CIIC 5017 - Course Syllabus

1. **General Information:**

   Alpha-numeric codification: CIIC 5017
   Course Title: Operating Systems and Network Administration and Security
   Number of credits: 3
   Contact Period: 2 hours of lecture and three hours of laboratory per week

   Equivalent Course: ICOM 5017

2. **Course Description:**

   English: Practical experience with the administration and security of operating systems and computer networks. Design and development of methods for the detection and response to attacks on such systems.

   Spanish: Experiencia práctica en la administración y seguridad de sistemas operativos y redes. Diseño y desarrollo de medidas de detección de y respuesta a ataques en estos sistemas.

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

   Prerequisites: CIIC 4070 or ICOM 5026

4. **Course Objectives:**

   Students will learn how to use the software tools developed for the administration of computer operating systems. In addition, students will learn how to develop countermeasures for security attacks.

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 system administration	3
System, user, and file system configuration and backup	6
Installation, event logging and problem investigation	3
Administering network configuration and services	3
User services and maintenance	3
Cryptographic basics and secure socket and other layers	6
Hacking methods, intrusion and virus countermeasures	9
Legal and ethical issues	6
Project presentations	3
Exams and discussions	3
Total hours: (equivalent to contact period)	45

8. Grading System

Quantifiable (letters)   Not Quantifiable

9. Evaluation Strategies

	Quantity	Percent
Exams	**2**	**40%**
Final Exam	**1**	**20%**
Short Quizzes		
Oral Reports		
Monographies		
Portfolio		
Projects	**1**	**20%**
Journals		
Other, specify: Laboratory	**10**	**20%**

	TOTAL:		100%	

10. Bibliography:

1. Evi Nemeth, Garth Snyder, and Trent R. Hein, *UNIX and Linux Administration Handbook*, 4th ed., Prentice Hall, 2010.
2. Jan Bergstra, and Mark Burgess*, Handbook of Network and System Administration*, Elsevier, 2008.
3. Wale Soyinka, *Linux Administration: A Beginner's Guide*, 6th ed., McGraw-Hill, 2012.
4. Association for Computing Machinery, Software Engineering Code of Ethics and Professional Practice, 1999, http://www.acm.org/about/se-code
5. 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]
6. 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 Impacted
1. understand and perform system administration tasks	a, i
2. Understand and analyze the hardware components in computing systems	b, l
3. install and configure operating systems	a, i
4. install and configure software to enable services	i, l
5. analyze vulnerabilities of software systems	a, b, h, l
6. analyze characteristics of hacking attacks	a, b, h, l
7. perform forensic analysis of intrusion attempts using system tools	a, b, h, i, l
8. understand ethical, legal, and social issues related to security attacks, and system administration policies	e, l
9. define, implement, and evaluate a computing system with system administration and security aspects	c, f, i, j, k

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.–