Republic of the Philippines
University of Southeastern Philippines
Obrero, Davao City

COURSE SYLLABUS IN IT 311 – ADVANCED COMPUTER NETWORKS

VISION

By becoming a premier university in the ASEAN Region, the USEP shall be a center of excellence and development, responsive and adaptive to fast-changing environments. USEP shall be known as the leading university in the country that fosters innovation and applies knowledge to create value towards social, economic, and technological developments.

MISSION

USeP shall produce world-class graduates and relevant research and extension through quality education and sustainable resource management.

Particularly, USEP is committed to:

- Provide quality education for students to grow in knowledge, promote their well-rounded development, and make them globally competitive in the world of work;
- Engage in high impact research, not only for knowledge's sake, but also for its practical benefits to society; and,
- Promote entrepreneurship and industry collaboration.

GOALS

To achieve its mission, the University aims to:

- produce globally competitive and morally upright graduates.
- develop a strong RDE culture with competent human resource and responsive and relevant researches that are adapted and utilized for development.
- produce an effective and efficient generation, allocation, and utilization of resources within the academe.

INSTITUTIONAL GRADUATE ATTRIBUTES

Leadership Skills

Creates and inspires positive changes in the organization; exercises responsibility with integrity and accountability in the practice of one's profession or vocation.

Critical and Analytical Thinking Skills

Demonstrates creativity, innovativeness, and intellectual curiosity in optimizing available resources to develop new knowledge, methods, processes, systems, and value-added technologies.

Service Oriented

Demonstrates concern for others, practices professional ethics, honesty, and exemplifies socio-cultural, environmental concern, and sustainability.

Lifelong Learning

Demonstrates enthusiasm and passion for continuous personal and professional development.

Professional Competence

Demonstrates proficiency and flexibility in the area of specialization and in conveying information in accordance with global standards.

PROGRAM INFORMATION

Graduate Outcomes	Performance Indicators
Identify, analyze, and formulate solutions to a variety of problem domains using concepts, principles and practices in information technology with proficiency and flexibility	1. Develop requirements analysis and translate to specifications 2. Document software/hardware specifications following computing industry standards
Assess and implement IT solution in relation to its design, development and use by optimizing current tools and processes	Implement computing solutions based on design specifications
Design and evaluate solutions for IT problems that meet specified user needs with appropriate consideration for cultural, societal and environmental concerns	Assess and evaluate designs and implementation systems, components or processes for its feasibility, effectiveness, achievement of quality requirements and standards
Create, select, adapt and utilize appropriate techniques, resources and modern computing tools to solve IT problems with an understanding of the limitations to accomplish a common goal	Discover new tools and solutions as necessary to improve the efficiency and effectiveness of performing tasks and in achieving goals

I. COURSE INFORMATION

Course Code:	IT 311
Course Title:	Advanced Computer Networks
Pre-requisite(s):	IT 220 – Fundamentals of Computer Networks
Credit:	3.0
Level:	Undergraduate
Semester/Year:	First Semester, AY 2017-2018
Version number:	1.0-08072017

Course Description:

The development of networks has expanded the areas of computer applications and networks have become the foundation of today's information society. The spread of computer network technologies, however, have been exposed to various threats. IT 311 - Advanced Computer Networks provides an overview of different society tools and its implementation strategies to ensure efficient and effective protection of a network. This course covers network management tools to collect performance data. It also covers troubleshooting exercises and activities that include methods, procedures and tools pertaining to the operation, administration and maintenance of networked systems.

Workload of Students:

Students are expected to do course-related works such as reading recommended references, studying for quizzes and examinations, perform laboratory activities, completing the 'Learning Evidences' required in this course, and other related tasks.

Faculty Information:

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II. COURSE OUTCOMES (CO):

On the completion of the course, student is expected to be able to do the following:

	Course Outcomes	Performance Indicator(s) Aligned to
CO1	Analyze a local area network requirements based on specifications and standards.	PGO2.2. Develop requirements analysis and translate to specifications PGO2.5. Document software/hardware specifications following computing industry standards
CO2	Design a local area network based on specifications and standards using a simulation tool.	PGO3.2. Implement computing solutions based on design specifications
CO3	Asses a local area network design on its overall performance based on specifications and standards.	PGO4.2. Assess and evaluate designs and implementation systems, components or processes for its feasibility, effectiveness, achievement of quality requirements and standards
CO4	Select the best network management tool and network operating system for a local area network based on a given design specification.	PGO5.3. Discover new tools and solutions as necessary to improve the efficiency and effectiveness of performing tasks and in achieving goals

III. LEARNING EVIDENCES:

As evidence of attaining the above learning outcomes, the student has to do and submit the following:

	Learning Evidence	Description and other Details	Course Outcomes it represents
LE1	Laboratory Activities	Configuration and deployment strategies of network devices, management tools and security plan design to optimize network security as it relates to the network components for a given environment.	CO1, CO2, CO3, CO4
LE2	Project (Video Tutorial)	A project involving installation and configuration of selected Network Operating System (NOS) to provide services to clients over the network and Network Management Tools for monitoring, assessment, and fine-tuning.	CO2, CO3, CO4

IV. MEASUREMENT SYSTEM:

Learning Evidence/Output to Assess: LE2: Major Project

Area to Assess	Exceptional (25)	Expected (20)	Satisfactory (15)	Unacceptable (10)
Content	Covers topic in-depth with details and examples. Subject knowledge is excellent.	Includes essential knowledge about the topic. Subject knowledge appears to be good.	Includes essential information about the topic but there are 1 – 2 factual errors.	There are unacceptable number of factual errors.
Storyline	Deals with the topic in a unique and creative fashion.	Deals with the topic in interesting and creative fashion.	Deals with the topic in and ordinary and functional fashion.	Topic is insufficiently developed.
Organization	Exceptional opening catches the reader's interest and presents information in logical, interesting sequence which audience can follow.	Effective opening catches the viewer's interest and presents information in logical sequence which audience can follow.	Acceptable opening attempts to catch the viewer's interest but audience has difficulty following presentation because presenter jumps around.	Ineffective opening doesn't catch the viewer's interest and audience cannot understand presentation because there is no sequence of information.
Knowledge Application	The concept demonstrates full understanding on the lesson learned in the course and with advanced theories and concepts applied.	The concept demonstrates understanding of the lessons learned in the course as applied.	The concept demonstrates, to an extent, understanding of the lessons learned in the course but lacks some important concepts.	The concept does not demonstrate an understanding of the lessons learned in the course.

OTHER REQUIREMENTS AND ASSESSMENTS (AA)

Aside from the final output, the student will be assessed at other times during the term by the following:

	Assessment Activity	Description and other Details	Course Outcomes it represents
AA1	Quizzes	Description and illustration of different network management and security tools and its implementation strategies deployed in different context of networking.	CO1, CO3

V. GRADING SYSTEM:

The final grade in this course will be composed of the following items and their weights in the final grade computation:

Assessment Item	Grade Source (Score or Rubric Grade)	Percentage of Final Grade
AA1	Quizzes Scores	20 %
LE1	Laboratory Activities Scores	40 %
LE2	Rubric for Project (Video Tutorial)	40 %

Passing Grade: 75 %
Passing Grade conditions: Completed LE1 and LE2

VI. LEARNING PLAN:

In order to achieve the outcomes of this course, learners will go through this learning plan

Intended Learning Outcomes (ILO)	Course Outcome	Weeks	Topics	Teaching-Learning Activities (TLA)	Assessment Activities	Required Reading	Learning Output
ILO1. Explain the importance of the course in relation to Information Technology.	-	1	**1. Course Orientation** 1.1. Course Syllabus	-	-	1	-
ILO1. Recall data communication concepts and theories. **ILO2.** Recall the networking models TCP/IP and OSI.	CO1	2	**2. Communication and Networking Models** 2.1. Data Communication concepts and theories 2.2. The TCP/IP Model 2.3. The OSI Model	Interactive Learning Video Presentation	Evaluation Test Laboratory Activity Quizzes	2, 3, 4, 5, 6	LE1
ILO1. Discuss a file server's job in a computer network. **ILO2.** Discuss the basic functions a file server performs. **ILO3.** Illustrate the basic operation of a printer server. **ILO4.** Apply different ways for servers to act as application servers. **ILO5.** Evaluate when applications should run a server. **ILO6.** Explain what is included in RASs, the basic concepts of a Virtual Private Network (VPN), and the basic functions of a web server. **ILO7.** Discuss several hardware and software platforms used for web services. **ILO8.** Distinguish the relationship between applications, operating systems and networks. **ILO9.** Compare distinctions between desktop operating systems and network operating systems.	CO1 CO2	3 - 5	**3. Servers** 3.1. File Servers 3.2. Print Servers 3.3. Application Servers 3.4. Communication Servers 3.5. Web Server Applications 3.6. Operating Systems and Networks	Interactive Learning Video Presentation Simulations	Laboratory Activity Quizzes	4, 5, 7	LE1
ILO1. Explain the role of Network Management. **ILO2.** Recognize the requirements of tools to manage small and medium sized networks. **ILO3.** Plan basic network management on a	CO3 CO4	6 - 8	**4. Network Management** 4.1. Network Management functions 4.2. Network Management tools	Interactive Learning Video Presentation Simulations	Laboratory Activity Quizzes	7, 8	LE1 LE2

Intended Learning Outcomes (ILO)	Course Outcome	Weeks	Topics	Teaching-Learning Activities (TLA)	Assessment Activities	Required Reading	Learning Output
network and use basic tools to manage the network.							
ILO1. Explain how to protect data confidentiality during transport over a network through key algorithms. **ILO2.** Explain how SSL protects confidentiality of a TCP connection. **ILO3.** Explain how a remote access and a point-to-point VPN work. **ILO4.** Explain how firewalls mitigate some network attack scenarios. **ILO5.** Explain the significance of passwords in networks. **ILO6.** Describe how intrusion detection system (IDS) works and the importance of prevention system (IPS) to defend against it.	CO1 CO2 CO4	9 - 12	**5. Network Security** 5.1. Fundamentals of Cryptography 5.2. Applications of Cryptography to networks 5.3. Network attack scenarios 5.4. Firewalls 5.5. Intrusion detection	Interactive Learning Video Presentation Simulations	Laboratory Activity Quizzes	4, 5, 7	LE1
ILO1. Recognize how NetWare relates to the OSI model. **ILO2.** List common protocol used by Novell NetWare. **ILO3.** Summarize basic NetWare services. **ILO4.** Explain basic NetWare print services. **ILO5.** Define the basic concepts of a Novell gateway. **ILO6.** Discuss additional services provided by the NetWare NOS. **ILO7.** Explain the concept of redirector. **ILO8.** Illustrate how replies and requests are sent between client and server. **ILO9.** Define the function of NetWare communication. **ILO10.** Analyze the relationship between Media Access Control (MAC), Network, and Transport Layer protocols. **ILO11.** Identify key features of the Windows NT operating system. **ILO12.** List the network support features of Windows NT. **ILO13.** List key file services offered by Windows NT.	CO2 CO3 CO4	13 - 16	**6. Network Operating Systems** 6.1. NetWare 6.2. Additional Netware 6.3. Netware protocols 6.4. Netware Clients 6.5. Windows NT 6.6. Windows NT capabilities 6.7. Windows NT services 6.8. Windows NT clients 6.9. Windows NT protocols 6.10. Windows NT tools 6.11. Windows NT and NetWare Interoperability 6.12. Window s NT traces	Interactive Learning Video Presentation Simulations	Laboratory Activity Quizzes	4, 5, 7, 8	LE1 LE2

Intended Learning Outcomes (ILO)	Course Outcome	Weeks	Topics	Teaching-Learning Activities (TLA)	Assessment Activities	Required Reading	Learning Output
ILO14. Discuss the basic concepts of disk mirroring and striping. **ILO15.** Explain how redirection works with Windows NT. **ILO16.** Demonstrate the basic steps for storing a file across a network. **ILO17.** Recognize the purpose of TDI and NDIS.							
LE2 SUBMISSION (week 18)							

VII. REFERENCES/ARTICLES TO READ:

1. Course Syllabus
2. Introduction to Networking. WestNet Learning Technologies
3. Introduction to Local Area Networks. WestNet Learning Technologies
4. Computer Networks (Third Edition). Andrew S. Tenenbaum
5. Data Communications, Computer Networks and Open Systems (Fourth Edition). Fred Halsall
6. Understanding Data Communications (Fourth Edition). Gilbert Held
7. Advanced Electronic Communication Systems (Third Edition). Wayne Tomasi
8. Network Management - Know It All. Morgan Kaufmann Publisher

VIII. CLASSROOM POLICIES:

1. **On Academic Honesty**. It is expected that students will use genuine, sincere, and fair means for the accomplishment of the tests, tasks, or projects from which evaluations of progress shall be determined. Students found plagiarizing; copying or cheating in any way will receive a failing grade in the assessment of the task. Three (3) repeated offenses will result in a failing grade.
2. **On Attendance**. If a student has an excused absence from class, he or she is responsible for the task that he/she missed. It is up to the student to inquire about missed work and tests. Failing grade will be given on the missed task if a student fails to make up work within an acceptable period (within 1 week, but may vary depending on the reason for the absence). Make up privileges for unexcused absences will be at the instructor's **discretion.** Absences may be considered excused if a formal writing, explaining the reason for such absence, signed by the student's parent or guardian is presented to and approved by the instructor.
3. **On Classroom Behavior**. Raise your hand before speaking and do not interrupt your instructor or classmate during lecture or discussion. Respect the rights, opinions, and property of others. Work without disturbing anyone. Avoid side conversations with seatmates during class. Always ask permission if you need to go to the restroom.

4. **On the use of Electronic Gadgets**. Put cell phones or other electronic gadgets on silent mode or turn them off. If you need to take a call, for some urgent or emergency reason, then ask permission from your instructor and answer the call outside the classroom.
5. **On Computer Laboratory use**:
    a. Do not install any software unless instructed by the instructor.
    b. Do not change the desktop or default configurations of the computer unless directed by the instructor.
    c. Any misuse of the equipment will not be tolerated.
    d. No surfing in other web sites other than the USeP Virtual Learning Environment (VLE) unless directed by the instructor.
    e. No using of email unless directed by the instructor.
    f. No chatting or instant messaging.
    g. No playing games.
6. All lectures will be made accessible via the VLE. Learning outputs and other requirements will likewise be submitted via the VLE unless specified otherwise.
7. Exams and Quizzes are scheduled and announced and will either be written or online.
8. **On General Concerns**. Consult and talk to your teacher about any class issue. Most problems can be solved or avoided completely by simple communication. Be smart and ask for the help you need.

Prepared by:	Reviewed by:	Recommending Approval:		Approved:
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Form No:	: FM-USeP-PRS-01
Issue Status	: 01
Revision No.	: 00
Date Effective	:07 August 2017
Approved by	: President