

A Brief History of Engineering Technology and a Case for Applied Engineering

Walter W. Buchanan

Texas A&M University
3367 TAMU, College Station, Texas 77843, U.S.A.
buchananw@tamu.edu

Abstract

This paper will present a brief history on Engineering Technology. It will then make the case why the four-year programs should be called “Applied Engineering.”

1. Introduction

The author’s career focus for many years has been in engineering technology. It may be of interest on how he became interested in engineering technology. When finishing his master’s degree in engineering with Purdue, he was asked by one of his professors if he would like to teach a course as an adjunct in engineering technology. He said, what is that?! As a practicing engineer he had never heard of engineering technology. When he found out it was really applied or “hands-on engineering,” he has been hooked on it ever since.

2. History of Engineering Technology

Engineering technology has a long history. The first two-year program to be accredited by ABET was at the Benjamin Franklin Institute of Technology, then called the Franklin Institute of Boston, and this occurred in 1947. [1] The graduates were called “engineering technicians.” The next significant event in the history of engineering technology occurred as the result of Sputnik. In 1957 when the Soviet Union launched the first satellite into space, the worry in the United States was that we were behind the Russians in engineering and that more mathematics and science should be introduced into the engineering curriculum. To make room for this, fewer engineering course had labs with them. As a result when these graduates entered industry in the early 1960s, they were not ready for lab work. In most cases this was not a problem as this was the height of the space race and many large aerospace companies such as Boeing and Martin had cost

plus contracts with the government. As a result the engineers could be brought up to speed over several months in the company labs. Even then, however, this was not the case with all companies and so there was a need for more “hands-on” graduates. As a result four-year engineering technology programs came on line and the first one accredited by ABET was at Brigham Young University in 1967. [2] Other followed quickly such as at the University of Houston in 1968 and Purdue University in 1969. At the time there was a debate on what to call these programs. One argument was to call these programs “Applied Engineering” and to call engineering programs “Engineering Science.” Many engineering deans at the time did not like this idea and in the end they won out. Turf battles in academia have probably been with us always! So in academia it was decided to call graduates of these four-year engineering programs “engineering technologist” and this position was endorsed by ABET. The problem, however, was that in the vast majority of cases this title was never accepted by industry. The author has made almost fifty ABET visits and can count on one hand the number of graduates in the four-year engineering programs that he has seen have the title “engineering technologist.” Almost all of the graduates get some kind of title with “engineer” in it. In fact many of the companies later do not realize they these graduates came from an engineering technology program. Examples of the different ways in which graduates with 4-year engineering technology degrees contribute to engineering projects in industry so as to make the argument for changing the name of 4-year engineering technology degrees to applied engineering was covered in a paper by Ron Land of Pennsylvania State University. [3]

When the author was a dean at the Oregon Institute of Technology, the Boeing Company asked OIT to come to the Seattle area and offer a four-year program in

engineering technology so that their employees, who were engineering technicians and had two-year engineering technology degrees, could get a four-year degree and then get jobs with the title “engineer.” In fact they later asked OIT to develop a master’s degree program in engineering technology for their employees as well.

3. ABET Involvement

The battle with ABET to allow the Technology Accreditation Commission, now the Engineering Technology Accreditation Commission (that name change was a battle as well!) to allow a four-year program to be called “applied engineering” has been going on for over fifty years. A couple of years ago the engineering technology community thought they had finally won this battle and for a brief time on the ABET website it was announced that ABET will now accredit programs in Applied Engineering within the ETAC. Again, however, there was apparently pushback from engineering deans and ABET reversed this decision. The battle does continue, however, and is currently taking place within the ABET Board of Delegates of which the author is a member. As may be imagined the Engineering Technology Area Delegation is for allowing the name change, but at this time, it has not progressed farther than that.

4. ATMAE Involvement

With the assistance of the Association of Technology, Management, and Applied Engineering Fellow, Dr. John Wright, a survey to the Engineering Technology Listserv of which the author administers and of which has over 4,300 members, was conducted on the perceptions of the engineering technology profession. 341 responses were received, which came from over forty percent of members of ASEE’s Engineering Technology Division and almost ten percent of the entire listserv, and thus resulted in statistically significant results. The responses indicated that there was a need for better branding of engineering technology with many feeling that especially baccalaureate graduates of ABET’s ETAC (Engineering Technology Accreditation Commission) accredited programs should have the title “applied engineering” for their programs. It was felt that these graduates overwhelmingly have engineering jobs in industry and that unlike the title “technicians” for associate degree graduates, the term “technologist” has never been accepted by industry. In fact the survey indicated that industry employers should be the ones who decide on the proper title. It was also felt that the engineering technology community should work to get ABET to allow its Engineering Technology Accreditation Commission permission to accredit baccalaureate programs with the title of “applied engineering” as they were on the

verge of doing two years ago. A recent article in *PE*, the magazine published by the National Society of Professional Engineers (NSPE), also found a branding issue with “engineering technology.” This came about as a result of the author being a member of a National Academy of Engineering (NAE) committee that was studying the role of engineering technology. Because of this he was interviewed for this article. NSPE has never been a fan of four-year engineering technology graduates being allowed to become registered as Professional Engineers and the author had to admit that the article was more favorable to engineering technology than he expected.

ATMAE is interested in this issue. They accredit engineering technology programs and allow the term “Applied Engineering” for four-year programs. The problem with many schools that have four-year engineering programs, however, is that they want their graduates to have a path for licensure for becoming P.E.s. Currently about 35 states allow this. It is certainly possible for graduates of ATMAE accredited programs to become registered, but this battle will have to be fought state by state in the respective state’s licensing board. The survey conducted by Dr. Wright and the author does not strongly conclude one way or the other that P.E. registration is a top priority for the engineering technology community.

5. Recommendation

A recommendation that ATMAE may consider is commission like structures for ATMAE Accreditation so Engineering Technology professionals would have more control over their field. Dr. Wright summated the following recommendation to the Board of Directors and the ATMAE Board of Accreditation Leadership last year. He sees a future where Engineering Technology faculty could have more control over their program accreditation and future development with ATMAE. Having their own Commission within ATMAE might be of interest to engineering technology leaders. At present ATMAE does not differentiate broad program criteria – they would be in addition to the ATMAE-ITEC listed as follows:

Commission	Description
ATMAE-ITEC	Industrial Technology Commission (Would retain the current program criteria as defined by the ATMAE Board of Accreditation.)
ATMAE-AEET	Applied Engineering/Engineering Technology Commission (New criteria would need to be defined.)

ATMAE-TMGT Technology Management Commission:
(New criteria would need to be defined.)

Another suggestion is whether ATMAE should work with the ASEE Engineering Technology Division (ETD) to pursue a Classification of Instructional Program (CIP) definition for Applied Engineering? The survey completed does seem to show support for the definition and endorsement from ASEE's ETD. The next window to pursue a new CIP is expected in 2020. Every ten years or so, a window opens to define or redefine programs recognized by the Department of Education.

References

- [1] Annual Report, Accreditation Board for Engineering and Technology, p. 144 (1984)
- [2] Annual Report, Accreditation Board for Engineering and Technology, p. 143 (1984)
- [3] Land, Ronald E., "Engineering Technologists Are Engineers," Journal of Engineering Technology, p. 32-39 (Spring 2012)