



## **COURSE SYLLABUS** in

**PC 4113**

(Course Code)

### **SYSTEM ADMINISTRATION AND MAINTENANCE**

(Descriptive Title)

**1<sup>ST</sup>**

Semester, A.Y.

**2023 – 2024**

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<b>Department/Area</b>	: DEPARTMENT OF TECHNOLOGY
<b>Curriculum</b>	: BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
<b>Curricular Year</b>	: 4 <sup>TH</sup> YEAR
<b>No. of Hours/Sem</b>	: 90 HOURS
<b>Credit Unit(s)</b>	: 3 UNITS
<b>Prerequisites</b>	: PC 3211/ PC 3211L
<b>University Vision</b>	: CTU as a premier, inclusive, globally-recognized research and innovation, smart, community-responsive, and sustainable technological university
<b>University Mission</b>	: The University is primarily providing leading-edge degree programs, innovative professional, entrepreneurial, and technical instruction as well as research, extension and resource generation programs that address both the needs of the region and the nation in the context of the global knowledge economy, Fifth Industrial Revolution, and sustainability.
<b>University Goals</b>	: By the end of 2024, CTU will be globally recognized for its quality. Specifically, it will <ul style="list-style-type: none"><li>• Obtain a Philippine university system status with a CHED SUC Level V recognition or equivalent;</li><li>• Be ranked among Top 10 Universities in the Philippines;</li><li>• Achieve world-class performance and excellence using leading quality management systems for quality assurance and control;</li><li>• Be an internationally recognized and ranked university (including Quacquarelli Symonds, Times Higher Education, Shanghai University Ranking, World University Rankings);</li><li>• Develop innovative academic initiatives, including medical and allied fields engineering and technology, and transnational higher education programs for enhance career pathways, qualifications, recognitions, accreditations, specialization and progression programs, and global mobility; and</li><li>• Lead innovations in the Fifth Industrial Revolution.</li></ul>

<b>University Outcomes</b>	: <ol style="list-style-type: none"> <li>1. Transformed visionary leadership in innovation to accelerate regional and national development in the context of the modern industrial revolution;</li> <li>2. Increased access by economically challenged but deserving student to relevant, quality, and world-class tertiary education with learning integration of practical experiences to achieve inclusive and sustainable growth;</li> <li>3. Developed research-intensive and multi-disciplinary university culture that strengthens higher education research, leading to economic productivity and innovation;</li> <li>4. Instituted innovative systems resulting in effective, efficient, sustainable and equitable resource general, mobilization, and management, including optimal utilization of resources provided by the government and expansion of the other revenue and funding streams for financial sustainability;</li> <li>5. Heightened sustainable community and stakeholder engagements, with harmonized institutional, financial, administrative, and policy frameworks that attain the highest academic, research, extension and resource generation excellence standards;</li> <li>6. Forged strategic local and international linkages, partnerships, and initiatives leading to heightened regional and global role in the modern industrial revolution and human and intellectual capital for sustained economic development.</li> </ol>
<b>Quality Policy</b>	: CTU in compliance with statutory and regulatory requirements is committed to provide quality instruction, research, extension and production toward customer satisfaction.
<b>Core Values</b>	: Commitment, Transparency, Unity, Patriotism, Integrity, Excellence, Spirituality (CTU PIES)
<b>Graduate Attributes</b>	: Highly skilled individual, ethically-imbued professional, service-oriented, and effective communicator
<b>Program Educational Objectives</b>	: <p><b>PEO1:</b> Exhibit key competencies in generating effective solutions and alternatives in addressing computing problems.</p> <p><b>PEO2:</b> Transmit concepts in dealing with users of the IT applications in both oral and written modes of communication.</p> <p><b>PEO3:</b> Demonstrate leadership and foresight in order to affect positive change in a variety of settings.</p> <p><b>PEO4:</b> Leverage emerging technology opportunities to address social, technological, and business concerns in computing disciplines.</p> <p><b>PEO5:</b> Instill high professionalism and ethical behavior in multi-disciplinary IT firms and diversified professional contexts in developing technologies.</p>
<b>Program Outcomes</b>	: <p><b>Common to all programs in all types of schools</b></p> <ol style="list-style-type: none"> <li>1. Articulate and discuss the latest developments in the specific field of practice (Philippine Qualifications Framework PQF-level 6 descriptor) (IT13).</li> <li>2. Effectively communicate orally and in writing using both English and Filipino (IT10).</li> <li>3. Work effectively and independently in multi-disciplinary and multi-cultural teams (PQF level 6) (IT08).</li> <li>4. Act in recognition of professional, social, and ethical responsibility (IT12).</li> <li>5. Preserve and promote "Filipino historical and cultural heritage" (based on RA 7722).</li> </ol>

**Common to the discipline**

1. Analyze complex problems, and identify and define the computing requirements needed to design an appropriate solution. (IT03).
2. Apply computing and other knowledge domains to address real-world problems. (IT01).
3. Design and develop computing solutions using a system-level perspective (IT05).
4. Utilize modern computing tools (IT07).

**Specific to Information Technology**

- IT01** Apply knowledge of computing, science and mathematics appropriate to the discipline.
- IT02** Understand best practices and standards and their applications.
- IT03** Analyze complex problems and identify and define the computing requirements appropriate to its solution.
- IT06** Integrate IT-based solutions into the user environment effectively.
- IT07** Apply knowledge through the use of current techniques, skills, tools and practices necessary for the IT profession.
- IT09** Assist in the creation of an effective IT project plan.
- IT10** Communicate effectively with the computing community and with society at large about complex computing activities through logical writing, presentations and clear instructions.
- IT12** Understand professional, ethical, legal, security and social issues and responsibilities in the utilization of information technology.
- IT13** Recognize the need for and engage in planning self-learning and improving performance as a foundation for continuing professional development.

**Course Description** : This course focuses on administration of operating systems in a client-server technology (Windows and Linux on virtual machine), installation and maintenance. It prepares students to installation of Windows Server; NTFS file system and folder permissions, Domain Name System, Active Directory, local and domain Group Policy, Windows Terminal Services, Internet Security and Acceleration Server, Internet Information Services, communications and networking. An introduction to Linux, installing Ubuntu, advanced usage and managing Ubuntu, terminal, working with Windows, system administration, configuration of server: WWW, DHCP, DNS, Samba, NFS, emails and printers.

**Course Learning Outcomes** :

- CLO 1:** Justify how resources will be allocated for the various administrative domains. (PO1, PO8)
- CLO 2:** Formulate policies governing the use of IT Systems within the organization. (PO4, PO7)
- CLO 3:** Recommend measures on how to administer and maintain systems effectively. (PO1, PO3, PO6, PO9, P10)
- CLO 4:** Modify configuration of an operating system to implement policy. (PO1, PO7, PO8)

# Course Content:

INTENDED LEARNING OUTCOME (WITH TIME ALLOCATION)	ASSESSMENT TASK(S)	TEACHING LEARNING ACTIVITY	CONTENTS	LEARNING RESOURCES	REMARKS
<p>Maintaining the Operating System of desktop computers / workstation. (CLO 3, CLO4)</p> <p>Proper purchasing, installing, updating, and maintaining the servers. (CLO1, CLO 2, CLO 3, CLO 4)</p>	<ul style="list-style-type: none"> <li>Assignment</li> <li>Quizzes</li> <li>Oral Recitation</li> <li>Group</li> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Interactive lecture-discussion on the fundamental elements in system administration and maintenance</li> </ul>	<p><b>Foundation Elements</b></p> <ul style="list-style-type: none"> <li>Workstation</li> <li>Servers</li> <li>Services</li> <li>Data Centers</li> <li>Networks</li> <li>Namespaces</li> <li>Documentation</li> <li>Disaster Recovery and Data Integrity</li> <li>Security Policy</li> <li>Ethics</li> <li>Helpdesks</li> <li>Customer Care</li> </ul>	<ul style="list-style-type: none"> <li>PowerPoint Presentation</li> <li>PDF File</li> <li>Video Recordings</li> <li>Desktop Computer</li> <li>Desktop Server</li> </ul>	
<p>Understanding in debugging process involving customers and fixing the root cause of the problem. (CLO 1, CLO 3, CLO 4)</p> <p>Upgrading servers and its conversions. (CLO 4)</p> <p>Proper planning in maintenance windows for its successful execution. (CLO 2, CLO 3)</p> <p>Executing and applying complicated topics about centralization and decentralization. (CLO 3, CLO 4)</p>	<ul style="list-style-type: none"> <li>Assignment</li> <li>Quizzes</li> <li>Oral Recitation</li> <li>Group</li> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Interactive lecture-discussion on the change process in system administration and maintenance</li> </ul>	<p><b>Change Process</b></p> <ul style="list-style-type: none"> <li>Debugging</li> <li>Fixing Things Once</li> <li>Change Management</li> <li>Server Upgrades</li> <li>Service Conversions</li> <li>Maintenance Windows</li> <li>Centralization and Decentralization</li> </ul>	<ul style="list-style-type: none"> <li>PowerPoint Presentation</li> <li>PDF File</li> <li>Video Recordings</li> <li>Desktop Computer</li> <li>Desktop Server</li> </ul>	
<b>MID TERM EXAMINATION</b>					
<p>Discussing and applying the historical data gathering and real-time monitoring and altering. (CLO 1, CLO3, CLO4)</p>	<ul style="list-style-type: none"> <li>Assignment</li> <li>Quizzes</li> <li>Oral Recitation</li> <li>Group</li> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Interactive lecture-discussion on the providing services in system</li> </ul>	<p>Proving Services</p> <ul style="list-style-type: none"> <li>Service Monitoring</li> <li>Email Service</li> <li>Print Service</li> <li>Data Storage</li> </ul>	<ul style="list-style-type: none"> <li>PowerPoint Presentation</li> <li>PDF File</li> <li>Video Recordings</li> </ul>	

INTENDED LEARNING OUTCOME (WITH TIME ALLOCATION)	ASSESSMENT TASK(S)	TEACHING LEARNING ACTIVITY	CONTENTS	LEARNING RESOURCES	REMARKS
<p>Understanding the concepts involving email and print services and data storage. (CLO1, CLO 3)</p> <p>Understanding the requirements before attempting to build a remote access and software depot. (CLO 1, CLO 3)</p>		administration and maintenance	<ul style="list-style-type: none"> <li>• Backup and restore</li> <li>• Remote Access Service</li> <li>• Software Depot Service</li> <li>• Web Services</li> </ul>	<ul style="list-style-type: none"> <li>• Desktop Computer</li> <li>• Desktop Server</li> </ul>	
<p>Defining the roles of System Administrators' Team and their functions in the organization. (CLO 2)</p> <p>Discussing the system-advocate philosophy of the system administration. (CLO 2)</p> <p>Following the guidelines for technical and nontechnical managers. (CLO 2, CLO 4)</p> <p>Understanding the proper process of hiring and firing a system administrator. (CLO 2, CLO 3)</p>	<ul style="list-style-type: none"> <li>• Assignment</li> <li>• Quizzes</li> <li>• Oral Recitation</li> <li>• Group</li> <li>• Reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Interactive lecture-discussion on the management practices in system administration and maintenance</li> </ul>	<p><b>Management Practices</b></p> <ul style="list-style-type: none"> <li>• Organizational Structures</li> <li>• Perception and Visibility</li> <li>• Being Happy</li> <li>• A Guide for Technical and Nontechnical Managers</li> <li>• Hiring and Firing System Administrators</li> </ul>	<ul style="list-style-type: none"> <li>• PowerPoint Presentation PDF File</li> <li>• Video Recordings</li> <li>• Desktop Computer</li> <li>• Desktop Server</li> </ul>	
<b>FINAL EXAMINATION</b>					

**Course Requirements:** Students are expected to maintain and promote the highest standards of personal honesty and professional integrity. Each student has to attend regular class sessions within the semester and shall comply with the requirements of the course before the end of the semester. For this course, the following is/are the requirement/s:

- 1. Major Examinations
- 2. Quizzes
- 3. Assignments
- 4. Project
- 5. Quizzes

**Evaluation Procedures:**

**Lecture:**

Term Examination	.....	40%
Daily Quizzes	.....	30%
Graded Oral Participation	.....	20%
Project	.....	<u>10%</u>
Total	.....	100%

**Laboratory:**

Term Examination	.....	20%
Daily Quizzes	.....	20%
Grade Oral Participation	.....	10%
Practical Examination	.....	30%
Project/Assignment	.....	20%
Total	.....	100%

**Suggested Readings/References:**

Microsoft Windows Server Administration Essentials, 2011, Tom Carpenter  
The Practice of System and Network Administration Second Edition, 2007, Thomas A. Limoncelli, Christina J. Hogan, Strata R. Chalup

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November 28, 2023

Upon Recommendation of the Curriculum Committee:

  
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Utilized by:  
  
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