# Telecommunications Course No. 10106 Credit: 0.5

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| **Student name:** |  | **Graduation Date:** |  |

Pathways and CIP Codes: **Networking and Telecommunications (11.0901)**

Course Description: **Technical Level:** This course delves into the intricacies of modern telecommunications, exploring principles, technologies, and networks that underpin our interconnected world. Students will investigate the evolution of communication systems, from historical advancements to the latest innovations. Topics covered include signal transmission, modulation techniques, multiplexing, network architectures, and the protocols shaping the internet and mobile communications.

Directions:The following competencies are required for full approval of this course. Check the appropriate number to indicate the level of competency reached for learner evaluation.

**RATING SCALE:**

4. Exemplary Achievement: Student possesses outstanding knowledge, skills or professional attitude.

3. Proficient Achievement:Student demonstrates good knowledge, skills or professional attitude. Requires limited supervision.

2. Limited Achievement:Student demonstrates fragmented knowledge, skills or professional attitude. Requires close supervision.

1. Inadequate Achievement:Student lacks knowledge, skills or professional attitude.

0. No Instruction/Training:Student has not received instruction or training in this area.

## Benchmark 1: careers in the telecommunications industry

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 1.1 | Identify various careers related to the field of Telecommunications. |  |
| 1.2 | Analyze technology trends impacting the Telecommunications industry. |  |
| 1.3 | Demonstrate proficiency in the different technologies relating to Telecommunications. |  |

## Benchmark 2: workplace safety

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 2.1 | Demonstrate office safety. |  |
| 2.2 | Correctly use personal safety equipment used in the telecommunications industry. |  |
| 2.3 | Explain fiber optics safety and demonstrate safety for splicing. |  |
| 2.4 | Explain the hazards associated with the telecommunication industry. |  |
| 2.5 | Inspect tools and support equipment. |  |
| 2.6 | Evaluate and inspect test equipment. |  |
| 2.7 | Explain the purpose of code of conduct. |  |
| 2.8 | List the basic parts of the industry code of conduct. |  |

## Benchmark 3: components of a network system

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 3.1 | Identify structure(s) to access the Internet, including hardware and software components. |  |
| 3.2 | Identify and configure user customization features in web browsers, including preferences, caching, and cookies. |  |
| 3.3 | Recognize essential database concepts. |  |
| 3.4 | Define important Internet communications protocols and their roles in delivering basic Internet services. |  |
| 3.5 | Identify basic principles of the Domain Name System (DNS) and personal information management (PIM), including common applications. |  |

## Benchmark 4: Demonstrate an understanding to the different networks utilized in telecommunications

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 4.1 | Recognize a PAN, LAN, MAN, and WAN networks. |  |
| 4.2 | Define the differences between the PAN, LAN, MAN and WAN networks, such as identifying the technical limits of speed and size. |  |
| 4.3 | Create a visual diagram illustrating or topology map showing the concept of how networks connect together and communicate. |  |

## Benchmark 5: 7 layers of the OSI (Open Systems Interconnection) model and processes

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 5.1 | Identify and recognize the different functions of each layer in the OSI model. |  |
| 5.2 | Describe how each layer communicates. |  |
| 5.3 | Communicate the OSI Model processes and identify the processes by each layer. |  |

## Benchmark 6: characteristics of common internet protocols

### Competencies

| **#** | **DESCRIPTION** | **RATING** |
| --- | --- | --- |
| 6.1 | Explain the purpose and roles of IP, TCP, UDP, DNS, HTTP, SMTP, FTP, SSL/TLS, |  |
| 6.2 | Analyze and present the difference between internet protocols. |  |
| 6.3 | Communicate a scenario for each protocol as to when and where it is required. |  |
| 6.4 | Simulate data transmissions using different internet protocols, in a controlled environment and observe and compare the data transfers. |  |
| 6.5 | Collaborate with a group to create simple web-based applications, understanding and implementing basic communication protocols. |  |

## Benchmark 7: practical application of multiplexing in everyday technology

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 7.1 | Define multiplexing as the technique to combine multiple signals into a single transmission. |  |
| 7.2 | Identify and describe two types of multiplexing techniques, such as Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM). |  |
| 7.3 | Articulate the advances to multiplexing in terms of maximizing bandwidth and optimization of communication channels. |  |

## Benchmark 8: ethical and social implications of telecommunications

### Competencies

| **#** | **Description** | **RATING** |
| --- | --- | --- |
| 8.1 | Articulate the potential privacy risks associated with modern communication technologies such as, data breaches, surveillance, and unauthorized access. |  |
| 8.2 | Describe the responsibilities and ethical considerations of a digital citizen in content to telecommunication: respecting intellectual property rights, online etiquette. |  |
| 8.3 | Evaluate ethical dilemmas related to telecommunication, considering scenarios involving issues like data privacy, net neutrality, or digital divide. |  |

I certify that the student has received training in the areas indicated.

Instructor Signature:

For more information, contact:

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