



### Definition of Terms

**Program:** A defined course of study leading to a degree program which is denoted by a unique name on the official transcript.

**Option:** A subset of a program which may be denoted by a unique name on the official transcript. (Program options are sometimes referred to as concentrations or specializations, this document will use the term option to represent program options, concentrations or specializations)

**Program Title:** The official approved title of the degree program being considered for accreditation.

**Program Mission:** A general statement which identifies the broad purpose of a program.

**General Outcomes:** A list of general expectations for “what” you expect students to achieve in the form of knowledge and skills.

**Competencies:** A series of measurable activities that demonstrate “how” students are achieving the desired outcomes.

**Competency Measures:** The activities used to determine if students have achieved a competency such as written tests, demonstrations & observations, case studies & discussion groups, exemplars, peer reviews, self assessments, presentations, mock events and monitors.

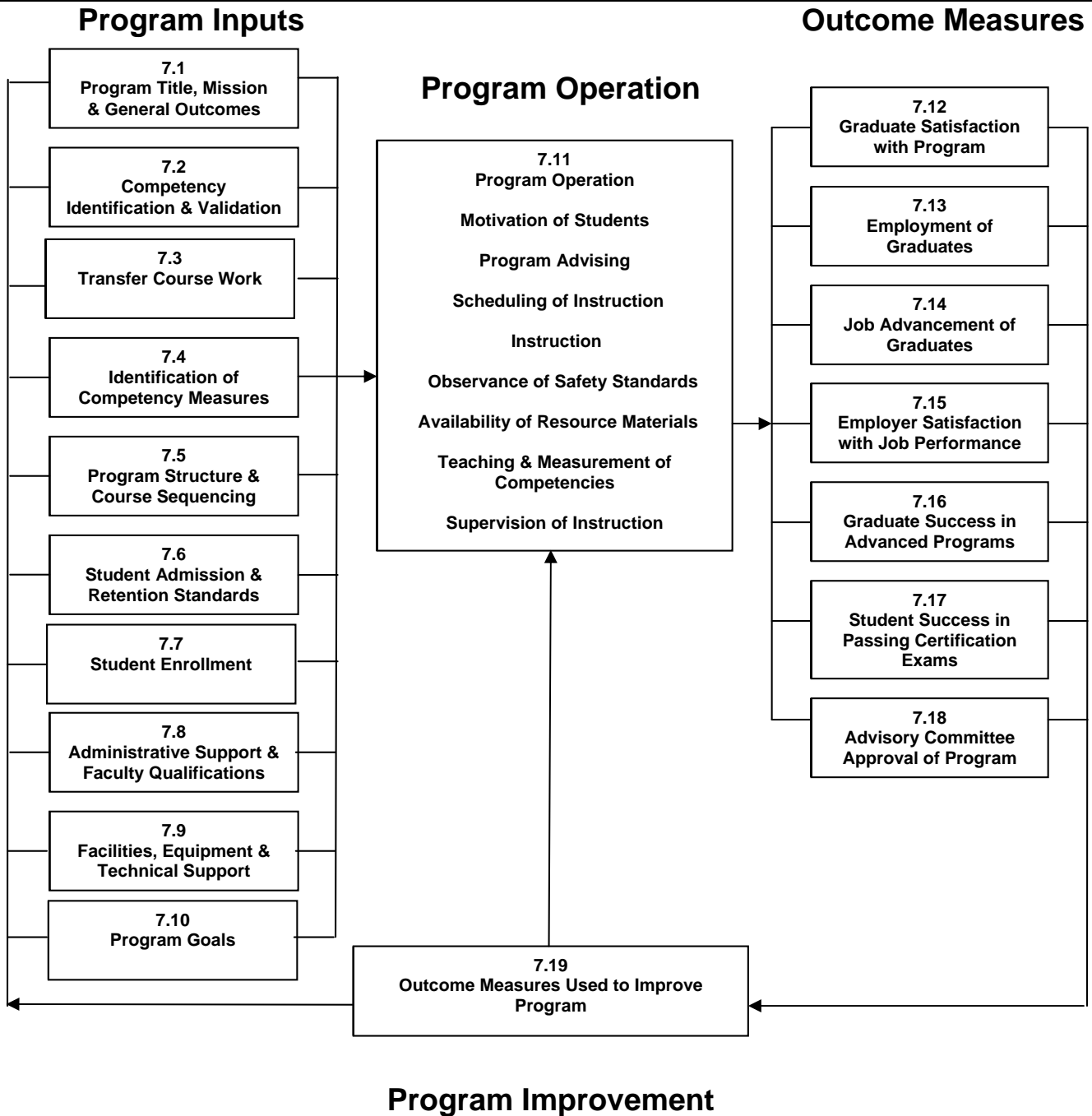
**Outcome Measures:** A series of activities, using instruments such as surveys, undertaken after students have completed a program to determine the overall effectiveness of the outcomes and competencies identified and covered in the program.

The Association of Technology, Management, and Applied Engineering (ATMAE), like other regional and professional accreditation bodies, is recognized for accreditation by the Council for Higher Education Accreditation (CHEA). The inclusion of outcomes assessment as part of accreditation is mandated by CHEA. This means that applications for accreditation of Technology, Management, and Applied Engineering programs by ATMAE must demonstrate that institutions have plans in place for assessing educational outcomes. These plans must show evidence that the results of these assessments have led to the improvement of teaching and learning processes and improved preparation of program graduates to enter professional positions upon graduation. Accrediting bodies, including ATMAE, are thus revising standards for accreditation that move away from “input” models that prescribe courses, credit hours, etc. to the examination of “output” that has been validated by advisory committees and program graduates and that students can demonstrate. This ATMAE Outcomes Assessment Accreditation Model is being tested in selected institutions and is expected to eventually replace the traditional standards currently used by ATMAE.

# Outcomes Assessment Accreditation Model

The objective of ATMAE accreditation is to ensure that programs in Technology, Management, and Applied Engineering that are accredited meet established standards and that outcome measures are used to continuously improve programs. The “Outcomes Assessment Accreditation Model” requires that consideration be given to both the qualitative and quantitative criteria set forth in these standards.

**Table 7.1 – Outcome Assessment Accreditation Model**



**PA.1 Preparation of Self-Study.** The Self-Study Report shall follow the guidelines and be completed by a representative portion of the institutions administrative staff, teaching faculty, and students.

**PA.2 Program Definition:** A program is a set of courses leading to a degree. A program may have more than one option, specialization or concentration, but specific course requirements for each option shall be clearly specified, and as appropriate all program/options shall meet ATMAE standards. In situations where an option is not appropriate for ATMAE accreditation based upon the approved definition of technology, management, and applied engineering, the request for accreditation should clearly state which option, concentration, or specialization is seeking accreditation and which ones are excluded. The case for exclusion should be made with the application for accreditation. If an option, concentration or specialization is excluded and the program becomes accredited, the program must identify specifically which concentrations, options and specializations are and are not accredited in all their publications and promotional materials that mention accreditation.

## 7.0 Standards for Accreditation

### *Program Inputs:*

**7.1 Program Title, Mission, and General Outcomes:** The program/option title, definition and mission shall be compatible with the ATMAE definition of Technology, Management, and Applied Engineering. The program/option shall lead to a degree at the associate, bachelors, or masters level. ATMAE approved definitions for degree programs are as follows:

- a. **Associate Degree:** Programs/options that prepare individuals for positions that contribute to the design and development, production, distribution or operational support of complex technical systems.
- b. **Baccalaureate Degree:** Programs/options that prepare individuals for positions that involve the management of complex technological systems.
- c. **Master's Degree:** Programs/options that prepare individuals for career advancement in that involve the management of complex technological systems

General outcomes shall be established for each program/option that provide a framework for the development of specific measurable competencies. Validation of the general outcomes shall be accomplished through a combination of external experts, an industrial advisory committee and, after the program is in operation, follow up studies of graduates.

Only institutions legally authorized under applicable state law to provide degree programs beyond the secondary level and that are recognized by the appropriate regional and/or national accrediting agency are considered for accreditation. Evidence must exist that the programs are understood and accepted by the university/college community, and the business/industry community.

Note: Each program/option shall have appropriate titles consistent with the approved ATMAE definition of Technology, Management, and Applied Engineering. Representative student transcripts for each program and/or option shall be made available for the visiting team.

**7.2 Competency Identification & Validation:** Measurable competencies shall be identified and validated for each program/option. These competencies must closely relate to the general outcomes established for the program/option and validation shall be accomplished through a combination of external experts, an industrial advisory committee and, after the program is in operation, follow up studies of program graduates.

**7.3 Transfer Course Work:** The institution shall have policies in place to ensure that coursework transferred to the program is evaluated and approved by program faculty. All transfer coursework accepted must meet the ATMAE foundation course requirements for the program/option.

**7.4 Assessment of Competency Measures:** Assessment measures shall exist for each of the measurable competencies identified for the program/option.

**7.5 Program Structure & Course Sequencing:** Each program/option shall meet minimum foundation semester hour requirements. Programs/options may exceed maximum foundation semester hour requirements specified in each area, but appropriate justification must be provided. A specific list of courses and credit hours that are being counted toward each category shall be included in the Self Study Report (please use the attached table 7.5). Minimum and maximum foundation semester hour requirements for degree programs/options are listed below:

**a. Associate's Degree:** Programs/options shall be a minimum of 60 semester hours and shall meet the following minimum/maximum foundation semester hour requirements:

Communications (must include both oral and written course).....	6-9
Mathematics .....	3-12
Physical Sciences* .....	3-12
Management and/or Technical .....	29-45
General Electives .....	0-12

\*Life Sciences may be appropriate for selected programs of study.

Students must successfully complete a minimum of 12 semester hours of management and/or technical course work at the institution seeking accreditation.

**b. Bachelor's Degree:** Programs/options shall be a minimum of 120 semester hours and shall meet the following minimum/maximum foundation semester hour requirements:

General Education (must include oral and written communications).....	18-36
Mathematics .....	6-18
Physical Sciences* .....	6-18
Management .....	12-24
Technical .....	24-36
Electives .....	0-18

\*Life Sciences may be appropriate for selected programs of study.

Students must successfully complete a minimum of 15 semester hours of junior or senior level major courses at the institution seeking accreditation.

**c. Master's Degree:** Programs/options shall be a minimum of 30 semester hours and shall meet the following minimum/maximum foundation semester hour requirements:

Communications and/or Problem Solving.....	6-12
Research .....	6-12
Management and/or Technical .....	12-18
Electives .....	0-6

Students must successfully complete a minimum of 10 semester hours of graduate level coursework at the institution seeking accreditation.

**NOTE:** The Board of Certified Safety Professionals (BCSP) evaluates programs in safety designed to gain recognition for students in the safety profession may have specific requirements based on local market needs and on national professional safety practice studies and standards. Examples are BCSP Technical Report #3 and ANSI Z590.2.

Appropriate laboratory activities shall be included in the program/option and a reasonable balance shall be maintained between the practical application of “how” and the conceptual application of “why.” Master’s degree programs and/or options may not have formal laboratory activities, but must maintain a balance between the practical application of “how” and the conceptual application of “why.”

There shall be evidence of appropriate sequencing of courses in each program/option to ensure that applications of mathematics, science, written and oral communications are covered in technical and management courses. Examples of graded student work and textbooks for each management and/or technical course shall be provided for the visiting team. Further, sequencing should ensure that advanced level courses build upon concepts covered in beginning level courses.

- 7.6 Student Admission & Retention Standards:** There shall be evidence showing that the quality of technology, management, and applied engineering students is comparable to the quality of students enrolled in other majors at the institution. The standards for admission and retention of technology, management, and applied engineering students shall compare favorably with institutional standards. Sources of admission information may include test scores and grade rankings. Sources of retention information shall include general grade point averages of technology, management, and applied engineering students compared to programs in other institutional programs.
- 7.7 Student Enrollment:** There shall be evidence of an adequate number of program majors to sustain the program, and to operate it efficiently and effectively. Program enrollment shall be tracked and verified.
- 7.8 Administrative Support & Faculty Qualifications:** There must be evidence of appropriate administrative support from the institution for the technology, management, and applied engineering program/option including appropriately qualified administrators, an adequate number of full time faculty members and budgets sufficient to support program/option goals. Full time faculty assigned to teach courses in the technology, management, and applied engineering program/option must be appropriately qualified. Faculty qualifications shall include emphasis upon the extent, currency and pertinence of: (a) academic preparation; (b) industrial professional experience (such as technical supervision and management); (c) applied industrial experience (such as applied applications); (d) membership and participation in appropriate technology, management, and applied engineering professional organizations; and (e) scholarly activities. The following minimum qualifications for full time faculty are required (except in unusual circumstances which must be individually justified):
- a. Associate Degree:** The minimum academic qualifications for a regular full-time faculty member is expected to be an earned bachelor’s degree in a discipline, or in certain cases for documented reasons, an associate’s degree plus professional certification/licensure closely related to the faculty member’s instructional assignments.
  - b. Bachelor’s Degree:** The minimum academic qualifications for regular tenure track, or full time, faculty members shall be an earned graduate degree in a discipline closely related to the instructional assignment. A minimum of fifty percent of the regular tenure track, or full-time, faculty members assigned to teach in the program of study content area(s) shall have an earned doctorate or other appropriately earned terminal degree as defined by the institution. Exceptions may be granted to this standard if the institution has a program in place that will bring the faculty demographics into compliance within a reasonable period of time.

- c. **Master's Degree:** An earned doctorate degree in a discipline closely related to the faculty member's instructional assignment (exceptions may be granted for specialized technical management programs/options).

Policies and procedures for faculty selection, appointment, reappointment and tenure shall be clearly specified and shall be conducive to the maintenance of high quality instruction. Faculty teaching, advising, and service loads shall be reasonable and comparable to the faculty in other professional program areas.

- 7.9 **Facilities, Equipment & Technical Support:** Facilities and equipment, including the technical personnel support necessary for maintenance, shall be adequate to support program/option goals. Evidence shall be presented showing the availability of computer equipment and software programs to cover functions and applications in each program area. Facility and equipment needs shall be included in the long range goals for the program.
- 7.10 **Program Goals:** Each program shall have current short and long range goals, and plans for achieving these goals.

**Program Operation:**

- 7.11 **Program/Option Operation:** Evidence shall be presented showing the adequacy of instruction including: (a) motivation and program advising of students; (b) scheduling of instruction; (c) quality of instruction; (d) observance of safety standards; (e) availability of resource materials; (f) teaching and measurement of competencies (specific measurable competencies shall be identified for each course along with the assessment measures used to determine student mastery of the competencies); (g) supervision of instruction; and (h) placement services available to graduates.


Management and/or technical course syllabi must be presented which clearly describe appropriate course objectives, content, references utilized, student activities, and evaluation criteria. Representative examples of student's management and/or technical graded work shall be available for each course.

**Outcome Measures:**


- 7.12 **Graduate Satisfaction with Program/Option:** Graduate evaluations of the program/option shall be made on a regular basis (two to five years). These evaluations shall include attitudes related to the importance of the general outcomes and specific competencies identified for the program/option. Summary data shall be available for graduate evaluations of the program/option.
- 7.13 **Employment of Graduates:** Placement, job titles, and salaries of graduates shall be tracked on a regular basis (two to five years). The jobs held by graduates shall be consistent with program/option goals. Summary data shall be available for the employment of graduates.
- 7.14 **Job Advancement of Graduates:** The advancement of graduates within organizations shall be tracked on a regular basis (two to five years) to ensure promotion to positions of increasing responsibility. Summary data shall be available for the job advancement of graduates.

- 7.15 Employer Satisfaction with Job Performance:** Employer satisfaction with the job performance of graduates shall be tracked on a regular basis (two to five years) including employer attitudes related to the importance of the specific competencies identified for the program. Summary data shall be available showing employer satisfaction with the job performance of graduates.
- 7.16 Graduate Success in Advanced Program:** If a goal of the program/option is to prepare students for advanced studies, then the success in the advanced study programs shall be tracked and confirmed. Summary data shall be available showing success in advanced programs.
- 7.17 Student Success in Passing Certification Exams:** If a goal of the program/option is to prepare students to pass certification examinations, then the success in passing these examinations shall be tracked and confirmed. Summary data shall be available showing success in passing certification exams.
- 7.18 Advisory Committee Approval of Overall Program:** An industrial advisory committee shall exist for each program/option and shall participate in general outcome and competency validation and the evaluation of overall program success. If more than one program of study or program option is available, then appropriately qualified industrial representatives shall be added to the committee or more than one committee shall be maintained. Policies for the advisory committee shall exist that include: (a) criteria for member selection; (b) procedures for selecting members; (c) length of member appointment; (d) committee responsibilities; (e) frequency of meetings (at least one per year); and (f) methods of conducting business. A roster of advisory committee members and minutes of advisory committee meetings shall be made available to the visiting team.
- 7.19 Outcome Measures Used to Improve Program:** Evidence shall be presented showing how multiple outcome measures for example (Graduate Satisfaction with Program/Option, Employment of Graduates, Job Advancement of Graduates, Employer Satisfaction with Job Performance, Graduate Success in Advanced Programs, Student Success in Passing Certification Exams, and Advisory Committee Approval of Program) have been used to improve the overall program/option (please use the attached table 7.19). Evidence that program stakeholders participate in this process must be demonstrated.


**TABLE 7.19  
Outcomes Measures Used to Improve Program**

	<b>Program Improvements</b>	
	Program/Option Name	
<b>What was Done</b>		
<b>Why it was Done</b>		
<b>Supporting Evidence</b>		
Program/Option Name		
<b>What was Done</b>		
<b>Why it was Done</b>		
<b>Supporting Evidence</b>		
Program/Option Name		
<b>What was Done</b>		
<b>Why it was Done</b>		
<b>Supporting Evidence</b>		
Program/Option Name		
<b>What was Done</b>		
<b>Why it was Done</b>		
<b>Supporting Evidence</b>		
Program/Option Name		
<b>What was Done</b>		
<b>Why it was Done</b>		
<b>Supporting Evidence</b>		


**Table 7.5 Associate’s Degree Foundation Semester Hour Requirements Table  
(complete a separate table for each degree/option)**

 <b>Requirements</b>	<b>School/Program Degree Requirements Course prefix, number and title</b>	<b>Semester Hours</b>
<b>Communications 6-9 Semester Hours</b>		
	Total	
<b>Mathematics 3-12 Semester Hours</b>		
	Total	
<b>Physical Sciences*</b> <b>3-12 Semester Hours</b>  <small>*Life Sciences may be appropriate for selected programs of study</small>		
	Total	
<b>Management and/or Technical 29-45 Semester Hours</b>		
	Total	
<b>General Electives 0 – 12 Semester Hours</b>		
	Total	
<b>ATMAE Minimum Total 60 Semester Hours</b>	<b>Degree Total</b>	


**Table 7.5 Bachelor’s Degree Foundation Semester Hour Requirements Table  
(complete a separate table for each degree/option)**

 <b>Requirements</b>	<b>School/Program Degree Requirements</b> <b>Course prefix, number and title</b>	<b>Semester Hours</b>
<b>General Education</b> (Humanities, English, History, Sociology, Psychology, Speech, etc.) <b>18-36 Semester Hours</b>		
	<b>Total</b>	
<b>Mathematics</b> <b>6-18 Semester Hours</b>		
	<b>Total</b>	
<b>Physical Sciences*</b> <b>6-18 Semester Hours</b>  *Life Sciences may be appropriate for selected programs of study		
	<b>Total</b>	
<b>Management</b> <b>12-24 Semester Hours</b>		
	<b>Total</b>	

(Continued on next page)

 <b>Requirements</b> (continued)	(continued) <b>School/Program Degree Requirements</b> <b>Course prefix, number and title</b>	(continued) <b>Semester Hours</b>	
<b>Technical</b> <b>24-36</b>			
		Total	
	<b>General Electives</b> <b>0-18 Semester Hours</b>		
		Total	
<b>ATMAE Minimum</b> <b>Total 120</b> <b>Semester Hours</b>	<b>Degree Total</b>		

**Table 7.5 Master's Degree Foundation Semester Hour Requirements Table**

 <b>Requirements</b>	School/Program Degree Requirements Course prefix, number and title	Semester Hours
Communications 6-12 Semester Hours		
	Total	
Research 6-12 Semester Hours		
	Total	
Management and/or Technical 12-18 Semester Hours		
	Total	
Electives 0-6 Semester Hours		
	Total	
<b>ATMAE Minimum                      Total 30                      Semester Hours</b>	Degree Total	

#### IV. Summaries and Recommendations

##### A. Summaries:

1. Place a “C” in the appropriate space if the Program/Option meets all the criteria of the standard.
2. Place a “P” in the appropriate space if the Program/Option meets most of the stated criteria for the standard, but has weaknesses or deficiencies that need to be corrected.
3. Place an “N” in the appropriate space if the Program/Option fails to substantially meet the criteria of the standard.

##### C. Conditions:

- 1. Accreditation - Report in Two Years:** A written progress report is required in two years which details the corrective action taken to meet standards.
- 2. Accreditation - Report and On-Site Visit in Two Years:** A written progress report by the institution and an on-site visit by one of the initial visiting team members is required in two years.
- 3. Non-Accreditation:** Denial of accreditation occurs when a program does not substantially comply with standards. If a program receives Non-Accreditation status, the application for reaccreditations will be considered as an initial application and the maximum period of accreditation granted will be four years.