

Association of Technology, Management, and Applied Engineering Accreditation: A Viable Option for 2-Year Programs and their Pursuit of Excellence

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Abstract

Accreditation by the Association of Technology, Management, and Applied Engineering is a viable option for 2-year technology programs seeking to inspire employer confidence, facilitate the transfer of course and program credit, provide access to federal funds, and to in general assure quality. A descriptive study of all 2-year technology programs accredited by ATMAE was undertaken to ascertain the appropriateness of the pursuit of accreditation by this body. Rather than examining just the titles of the programs accredited by ATMAE, a system developed to support the accurate tracking, assessment, and reporting of fields of study and program completion activity was used—Classification of Instruction Program codes. According to the Association and the institutions housing those programs, all the 2-year technology programs accredited by ATMAE were aligned with one of ten two-digit series CIP codes with the majority reporting that their programs were aligned with the Engineering Technologies and Engineering-Related Fields CIP codes. All these Engineering Technologies and Engineering-Related Fields programs were also aligned with one of eleven different 4-digit series CIP codes with over a quarter of those programs being aligned with the Industrial Production Technologies/Technicians CIP codes and almost as many being aligned with the Drafting/Design Engineering Technologies/Technician CIP codes. While all the 2-year technology programs accredited by ATMAE are not coded as Engineering Technologies and Engineering-Related Fields programs, a compelling argument can still be made by other 2-year technology programs to pursue ATMAE accreditation as they seek to up the ante in their pursuit of excellence.

Introduction

According to Eaton¹, accreditation is a process of external review that exists to assure quality and to foster a culture of continuous and ongoing improvement. In the United States, it is considered to be a non-governmental enterprise carried out by private, non-profit organizations of which there are four basic types: regional, national faith-related, national career-related, and programmatic. The process is decentralized and complex and mirrors the decentralized and complex nature of education in the United States. Oversight of the process is provided by the Council for Higher Education Accreditation (CHEA) and the U.S. Department of Education.

Among the programmatic accrediting bodies recognized by CHEA are the following: The Association to Advance Collegiate Schools of Business (AACSB), Accreditation Commission for Education in Nursing (ACEN), Accreditation Council for Pharmacy Education (ACPE), National Council for Accreditation of Teacher Education (NCATE), Planning Accreditation Board (PAB), and ATMAE, or the Association of Technology, Management, and Applied Engineering.

According to CHEA², ATMAE's scope of accreditation includes associate, baccalaureate, and master's degree programs in technology, applied technology, engineering technology, and

technology-related disciplines delivered at national or regional accredited institutions in the United States. The Council has also concluded that the Association's accreditation standards and processes are consistent with the academic quality, improvement, and accountability expectations the Council has established.

ATMAE is also endorsed by the Association of Specialized and Professional Accreditors (ASPA)³, whose mission is to provide a collaborative forum and a collective voice for organizations that assure the quality of specialized and professional higher education programs and schools⁴. ASPA has concluded that ATMAE closely examines and evaluates measures of learning or competence that are fundamental to the discipline or profession.

Comprised of college and university educators, administrators, students, and industry professionals, ATMAE is dedicated to solving complex technological problems and developing the competitive technologist and applied engineering workforce⁵. It pursues its duties and responsibility through specialized accreditation of 2-year, 4-year, and graduate technology, management, and applied engineering degree programs; personal certifications; an annual conference; publications; awards and scholarships; a career center; a website; and numerous opportunities for professional development.

The Problem

Is the pursuit of ATMAE accreditation by 2-year technology programs a viable option in their pursuit of excellence? In the quest for a response, Classification of Instruction or CIP codes were collected, compiled, and examined. These data points, which characterize the sum of all the ATMAE accredited 2-year technology programs will, it is anticipated, suggest whether the pursuit of ATMAE accreditation is appropriate for all 2-year technology programs. If it is not, the data should at least suggest and identify which 2-year technology programs would be viable candidates for ATMAE accreditation.

Method

In the pursuit of this study's purpose, data points that characterize the sum of all the ATMAE accredited 2-year technology programs were collected and compiled. Once a list of all the ATMAE accredited 2-year technology programs was compiled, CIP Code data that characterized those programs were collected and compiled.

Population. All the ATMAE accredited 2-year technology programs comprised the population of ATMAE accredited 2-year technology programs. These programs were identified with the aid of the list of ATMAE accredited programs published by ATMAE⁶.

Procedure. Once the population data were compiled, the CIP codes for all the ATMAE accredited 2-year technology programs were collected and compiled by conducting online searches with the aid of the World Wide Web and through personal correspondence. A spreadsheet was populated with the relevant data and the data sorted and examined.

CIP Codes. CIP codes provide a taxonomic scheme that supports the accurate tracking and reporting of fields of study and program completions activity by the National Center for Education Statistics, which is located within the Department of Education and Institute of Education Sciences. The codes are used to characterize data on student majors, degrees granted, courses taught, and can be used to crosswalk academic preparation with related occupations. Every CIP Code is comprised of a 6-digit number—ie 15.0612—where:

- Digits 1-2 indicate a *broad area*—ie 15 refers to all engineering technologies and engineering related fields of study. That is, all instructional programs that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields.
- Digits 3-4 indicate a *subfield*—ie 15.06 refers to all industrial production technologies/technicians instructional programs.
- Digits 5-6 provide additional details—ie 15.0612 refers to the industrial technology/technician program: an instructional program that prepares individuals to apply basic engineering principles and technical skills in support of industrial engineers and managers. This includes instruction in optimization theory, human factors, organizational behavior, industrial processes, industrial planning procedures, computer applications, and report and presentation preparation.

Results

Table 1 summarizes the demographic characteristics for the population of ATMAE accredited 2-year technology programs and options. According to a list of ATMAE accredited programs⁶, the Association has accredited 107 2-year technology programs and 81 associated options. These programs and options were administered by 26 institutions located in 11 states.

Table 1. Demographics of ATMAE Accredited 2-Year Technology Programs and Options.

Population	N
States	11
Institutions	26
Programs	107
Options	81

Words of clarification are extended to the reader regarding the number of accredited programs and their associated options (also referred to as concentrations or specializations). At some institutions, a given program may offer several options. At other institutions, a given program may be offered with no associated option(s). For the purpose of this study, regardless of the number of options offered by a given program, the program was only counted once. This decision was made based on an assumption that the core courses required were the same for all options and a precedence established by Keith and Talbott⁷.

In addition, there were 32 campus associated with one of the institutions. The data do not indicate which programs and program options were offered by those campus. For the purpose of that institution, all programs and program options were collapsed into a single institution.

At a few institutions, the same CIP Code was assigned to more than one program. In those instances, each program was included in the total count of ATMAE accredited 2-year technology programs. This decision was made based on an assumption that the programs and their core courses in particular were different enough to warrant the assignment of program status.

Moreover, it should be noted that institutions normally limit the assignment of CIP Codes to degree granting programs and not program options. ATMAE, however, still requires that all options associated with an accredited program comply with all accreditation standards⁸.

Broad Areas. The *broad areas* institutions used to characterize their ATMAE accredited 2-year technology programs appear in Table 2. Over 55% (n=59) of the ATMAE accredited 2-year technology programs were characterized by their institutions as programs that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields (15.XXXX). Another 27% of the programs were divided almost evenly between programs that focus on the computer and information sciences and prepare individuals for various occupations in information technology and computer operations fields (11.XXXX) and programs that prepare individuals to apply technical knowledge and skills in the adjustment, maintenance, part replacement, and repair of tools, equipment, and machines (47.XXXX). The balance of the ATMAE accredited 2-year technology programs, 19 of them, were distributed among nine other *broad areas* that ostensibly prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields. Ostensibly in that they have been accredited by ATMAE.

Table 2. ATMAE Accredited 2-year technology Programs by *Broad Area*.

Digits 1-2	Programs by Broad Area	N
01	Agriculture, Agriculture Operations, and Related Sciences	1
11	Computer and Information Sciences and Support Services	14
15	Engineering Technologies and Engineering-Related Fields	59
30	Multi/Interdisciplinary Studies	1
41	Science Technologies/Technicians	4
46	Construction Trades	5
47	Mechanic and Repair Technologies/Technicians	15
48	Precision Production	3
50	Visual and Performing Arts	1
52	Business, Management, Marketing, and Related Support Services	4

Subfields. The *subfields* institutions used to characterize their ATMAE accredited 2-year technology programs appear in Table 3. Of the 59 ATMAE accredited 2-year technology programs that were characterized by their institutions as programs that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields (15.XXXX), 27% (n=16) of them were characterized by their institutions as programs that prepare Industrial Production Technologies/Technicians (15.06XX). Another 24% (n=14) of them were characterized by their institutions as programs

that prepare Drafting/Design Engineering Technologies/Technicians (15.13XX). These 30 programs comprise a little over 28% of all the ATMAE accredited 2-year technology programs. The remaining 15.XXXX coded programs were distributed among 12 other *subfields* that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields.

CIP Codes. The CIP Codes used by all the institutions that administer ATMAE accredited 2-year technology programs to characterize their programs appear in the appendix. Of the 16 ATMAE accredited 2-year technology programs that were characterized by their institutions as programs that prepare Industrial Production Technologies/Technicians (15.06XX), 56% (n=9) of them prepare Industrial Technology/Technicians (15.0612). Those nine programs comprise a little over 8% of all the ATMAE accredited 2-year programs. And of the 14 ATMAE accredited 2-year technology programs that were characterized by their institutions as programs that prepare Drafting/Design Engineering Technologies/Technician (15.13XX), 57% (n=8) of them prepare generalist Drafting and Design Technology/Technicians (15.1301).

Discussion

The problem of this study was to respond to the following question: Is the pursuit of ATMAE accreditation by 2-year technology programs a viable option in their pursuit of excellence? The purpose of this study was to compile data points that characterize the sum of all the ATMAE accredited 2-year technology programs in order to answer the aforementioned question. It was anticipated that the answer would be yes and that the pursuit of ATMAE accreditation is appropriate for all 2-year technology programs. However if the answer was no, then it was anticipated that the pursuit of ATMAE accreditation would be appropriate for at least some of the 2-year technology programs with an interest in their pursuit of excellence.

The 107 ATMAE accredited 2-year technology programs that comprise this study's population were characterized by 54 CIP Codes. The majority of the programs, 82% of them, were distributed among three of ten Broad Areas and 24 of 36 associated Subfields.

Over 55% (n=59) of the programs were characterized by 39% (n=21) of the CIP Codes used to characterize all the ATMAE accredited 2-year technology programs. Specifically, these CIP Codes characterized programs that prepare individuals to apply basic engineering principles and technical skills in support of engineering and related projects or engineering-related fields—15.XXXX. Another 14% (n=15) of the programs were characterized by 19% (n=10) of all the CIP Codes used to characterize all the ATMAE accredited 2-year technology programs—47.XXXX. And another 13% (n=14) of the programs were characterized by 15% (n=8) of all the CIP Codes used to ATMAE accredited 2-year technology programs—11.XXXX. The outliers, which comprise 18% (n=19) of the ATMAE accredited 2-year technology programs, were characterized by their institutions with CIP Codes that were distributed among seven other Broad Areas and 12 other Subfields.

Table 3. ATMAE Accredited 2-year technology Programs by *Subfield*.

Digits 1-4	Programs by Subfield	N
01.06	Applied Horticulture and Horticultural Business Services	1
11.01	Computer and Information Sciences, General	2
11.02	Computer Programming	4
11.03	Data Processing	1
11.08	Computer Software and Media Applications	1
11.09	Computer Systems Networking and Telecommunications	4
11.10	Computer/Information Technology Administration and Management	2
15.00	Engineering Technology, General	2
15.01	Architectural Engineering Technologies/Technicians	3
15.02	Civil Engineering Technologies/Technicians	2
15.03	Electrical Engineering Technologies/Technicians	4
15.04	Electromechanical Instrumentation and Maintenance Technologies/Technicians	5
15.05	Environmental Control Technologies/Technicians	1
15.06	Industrial Production Technologies/Technicians	16
15.07	Quality Control and Safety Technologies/Technicians	1
15.08	Mechanical Engineering Related Technologies/Technician	4
15.09	Mining and Petroleum Technologies/Technician	4
15.10	Construction Engineering Technologies	1
15.11	Engineering -Related Technologies	1
15.13	Drafting/Design Engineering Technologies/Technician	14
15.16	Nanotechnology	1
30.99	Multi-/Interdisciplinary Studies, Other	1
41.02	Nuclear and Industrial Radiologic Technologies/Technician	3
41.03	Physical Science Technologies/Technicians	1
46.00	Construction Trades	1
46.03	Electrical and Power Transmission Installers	2
46.04	Building/Construction Finishing, Management, and Inspection	1
46.99	Construction Trades, Other	1
47.01	Electrical/Electronics Maintenance and Repair Technology	2
47.02	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician (HAC, HACR, HVAC, HVACR)	2
47.03	Heavy/Industrial Equipment Maintenance Technology	3
47.06	Vehicle Maintenance and Repair Technologies	8
48.05	Precision Metal Working	3
50.04	Design and Applied Arts	1
52.02	Business Administration, Management and Operations	1
52.04	Business Operations Support and Assistant Services	3

Any 2-year technology program administered by a regional accrediting body should be able to successfully negotiate ATMAE's accreditation process if their CIP Code is among the ones currently used by the 2-year technology programs accredited by ATMAE. Even programs whose CIP Codes are adjacent to the ones used by the 2-year technology programs accredited by ATMAE or programs whose CIP Codes fall into the same subfield as those used by ATMAE accredited 2-year technology programs should be able to successfully negotiate ATMAE's accreditation process. As an example, while ATMAE has accredited programs characterized by the 15.0612 CIP code (Industrial Technology/Technician), a program characterized by the 15.0611 CIP code (Metallurgical Technology/Technician) is a viable candidate for accreditation by ATMAE. As a matter of fact, most if not all programs characterized by a 15.XXXX CIP are viable candidates for accreditation by ATMAE. While these data are not the be-all and end-all, these data will help institutions and programs make sound decisions with respect to upping the ante in their pursuit of excellence.

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Appendix

ATMAE Accredited 2-year Technology Program CIP Codes and Titles

Digits 1-6	Programs by Title	N
01.0607	Turf and Turfgrass Management	1
11.0101	Computer and Information Sciences, General	1
11.0103	Information Technology	1
11.0201	Computer Programming/Programmer, General	2
11.0202	Computer Programming, Specific Applications	2
11.0301	Data Processing and Data Processing Technology/Technician	1
11.0803	Computer Graphics	1
11.0901	Computer Systems Networking and Telecommunications	4
11.1001	Network and System Administration/Administrator	2
15.0000	Engineering Technology, General	2
15.0101	Architectural Engineering Technology/Technician	3
15.0201	Civil Engineering Technology/Technician	2
15.0303	Electrical, Electronic and Communications Engineering Technology/Technician	4
15.0401	Biomedical Technology/Technician	2
15.0404	Instrumentation Technology/Technician	3
15.0503	Energy/Management and Systems Technology/Technician	1
15.0612	Industrial Technology/Technician	9
15.0613	Manufacturing Engineering Technology/Technician	3
15.0699	Industrial Production Technologies/Technicians	4
15.0701	Occupational Safety and Health Technology/Technician	1
15.0803	Automotive Engineering Technology/Technician	4
15.0903	Petroleum Technology/Technician	4
15.1001	Construction Engineering Technology/Technician	1
15.1102	Surveying Technology/Surveying	1
15.1301	Drafting and Design Technology/Technician, General	8
15.1302	CAD/CADD Drafting and/or Design Technology/Technician	2
15.1303	Architectural Drafting and Architectural CAD/CADD	2
15.1304	Civil Drafting and Civil Engineering CAD/CADD	1
15.1306	Mechanical Drafting and Mechanical Drafting CAD/CADD	1
15.1601	Nanotechnology	1
30.9999	Multi-/Interdisciplinary Studies, Other	1
41.0205	Nuclear/Nuclear Power Technology/Technician	3
41.0301	Chemical Technology/Technician	1
46.0000	Construction Trades, General	1
46.0302	Electrician	1
46.0303	Lineworker	1
46.0412	Building/Construction Site Management/Manager	1
46.9999	Construction Trades, General	1

47.0101	Electrical/Electronics Equipment Installation and Repair, General	1
47.0105	Industrial Electronics Technology/Technician	1
47.0201	Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician	2
47.0302	Heavy Equipment Maintenance Technology/Technician	1
47.0399	Heavy/Industrial Equipment Maintenance Technologies, Other	2
47.0603	Autobody/Collision and Repair Technology/Technician	1
47.0604	Automobile/Automotive Mechanics Technology/Technician	2
47.0608	Aircraft Powerplant Technology/Technician	2
47.0611	Motorcycle Maintenance and Repair Technology/Technician	1
47.0613	Medium/Heavy Vehicle and Truck Technology/Technician	2
48.0501	Machine Tool Technology/Machinist	3
50.0402	Commercial and Advertising Art	1
52.0201	Business Administration and Management, General	1
52.0401	Administrative Assistant and Secretarial Science, General	1
52.0402	Executive Assistant/Executive Secretary	1
52.0407	Business/Office Automation/Technology/Data Entry	1
