A. **TITLE:** Data Communications and Network Technology Lab

B. **COURSE NUMBER:** CITA 221

C. **CREDIT HOURS:** 1

D. **WRITING INTENSIVE COURSE:** No

E. **COURSE LENGTH:** 15 weeks

F. **SEMESTER(S) OFFERED:** Fall/Spring

G. **HOURS OF LECTURE, LABORATORY, RECITATION, TUTORIAL, ACTIVITY:**
   2 lab hours per week

H. **CATALOG DESCRIPTION:** This laboratory course is to accompany the lectures of CITA 220 Data Communications and Network Technology course. Students obtain hands-on experience on data communications and network technology throughout this course.

I. **PRE-REQUISITES/COREQUISITES:**
   b. Co-requisite(s): CITA 220 Data Communications and Network Technology

J. **GOALS (STUDENT LEARNING OUTCOMES):**
   By the end of this course, the student will be able to:

<table>
<thead>
<tr>
<th>Course Objective</th>
<th>Institutional SLO</th>
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<tbody>
<tr>
<td>a. Differentiate between straight-through cable and crossover cable configurations</td>
<td>2. Crit. Thinking 3. Prof. Competence</td>
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<td>b. Use terminal programs to configure switches and routers</td>
<td>2. Crit. Thinking 3. Prof. Competence</td>
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<tr>
<td>c. Illustrate the main components of network operating systems with Linux and Windows servers</td>
<td>2. Crit. Thinking 3. Prof. Competence</td>
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K. **TEXTS:** N/A

L. **REFERENCES:** N/A

M. **EQUIPMENT:** NN128 network lab (equipped with VMware)

N. **GRADING METHOD:** A-F
O. **MEASUREMENT CRITERIA/METHODS:**
   - Lab projects
   - Participation

P. **DETAILED COURSE OUTLINE:** N/A

Q. **LABORATORY OUTLINE:**

   I. Field trip to observe the SUNY Canton IT network (server room, wiring closet, campus network infrastructure)
   II. Structured Cabling: Students build and test cables to set up computer connections in the lab.
   III. Introduction to Switching: Comparison of repeaters and switches. Students use their cables to set up a LAN.
   IV. Configuring Cisco Switches
   V. Configuring Cisco Routers
   VI. Network Operating Systems: Overview of Linux and Windows servers (using VMware)
   VII. Configuring Network Protocols and Services: ADS
   VIII. Configuring Network Protocols and Services: WINS
   IX. Configuring Network Protocols and Services: DNS
   X. Configuring Network Protocols and Services: DHCP
   XI. Configuring Network Protocols and Services: TCP/IP
   XII. Configuring User and Group Accounts
   XIII. Configuring Network Security
   XIV. Network Monitoring and Analyzing Tools