

# PARTNERSHIP Customized Course List

# Customized Course Title and Class Hours

<u>Course Title</u>	<u>Hours</u>
Network Plus	40
TKTII	40
Basic Electricity	30
Basic Electronics	30
Fiber Optic Technician	30
Fiber Optic Installer	30
Wireless Networking Technician w/ 5G Intro	30
5G Technician	28
FCC GROL	24

# Network Plus

40 Class Hours

Network+ equips the student with the knowledge and skills needed to prepare for entry level networking careers. This course is a hands-on, career-oriented e-learning solution that emphasizes practical experience. It is a blended curriculum with both online and classroom learning. Network+ aims to develop an in-depth understanding of networking principles as well as the tools and configurations required to design a network. Various types of hands-on labs provide practical experience, including procedural and troubleshooting labs, skills integration challenges, and model building.

# TKT II

40 Class Hours

The TKT II course is designed to prepare the student for the TKT II exam. The TKT II is designed to measure an individual's knowledge of technical concepts required for certain technical jobs in AT&T. This course provides a basic understanding of electrical and electronic fundamentals, computer hardware/software, and digital technologies as they apply to the telecommunications industry. Upon completion of the course students will be able to analyze AC and DC electrical series and parallel circuits and the electrical and electronic components they are comprised of. Fundamentals of digital communications are covered, including analog to digital conversion, line coding, framing, modulation, multiplexing, transmission media, as well as the T-Carrier and SONET data rates. Digital and analog test instruments and the related measuring procedures will be introduced as well as the electrical safety rules to be followed. Binary numbering system and principles of computer architecture are presented. The course also provides a review of mathematic operations commonly used for basic electricity and electronics including Scientific notation and the use of exponents, multipliers, and electrical prefixes.

# Basic Electricity

30 Class Hours

This course provides a basic understanding of DC (Direct Current) and AC (Alternating Current) concepts, laws and formulas that apply to electrical circuits. This includes Ohm's Law, Power formulas, Kirchhoff's Laws, and the rules governing series and parallel circuits. The operation of capacitors and inductors is explained as well as how they behave as reactive components in AC circuits including the formulas used to calculate reactance and impedance. Transformers, Power Factor, resonant circuits, and frequency filters are also discussed.

Digital and Analog testing instruments are presented along with how to perform resistance, voltage, and current measurements of electrical circuits. Best troubleshooting practices are covered along with safety considerations and rules when working with electrical power.

The course concludes with a presentation on decimal, binary, octal, and hexadecimal numbering systems as well as how to convert values from one numbering system to another. Addition and subtraction of binary numbers is also included.

Upon completion of this course, students will be able to demonstrate how to build AC and DC circuits, calculate circuit values and perform measurements to validate their calculations. This will be accomplished in a series of hands-lab exercises designed to reinforce concepts learned throughout the course.

# Basic Electronics

30 Class Hours

This course provides the fundamentals of fiber optic systems utilized by the telecommunications industry. The course begins with an in-depth look at optical theory, light propagation, and how light waves are used to carry information.

The course continues with detailed descriptions of fiber system components such as photodiodes, light sources, receivers, multi-mode, and single mode fibers, connectors, and the various types of fiber cables. Fiber splicing and connectorization techniques are presented along with a presentation of the various test instruments used to measure fiber optic system performance. Fiber optic system design criteria necessary to ensure fiber links meet performance requirements are discussed, including power and loss budget calculations.

The course continues with the procedures used to successfully splice fiber cables, install connectors, and perform Tier 1 acceptance testing along with the safety rules that must be followed when working with fibers.

The course concludes with an overview of fiber optic system applications used to transport voice, data, and video services.

# Fiber Optics Installer

30 Class Hours

This course provides the fundamentals of fiber optic systems utilized by the telecommunications industry. The course begins with an in-depth look at optical theory, light propagation, and how light waves are used to carry information.

The course continues with detailed descriptions of fiber system components such as photodiodes, light sources, receivers, multi-mode, and single mode fibers, connectors, and the various types of fiber cables. Fiber splicing and connectorization techniques are presented along with a presentation of the various test instruments used to measure fiber optic system performance. Fiber optic system design criteria necessary to ensure fiber links meet performance requirements are discussed, including power and loss budget calculations.

The course continues with the procedures used to successfully splice fiber cables, install connectors, and perform Tier 1 acceptance testing along with the safety rules that must be followed when working with fibers.

The course concludes with an overview of fiber optic system applications used to transport voice, data, and video services.

# Fiber Optic Technician

30 Class Hours

This course begins with a review of optical theory, light propagation and how light waves are used to carry intelligent information.

The course continues with detailed descriptions of primary fiber system components from the light sources to the photodetectors at the receiver, including connectors, and the various types of fiber cables designed for specific environments. Also included are the techniques and requirements for conducting fiber splicing. Fiber optic system design criteria necessary to ensure fiber links meet performance requirements are presented, including power and loss budget calculations.

The course then proceeds with an in-depth look at the requirements and procedures to conduct Tier 1 acceptance testing and Tier 2 fault location testing of fiber links and the various test instruments used to conduct testing.

The course concludes with a survey of optical transport systems such as SONET, OTN, FTTx architectures, and **Passive Optical Networks** used to implement broadband fiber access networks.



# Wireless Networking Technician w/5G Intro

30 Class Hours

Wireless communications technologies have been seamlessly integrated into many of our daily personal and professional activities. Using a remote-control device, accessing the internet, and interacting with our smart phone are all activities we are familiar with that use wireless technology. However, there is a plethora of other applications that also use wireless communications that we might not even be aware of.

This course provides students with an introduction to the world of wireless communication technology that is impacting every sector of our interconnected world today. The fundamental knowledge of RF technology used in wireless communications and how intelligent information is communicated for specific applications along with system design components and their requirements is presented. Antenna theory, transmission lines, RF propagation, and modulation schemes are discussed.

The course continues with an exploration of wireless solutions and standards used today in Personal, Local, Metropolitan, and Wide Area Networks. This includes solutions for both fixed wireless and mobile wireless applications. An in-depth look into Wi-Fi technology (802.11), the predominant technology used for Local Area Networks (LANs) is presented. The course also provides a comprehensive study of Wide Area Network technology including microwave and satellite solutions. More importantly, the course explores the world of mobile wireless with a focus on 4G/LTE and 5G. This includes a discussion on the impact of 5G from both a technological and economic level.

This course is a prerequisite for the 5G Technician course.

# 5G Technician

28 Class hours

It is being said that as a global community we are now entering into the 4th Industrial Revolution and that 5G is essential to paving the way. 5G is the fundamental communications platform for which the 4th Industrial Revolution is made possible. This course unveils the world of 5G with a focus on information beneficial to technicians working within the telecommunications industry.

The course begins with a look at the path from 1G to 5G wireless mobile communications. Standards organizations and the role they play in the development of cellular technology is also explored. The 5G "use cases" defined by ITU (International Telecommunications Union) that describe what 5G must be capable of providing are discussed along with technical requirements such as frequencies, bandwidth, and delay. Also presented are the existing and new technologies that enable deployment of 5G networks such as millimeter wave, antenna beamforming and MIMO (Multiple Input Multiple Output).

The course then goes on to discuss the 5G network elements and their functions beginning with a look at the 4G/LTE network and the role it plays in the development of 5G networks. An in-depth look at 5G cells and antennas and how they are deployed is presented along with safety considerations the technician needs to be aware of when working around antennas.

The course concludes with an exploration of 5G applications and deployment strategies. This course requires Wireless Network Technician w/ Intro to 5G as a prerequisite.

# FCC GROL

24 Class Hours

This course provides the fundamental knowledge that enables the student to pass the FCC Element 1 Marine Radio Operator's Permit exam, and the FCC Element 3 General Radiotelephone Operator's License (GROL) exam. FCC Element 1 provides basic radio law and operating practice to become familiar with aircraft, ship, and other FCC licensed radio communications equipment. FCC Element 3 provides general electrical and electronic knowledge required to repair and maintain radio transmitters and receivers. The General Radio Operator's License is recognized by several employers as evidence of knowledge in the radio telecommunications field.