NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ENE 108 – INTRODUCTION TO DATA CENTER OPERATIONS (3 CR.)

Course Description

Provides the foundational aspects of data center fundamentals, data center compliance, operations, and physical infrastructure. Introduces mission critical operations as they apply to data centers. Teaches students the physical components of a data center, its interoperability, and the usage of data center equipment in a simulated data center environment. Lecture 2 hours. Laboratory 2 hours. Total 4 hours per week.

General Course Purpose

This course provides fundamental knowledge of data centers, how they are designed, and how they operate.

Course Prerequisites/Corequisites

None.

Course Objectives

- Describe "mission-critical mindset" (MCM) and give examples of relative MCM behaviors.
- Name the major electrical and mechanical components found in a data center, their purpose, classification, and how they are inter-connected.
- Describe the various fire suppression systems found in data centers, including `very early smoke detection apparatus? (VESDA), ion and photodetectors, and double interlock preaction systems.
- Identify general safety best practices in a data center along with donning personal protective equipment (PPE) and interpreting arc flash labels.
- Discuss energy concepts relatable to data center efficiency.
- Calculate the required airflow in a data center based on load.
- Define and calculate power usage effectiveness (PUE) of a data center.
- Describe and diagram the uninterruptible power supply (UPS) double-conversion theory.
- Define various acronyms used in data centers and use them properly.
- Identify proper security measures and protocols used in data centers.
- Interpret documentation types, including Basis of Design, Sequence of Operations, Commissioning documents, and mechanical, electrical, and plumbing (MEP) drawings.
- Describe standard maintenance practices on data center equipment.
- Navigate through several drill scenarios as a first responder.
- Identify the basics of working at the physical telecom layer
- Develop technical writing skills and an understanding of protocols such as manual of procedures (MOP) and standard operating procedures (SOP).

Major Topics to be Included

a) Introduction to applicable data center theories, terminology, and standards
b) Occupational, physical, and general safety and security
c) The physical data center environment
d) Technical and procedural documentation
e) American society of heating refrigerating and air conditioning engineers ASHRAE Technical Committee 9.9 standards and publications
f) Uptime Institute tier standards