Helping Graduates to Get Professional Employment

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Abstract

One objective of higher education is to train college students into qualified professionals and place them into the workforce. The percentage of graduates employed in their major area is a measure of a college program's success. It is the responsibility of universities and faculty to help their students to be trained well and get employed in their study fields. Moreover, a good graduate employment history helps the involved program in recruitment and retention of students.

For the Electro-Mechanical Engineering Technology program at Middle Tennessee State University, almost every student gets a job in the major area when he/she is graduating. The faculty, department, and university have done a lot to help their students in seeking for employment. The balanced electrical and mechanical courses train the students into qualified technical personnel. The cooperative education program helps students to obtain industrial work experience. The local industry supports are very important for the employment. The contacts of faculty with the industry provide an efficient vehicle for employment news to be disseminated to the interested students.

This paper introduces the Electro-Mechanical Engineering Technology program curriculum at Middle Tennessee State University and the industries in the middle Tennessee area. It discusses how the university and faculty assist students to be hired on professional jobs. The university's cooperative education program is also addressed.

Introduction

A recent survey indicated that majority electronic technology programs had enrollment declines in the last ten years. These programs involve both two-year and four-year schools. "The percentage of decline ranged from 20% to 90%, with most indicating an estimated 50% decrease during the period."[1] There were many factors causing the enrollment declines. There were also many suggestions for slowing or reversing the enrollment decreases.

At Middle Tennessee State University (MTSU), there is a four-year program in Electro-Mechanical Engineering Technology (EMET). This is a hybrid program of electrical and

mechanical engineering technology. The enrollment of this program had increased from 47 in 1991 to 85 in 2002. Most of the increase occured in the last four years. Figure 1 shows the enrollment trends of MTSU engineering technology programs. The EMET program had a 60% enrollment rising in the last four years. Its sister program, Computer Engineering Technology, had a 43% enrollment rising during the same period.

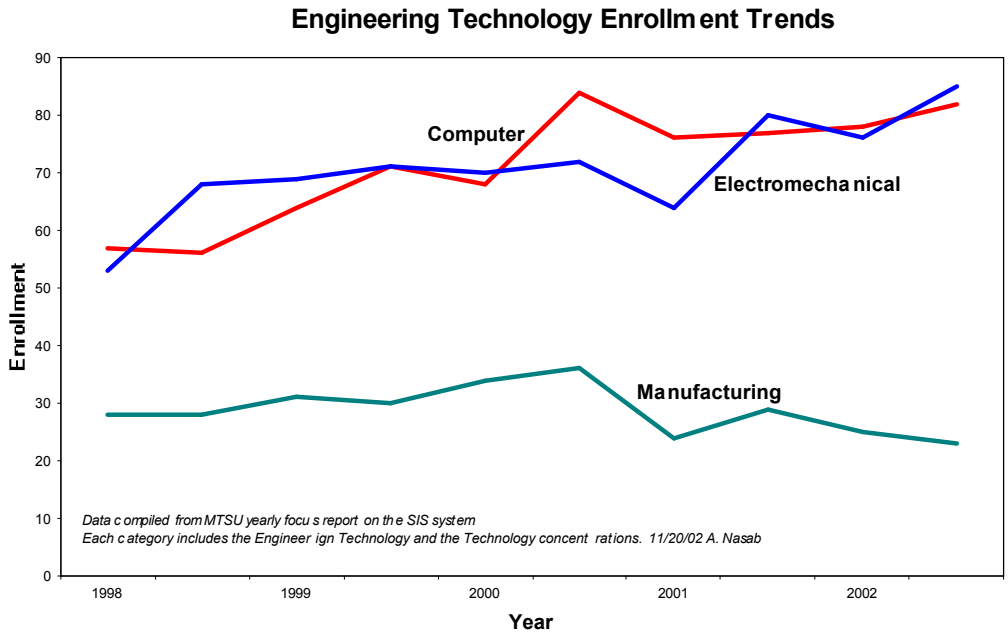

Figure 1. MTSU engineering technology program enrollment

It is believed that the enrollment increase was affected by the recruitment, curriculum, faculty experience, university location, local industries, and employment of graduates. This paper discusses the issues that are related to getting the graduates employed on professional jobs.

Program History and Employment of the Graduates

The Bachelor of Science in Engineering Technology major at MTSU has three concentrations: Computer Engineering Technology (CET), Electro-Mechanical Engineering Technology (EMET), and Manufacturing Engineering Technology (MET). These concentrations were established in later 1980s. They have been accredited by ABET since 1994.

The EMET program at MTSU has a very good history of graduate professional employment. Although the U.S. economy was in down term in the last several years, almost all the EMET students graduating during this period were employed on the jobs related to their major area. Followings are some of the major companies that hired the EMET graduates:

Tennessee Valley Authority
Nissan North America Inc
The Saturn Corporation
Dell Computer

The Square D Company
Calsonic North American Inc
Fanuc America Corporation
Carrier Corporation.

The positions, for which the EMET graduates were hired, included design engineer, test engineer, field service engineer, maintenance engineer, and automation engineer. Some of the EMET graduates have been promoted to management positions.

Besides the efforts of students in study and job-hunting, the credits for successful graduate employment should be given to the program curriculum, local industry helps, faculty and university assists in job searching, and cooperative education.

Curriculum

The EMET program at MTSU "is structured to prepare the student for positions in industry requiring the integration of electricity (for power and control) and mechanical devices (for force and motion) to perform tasks associated with manufacturing and performance of services".[2] For reaching this goal, the required courses for the EMET concentration were carefully selected. The required technical courses include:

Introduction to Metals and Metallurgy
Engineering Fundamentals
Computer-Assisted Drafting/Design (2 courses)
Machine Tool Technology
Engineering Thermodynamics and Heat Transfer
Statics
Strength of Materials
Fluid Power
Robotics
Electrical Circuit Analysis
Digital Circuit Fundamentals
Electronics
Introduction to Microprocessor
Programmable Logic Controllers
Instrumentation and Controls
Industrial Electricity
Engineering Economy
Senior Project
C^{++}

Most of these required technical courses involve both lecture and lab. After taking these courses, students obtain both solid knowledge and hand-on experience on the covered topics. The graduates of the EMET program are expected to be able to operate, design, and troubleshoot industrial equipment that has electrical, electronics, and mechanical components. They have

training in program programmable logic controllers (PLC) and computerized equipment. They can learn quickly to use various types of PLCs and computerized equipment encountered in industry.

Location and Local Industries

Middle Tennessee State University is located in Murfreesboro, Tennessee. Murfreesboro is the geographic center of Tennessee state. It is forty miles from Nashville, Tennessee. Interstate 24 goes through the Murfreesboro city. Both Interstate 40 and Interstate 65 are 20 miles from Murfreesboro. It takes thirty minutes to drive from Murfreesboro to Nashville International Airport. The convenient location has attracted many businesses to Murfreesboro and the middle Tennessee area. The major manufacturing companies, which are within 50 miles of distance from MTSU, include:

Nissan North America Inc
The Saturn Corporation
Dell Computer
Toshiba American Company
The Square D Company
Calsonic North American Inc
Carrier Corporation
Whirlpool

Most of the EMET graduates of MTSU were employed within 100 miles from the university. The companies at middle Tennessee area really helped to improve the EMET graduate employment and student enrollment.

Cooperative Education

For the students who have no industrial work experience, cooperative education (co-op) program is very important. Co-op gives an opportunity for students to work in industry for getting real-world experience. On a co-op position, students may learn many things that are not available in classrooms. The EMET program at MTSU encourages its students to enroll in the co-op program. With the cooperation of the department, university co-op office, and local industries, there were adequate co-op opportunities for the EMET students in the past years. The co-op positions were either full-time or part-time. Most of the EMET students, who met the co-op requirements and had no much manufacturing industry work experience, took up to one-year equivalent full time co-op. Employers highly evaluated co-op experience. Some EMET graduates were hired as full-time employee by the company that they co-oped with.

One student wrote in his co-op class report: “For the summer of 2000, I took the opportunity to take the advantage of MTSU’s cooperative education program. This opportunity has given me a chance to gain some experience in the engineering field. Working with the engineers here would give me some idea of what future employers would expect from me. I would also have the chance to work in the industry, learn their operations, and meet other people that shared the same job interests. …… So far I feel I have gained the edge that I was looking for at the beginning. Here at

Carrier I have learned some of the skills I need in my future career, which I could not have learned in the classroom. Even though the education I have acquired throughout the years have prepared me for my career, the actual application of this knowledge and experience I will receive will make me more marketable in the career field."

University and Faculty Assistances

Middle Tennessee State University has a career and employment center. Students at MTSU may use this center for their job-hunting. The center helps students to prepare resumes, collects employment information, and handles on campus interviews. In the last few years, two annual employment events were organized by this center. One of the events was on-campus career day and the other one was regional job fair that involved several universities in the middle Tennessee area. Each of the events invited hundreds of employers to meet students. It offered the interested employers an opportunity to know the university and students. It also provided the students an opportunity to be familiar with the potential employers. Although there were not enough EMET program related employers attended the events, but number of the related employers had increased.

The EMET program at MTSU is in the Department of Engineering Technology and Industrial Studies. Both of the department and its faculty did their best in assisting their graduates to be employed on professional jobs. The department and faculty believe successful graduate employment benefits recruitment, retention, and quality of students. Faculty members of the program take helping students to be hired as part of their job. They use their industrial contacts to get employment information promptly and directly. They assist the graduates to get employed. Some of the EMET graduates were hired on professional jobs through faculty industrial contacts. An employer hired two of our EMET graduates in the last two years through a faculty contact. Now, he wants to interview more EMET graduates.

Conclusions

Almost every EMET graduate at MTSU was employed on a major-related professional job right after graduating from the university. The balanced electrical and mechanical engineering technology curriculum, local industry helps, university and faculty assistances, and cooperative education program were the factors for the graduate successful employment. The good records of graduate employment stimulated the enrollment increase.

References

1. Louis Frenzel: "Enrollment Decline Survey: Electronic Technology", an e-mail to ETD listserve, January 2, 2003.

2. Middle Tennessee State University Undergraduate Catalog, 2001-2003.

Biography

Dr. CHONG CHEN is a professor in the Department of Engineering Technology and Industrial Studies, Middle Tennessee State University. He received his B.S. degree from Hebei Institute of Technology in China, M.S. degree from Tianjin University in China, and Ph.D. degree from the University of Kentucky, all in Electrical Engineering. Dr. Chen is a Professional Engineer registered in the State of Tennessee.