Short Quizzes		
<input type="checkbox"/> Oral Reports		
<input type="checkbox"/> Monographs		
<input type="checkbox"/> Portfolio		
<input checked="" type="checkbox"/> Projects	1	40%
<input type="checkbox"/> Journals		
<input type="checkbox"/> Other, specify: Homework	variable	15 %
<b>TOTAL:</b>		<b>100%</b>

### 10. Bibliography:

Plfeeger, S.L. and Atlee, J.M., "Software Engineering, Theory and Practice", 3rd Ed., Prentice Hall, 2006  
 DeMarco, T. "The Deadline: A Novel About Project Management", DorsetHouse Publishing, 1997  
 Bruegge, B. and Dutoit, A.H., "Object-Oriented Software Engineering", 2nd. Ed. Prentice-Hall, 2001.  
 Fowler, M. and Scott, K., "UML Distilled: Applying the Standard Object Modelling Language", Addison Wesley, 1997  
 Kaner, C., Falk, J. and Nguyen, H.Q., "Testing Computer Software", 2nd Edition, John Wiley & Sons, 1999.  
 Pressman, Roger S., "Software Engineering: A Practitioner's Approach", 4th Ed., McGraw-Hill, 1998.

### 11. 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 (Chemistry Building, room 019) at (787)265-3862 or (787)832-4040 extensions 3250 or 3258.

### 12. Contribution of Course to meeting the requirements of Criterion 5:

Math	Basic Science	General	Engineering Topic
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### 13. Course Outcomes

**Map to  
Program**

	<b>Outcomes</b>
1. Ability to design prototypes to test design concepts	(b)
2. Competency in determining and producing design specifications of computer software	(c)
3. Competency in determining the scope of hardware and software development project	(c)
4. Ability to follow logical and orderly design procedures, choosing the best solution for a given set of criteria and considering design constraints and tradeoffs, in the design of software systems	(c)
5. Ability to articulate teamwork principles (group dynamics)	(d)
6. Be comfortable breaking up a complex problem into separate tasks, delegating tasks to other team members, and integrating the composite effort of the group into a final solution.	(d)
7. Ability to communicate effectively with other team members	(d)
8. Ability to effectively describe a problem in a way that can lead to the construction of the solution	(e)
9. Be capable of defining a possible solution	(e)
10. Ability to determine the reasonableness of a solution within the physical and ethical context of the problem	(e)
11. Identify the applicability of the Software Engineering Code of Ethics	(f)
12. Ability to write effectively and be understood by technical and non- technical audiences	(g)
13. Be aware of emerging technologies and their impact in the future development of their field of study	(j)
14. Ability to use Software development and Computer-Aided Software Engineering (CASE) tools.	(k)

Person (s) who prepared this description and date of preparation: Javier Arroyo.

Submitted by: Manuel Rodríguez march 2007