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Network Technology-Telecommunications/Data Communications

The Telecommunications Program was developed in 1979 in cooperation with the two telephone associations in Iowa at that time: Rural Iowa Independent Telephone Association (RIITA) and Iowa Telephone Association (ITA) that first made contact with DMAACC concerning a Telephone Combination-Technician Training Program. After several meetings with a steering committee, composed of industry representatives, the committee developed a proposal for a one-year telecommunications program. It was drafted, submitted to the Iowa Department of Instruction and approved. The proposal identified a serious shortage of qualified applicants for a variety of technical positions in this rapidly-growing industry, primarily in two occupations: switch repairer and outside plant (distribution) specialist.

After an intensive search for a program chair, the college selected C. John "Dutch" Kleywegt, who brought years of experience in large (Bell) company operation. He launched the first program with 13 students. Two major priorities were identified for the first year: Curriculum development and hardware acquisition.

Kleywegt established a strong working relationship with the program advisory committee and industry leaders, which led to the donation of a digital, state-of-the-art switch from Northern Telephone Company in Canada. Students' experience on this equipment was crucial since many companies were in transition from mechanical to digital switching, and it helped the program earn a positive reputation with employers in the Iowa Telephone Industry. After two years, Dutch was appointed to head a new labor studies program at the college and was followed by James Marcusen, who also had extensive industry experience.

The program has maintained strong relationships in Iowa, currently with The Iowa Communications Alliance (ICA). The organization continues to be a huge supporter and stakeholder in the program, but now graduates go to not only smaller, Iowa telecommunication companies and ISP's, but also bigger 'data centric' companies. The major companies that currently employ recent graduates are state, regional and national and include Hy-Vee, LightEdge, Iowa Network Services, MicroSoft data center, MechDyne, Mercy Medical Center and many others.

The job titles in the industry have undergone changes over the years. Originally the program prepared switch repairer and outside plant (distribution) specialists. Later, the focus was on telephone technicians. Currently (2015) students apply for positions as telecom technician, fiber optic splicer, data center technician, system administrator, security technician, installation and repair tech, and network engineer.

The original program was a one-year diploma program. The current program has two additional options: a certificate in telecommunications and a two-year AAS degree in Network Technology—Telecom. The program was originally housed on the Ankeny Campus but relocated to the West Campus when that facility opened in 2002.

The program has changed constantly since its inception, based on the numerous changes in communications technology as well as the expansion of related positions in virtually all companies. With the increase in networking in both home and business, telecom workers enjoy career opportunities in a variety of companies. The demand for graduates has been consistently high since the program was established, and compensation has continued to increase based on the shortage of well-trained applicants.

The program curriculum is undergoing constant change as technology moves in new directions in the industry. The original curriculum competencies focused on a single service of “voice” (telephony) providing knowledge and skills in three major areas (cabling, wiring and equipment use). The 1979 College Catalog stated that “the student will learn to perform the basic manipulative skills involved in installation, servicing and troubleshooting for the total outside plant. The student will also have a basic knowledge of central office equipment. “

In recent years the curriculum has moved from a ‘telephony’ (voice) only focus to a more converged communications on the wire, or fiber optic cable, or thru the air. Instruction focuses on the design, installation and repair of “voice, video and data (Internet)--the “triple play” of what most customers and businesses that employ the program’s graduates seek in job candidates. Currently, students learn aspects of not just technician level work, but also of IT management and network engineering. Competencies /skill sets in training cover far more “data communications” than the earlier program. Competencies have evolved from the single service of “voice” (telephony) to a converged service of voice, video and data. Students learn aspects of not just technician level work, but also of IT management and network engineering. Training dealing with TCP/IP (the core language of the Internet) begins early in the program and is emphasized until the student graduates.

From its inception the majority of instruction equipment was donated by the industry with the encouragement of the program advisory committee. The program currently has over \$2 million in donated equipment that is commonly found in networking/telecommunications companies across Iowa and the United States.

Equipment to support instruction has also changed radically in recent years. Until 1997 the program had only a small LAN (local area network) consisting of five computers networked together with Novell Netware technology. Now (2015), the program has hundreds of ‘networked’ devices that are fiber optic, copper wire or strictly wireless. The land-line and cellular telephones in use at the home or business has changed from a “dumb” analog device into a digital device that shares a network address just like the PC in your home or office. More advanced test sets have been included to test voice, video and data services. Many companies have used, or may still use, the DMS-10 model switch for their 911 service, home and business voice service. The DMS-10 is being phased out by many companies (older, legacy equipment), and now are moving to “soft switches” (more software than hardware). (DMACC has two, both donated and valued at \$300,000 (Taqua brand and the company that bought Nortel, ‘Genband’).

Since 2000, the lab has had a “local loop” that simulates the connection from the main ISP (Internet Service Provider) office to a home or business. This two-mile-long simulator provides students a real-world perspective and the opportunity to have hands-on experience with current industry equipment. This program will continue to respond to changes in the industry to insure it provides an educational experience for students that prepares them for new and changing jobs in the “IT” industry.

Students are encouraged to take several national certification exams to verify their competencies to the employer: Network+, A+, Security+, and Linux+. To validate competency in computer and network repair and network security, the CompTIA (Computing Technology Industry Association) exam is recommended. The Network Technology program helps prepare students to take basic networking and data communications certifications, dealing with networks and information security.

Along with the AAS degree, students are encouraged to take IT industry exams upon graduation. The Network Technology program helps prepare students to take basic networking and data

communications certifications dealing with networks and information security. The program includes a summer term internship.

The program shares some "common" IT (Information Technology) classes that are central to all areas of the IT workforce. But, each program remains in segmented areas of specialization, as that is what we continue to see in the workforce and IT industry in Iowa. These programs are Information Technology, Network Administration, Network Technology/Telecom, Management Information Systems and Business Information Systems.

Staffing for the program since it started has include Program chairs John "Dutch" Kleywegt, James Marcusen, Jay Nickelson and faculty Galen Briggs, Amy Hill, and Gordon Hochkiss.

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