# *Assignment 2 – Network Design*

Date assigned: April 19, 2021

Date due: **May 11th, 2021 at 11:59 p.m.**

**Learning Objectives**

Upon successful completion of this assignment, the student will be able to:

* Design a network and identify the materials required to construct it.

**To submit – Read this carefully**

This assignment requires the following items to be present. Do not include your answers in this document. Instead create a new document with an appropriate cover page.

1. Appropriate cover page (5%)
2. A one-page description of the network you are creating. Do not assume that the person reading your report knows anything about the network, so describe the network you are making and the school that you are making it for. (10 %)
3. Your drawing of the network. This drawing should be done on the computer. You must show the layout of all devices and computers in the network. Think about where you want the computers to go within each room and where you intend to put any switches. I want this diagram to mimic as closely as possible how the network will look in each room.
   1. Your room layouts must be organized to make wiring the room easier. When more than one wire is going in the same direction you may show this with a single line and a number indicating how many wires are in that line. (75%)
4. Create an itemized list of the devices that must be purchased to create the network. (10%)
   1. This should be done by room and include both the switches required along with the number of ports in each.
   2. You will only need one router for the school, and it should be in the teachers’ lounge. Choose the number of ports required according to how many devices must be connected to it.
5. Everything must be submitted in Moodle by due date in a compressed folder with the name Networks\_A2\_yourname.
6. If you have any questions about this assignment, contact me and I will help you with this.

Assignment description:

For this assignment you are to design a network for a school that spans 7 rooms. In addition to the design, you will have to supply a detailed list of all devices required to build the network. You are not responsible to mention any cable requirements or any devices that are already in the rooms such as clients or printers.

**Network Description**

You have been hired by a small school to design and implement a network for their building. You have decided on a peer-to-peer network configuration due to its low cost and easy maintenance. The following is the information that you have obtained from the school as per their requirements.

**Room 1 - Library**

10 computers and 1 network printer

**Classroom 1** **Classroom 4**

5 computers 4 computers

**Classroom 2** **Teachers Lounge**

6 computers 4 computers, 1 network printer and the router

**Classroom 3** **Shared Room**

3 computers 1 computer and 1 network printer

* You will only need one router for the entire school, to supply IP addresses to all the computers and to connect to the internet, but each room will require at least one switch. You may use additional switches in some rooms if you think this would help simplify your layout, but you must use a minimum of one per room.
* All switches will have to be connected back to the router somehow (not necessarily directly however as they can connect to another switch provided, they have a path back to the router) so that they will have access to the router’s DHCP server as well as access to the entire network. You must show these connections using a line to represent the wired connection.
* You should be conscious of the load balancing of your network. Do not send all or most of the traffic through a single switch or wire. Try balance the number of computers that flows through the main paths back to the router as much as possible.