# **MWENGE CATHOLIC UNIVERSITY**

# **PROGRAM: BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

# **NATURAL SCIENCE AND INFORMATION TECHNOLOGY DEPARTMENT**

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UTP (Unshielded Twisted Pair) Cable.

UTP cable is a medium that is composed of pairs of wires. UTP cable is used in a variety of networks. Each of the eight individual copper wires in UTP cable \is covered by an insulating material. In addition, the wires in each pair are twisted around each other. The following are the categories of UTP Cable from CAT5 to CAT7.

* Category 5 cable

Introduced in 1995, Category 5 cable has a data rate of up to 100 Mbps. It is used for standard 10BaseT and 100BaseT (Fast Ethernet) networks, and can distribute data, video and telephone signals at distances up to 100 meters (328 ft.). [**Cat5e**](https://www.tripplite.com/products/copper-network-cables-cat5e~276-991) is not an official designation but is used by manufacturers to describe an enhanced Cat5 cable that is capable of speeds up to 1 Gbps. Its higher data rate is achieved by increasing the number of twists, making it more resistant to crosstalk. Cat5e is recommended for new sub-Gigabit network installations.

* Category 5e cable.

Category 5e (CAT5e) cable, also known as enhanced category 5, is designated to support full duplex fast Ethernet operation and gigabit Ethernet. The main difference between CAT5 and CAT5e is that CAT5e has stricter specification for power sum equal-level far-end crosstalk, near end crosstalk, attenuation and return loss than those for CAT5. Like CAT5, CAT5e is a 100-MHz standard, but it has the capacity to handle bandwidth superior to that of CAT5.

* Category 6 cable  
  In comparison to Cat5e, [**Cat6**](https://www.tripplite.com/products/copper-network-cables-cat6~276-990) cable provides greater bandwidth and data transfer rates up to 1 Gbps over 100 m, the same as Cat5e. However, at shorter distances of up to 37 m (121 ft.), Cat6 is able to achieve 10 Gbps speeds thanks to its improved shielding and higher bandwidth. Cat6 includes a physical separator called a "spline" between the four pairs to reduce crosstalk and foil shielding to reduce electromagnetic interference. Cat6 cabling is backward compatible with the Cat5/5e standard. Introduced in 2009, [**Cat6a**](https://www.tripplite.com/products/copper-network-cables-cat6a~276-989) is an "augmented" Category 6 cable with a bandwidth of up to 500MHz.
* Category 7 cable.

The Cat7 specification is a proprietary standard developed by a consortium of companies and is not endorsed by IEEE or TIA/EIA. While substantially similar to the performance characteristics of Cat6a, Cat7 cables features proprietary GG45 connectors and robust shielding. **Cat7a** (Category 7 Augmented) is a further refinement of Cat7, capable of 40 Gigabit speeds over 50 meters and 100 Gbps up to 15 meters. The proprietary nature of the Cat7 and Cat7a standards and lack of support from IEEE and EIA has resulted in a relatively small installed based for Cat7/Cat7a.

