



ENGINEERS
AUSTRALIA

Accreditation Management System

Accreditation Standard – Higher Education

AMS-STD-10

Version 1.0

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
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Table of Contents

1. Introduction	3
1.1 Purpose	3
1.2 Scope	3
1.3 Application of the Standard	3
1.4 Definitions and Acronyms	4
1.4.1 Definitions	4
1.4.2 Acronyms	5
1.5 References	6
2. Enumeration of the Accreditation Criteria	7
3. Accreditation Criteria – Academic Programs	8
3.1 Criteria and Suggested Evidence of Attainment for the Academic Program (AP)	8
3.2 Criteria and Suggested Evidence of Attainment for the Operational Environment (OE)	10
3.3 Criteria and Suggested Evidence of Attainment for Quality Systems (QS)	12
Context of this Document in the AMS	13
Revision History of this Document	14

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

Accreditation Standard – Higher Education

1. Introduction

1.1 Purpose

The purpose of this document is to provide a statement of the Engineers Australia Accreditation Standard, expressed as a set of Accreditation Criteria, for higher education programs delivered.

Programs are evaluated against the Accreditation Standard when a program is submitted for evaluation. The Standard is intended for application by Education Providers to enable them to prepare a case for accreditation, and for accreditation panels that evaluate the case.

This Accreditation Standard will also be of interest to all stakeholders.

1.2 Scope

The accreditation standard encompasses all categories of the engineering team, namely:

- Professional Engineer
- Engineering Technologist
- Engineering Associate

This document is limited to a statement of the Standard, and is not interpretive in nature.

The Accreditation Standard for programs delivered in a competency-based framework typical of Vocational Education and Training (VET) programs is not within the scope of this document.

1.3 Application of the Standard

As a statement of the Accreditation Standard, notwithstanding suggested forms of evidence for each Accreditation Criteria, it does not provide detailed guidance on its application. When applying this Standard, the document must be used in close conjunction with the following accompanying Manuals:

- AMS-MAN-10 Accreditation Criteria Manual – Higher Education
- AMS-MAN-11 Accreditation Procedures Manual – Higher Education

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

1.4 Definitions and Acronyms

1.4.1 Definitions

Accreditation Criteria

Accreditation Criteria are the set of factors that are considered by an agency in evaluating the quality of a program. Accreditation Criteria incorporate Competency Standards, that is, statements of assessable attributes to be displayed by graduates that indicate that the purpose of the program has been achieved (Reference [1])

Accreditation Standard

The Accreditation Standard, comprising the Accreditation Criteria, is the threshold measure that an education program must achieve to be accorded accreditation; each Accreditation Criterion must be individually achieved for the Standard to be met

Program

A course of study, comprising units of study, leading to the award of a qualification

Outcomes terminology at the level of a *Program* (Course of Study) – see also figure next page

Engineers Australia Stage 1 Competency Standards – graduate outcomes standard, defined for three occupational categories (Engineering Associate, Engineering Technologist, Professional Engineer), expressed in the form of professional competencies required of graduates at the completion of an engineering education program

Expected Learning Outcomes – the learning outcomes expected by key stakeholder groups, both internal and external to the Education Provider, that inform the Program Learning Outcomes

Program Learning Outcomes – the integrated statement of learning outcomes, informed by the Expected Learning Outcomes of the stakeholder groups, that form part of the education design specification for the program

Graduate Capabilities – the attributes of graduates, achieved and measured through the completion of an engineering education program, that equip them to effectively engage and contribute in the professional engineering workplace

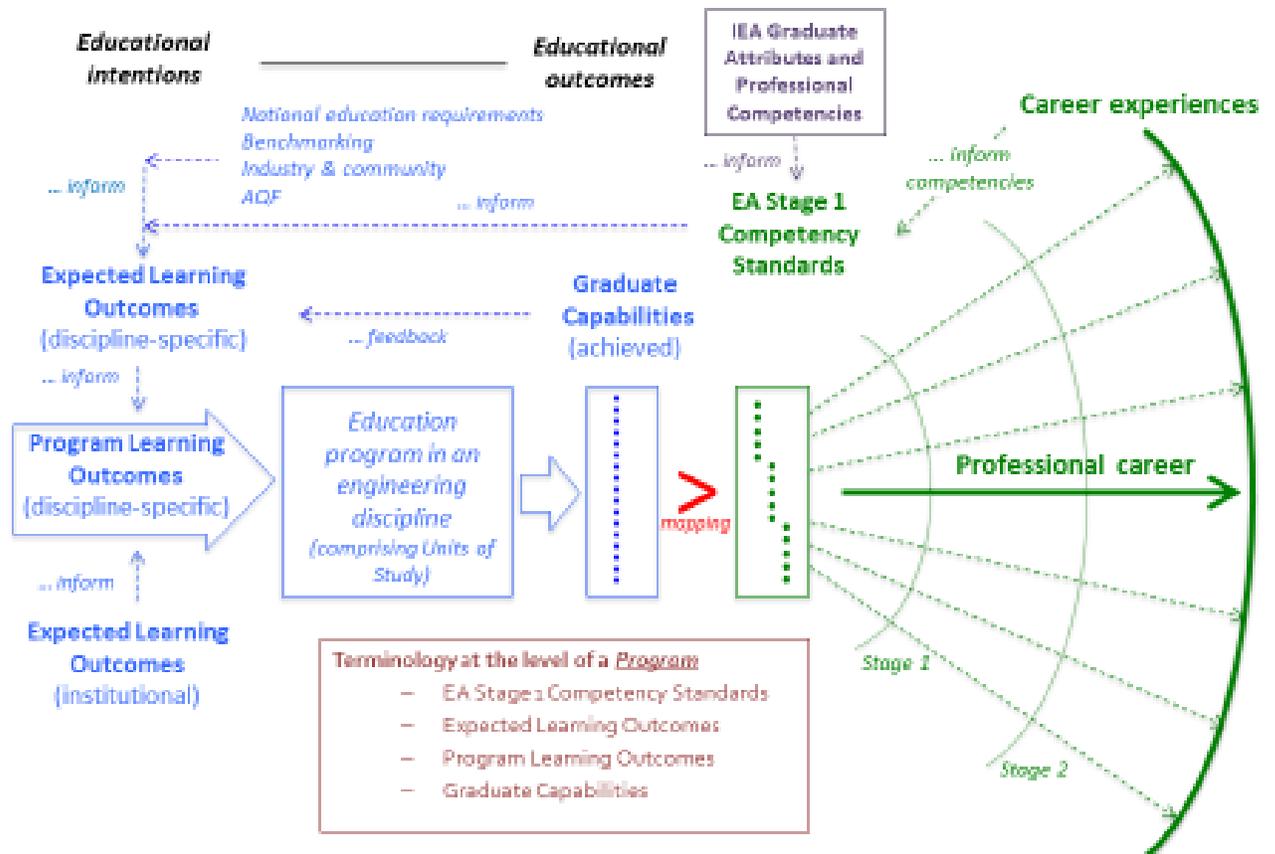
Outcomes terminology at the level of a *Unit of Study*

Unit Learning Outcomes – an unambiguous statement of what students are expected to learn in a Unit and to be able to demonstrate at its completion, guiding the learning design of that Unit

Unit Capabilities – the achieved and measured capabilities that are delivered by a Unit

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

of Study, building across all Units in a program to deliver the Graduate Capabilities



1.4.2 Acronyms

AP	Academic Program
EA	Engineers Australia or Engineering Associate
ET	Engineering Technologist
IEA	International Engineering Alliance
HE	Higher Education
OE	Operational Environment
PE	Professional Engineer
QS	Quality Systems
VET	Vocational Education and Training

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

1.5 References

- [1] International Engineering Alliance Graduate Attributes and Professional Competencies, Version 3.0, 21 June 2013
- [2] International Engineering Alliance and European Network for Engineering Education. Best Practice in Accreditation of Engineering Programmes: an Exemplar, 13 April 2015 (joint document)
- [3] Engineers Australia Stage 1 Competency Standard – Professional Engineer
- [4] Engineers Australia Stage 1 Competency Standard – Engineering Technologist
- [5] Engineers Australia Stage 1 Competency Standard – Engineering Associate
- [6] AMS-MAN-10 Accreditation Criteria Manual – Higher Education
- [7] AMS-MAN-11 Accreditation Procedures Manual – Higher Education

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

2. Enumeration of the Accreditation Criteria

The mandated accreditation criteria are enumerated below as a ready reference summary.

Academic Program (AP)

AP1 Development of the education specification for the program

Purpose: To establish a clear design specification for the education program, inclusive of Program Learning Outcomes, incorporating and driven by the EA Stage 1 Competency Standard

AP2 Approach to program and curriculum design

Purpose: To explain the educational design approach and process employed to achieve the specified learning outcomes for the program

AP3 Program structure and implementation framework

Purpose: To articulate the education concept and program architecture consistent with the design approach

AP4 Engagement with professional practice

Purpose: To describe how the graduate capabilities related to professional practice are developed throughout the entire program

AP5 Program curriculum (learning outcomes, content, pedagogy, assessment)

Purpose: To verify that the education specification is achieved in the detailed design of the program

Operational Environment (OE)

OE1 Organisational structure and commitment to engineering education

Purpose: To show how the organisation is aligned to deliver the program

OE2 Academic and support staff profile

Purpose: To demonstrate how the staff profile and supporting practices enable delivery of the program

OE3 Academic leadership and educational culture

Purpose: To demonstrate the key leadership features that drive education delivery

OE4 Funding, facilities and physical resources

Purpose: To ensure that resources appropriate for delivery of a professional education program are available through the accreditation period

OE5 Management of the student profile

Purpose: To ensure that all graduates complete a program of study that verifiably delivers the Stage 1 competencies, inclusive of all pathways to the award of the qualification

Quality Systems (QS)

QS1 Engagement with external stakeholders

Purpose: To ensure input from downstream stakeholders drives continuous improvement

QS2 Engagement with students

Purpose: To ensure student feedback informs ongoing improvement

QS3 Continuous improvement of the education program

Purpose: To embed continuous improvement as a normal education activity

QS4 Dissemination to students of educational expectations

Purpose: To provide the professional context of the program to students

QS5 Benchmarking

Purpose: To facilitate strategic improvements to the program and comply with Higher Education Standards

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

3. Accreditation Criteria – Academic Programs

3.1 Criteria and Suggested Evidence of Attainment for the Academic Program (AP)

Mandated Criteria	Suggested Evidence of Attainment
<p>AP1 Development of the education specification for the program</p> <p>Purpose: To establish a clear design specification for the education program, inclusive of Program Learning Outcomes, incorporating and driven by the EA Stage 1 Competency Standard</p>	<p>a. An entry to practice program that is designed to meet the Engineers Australia Stage 1 Competency Standard, in a clearly identified engineering discipline with a matching and appropriate program title</p> <p>b. Explicit and comprehensive specification of graduate capabilities that demonstrate:</p> <ul style="list-style-type: none"> i. A rationale based on analysis of industry and community needs, trends in professional practice and benchmark indicators ii. Attainment of the Engineers Australia Stage 1 competency elements (PE/ET/EA), integrated with specific details of the technical knowledge and engineering application skills that are uniquely targeted for the specified engineering discipline iii. Attainment of institutionally-specified graduate capabilities <p>c. Systematic review process inclusive of all teaching staff and the ongoing input from external constituencies, that:</p> <ul style="list-style-type: none"> i. Is holistic and outcomes driven ii. Addresses the full range of program learning outcomes/graduate capabilities iii. Is specific to each program <p>d. Ongoing evaluation of engineering practices, industry needs and demand, to maintain the relevance of the Program Learning Outcomes</p>
<p>AP2 Approach to program and curriculum design</p> <p>Purpose: To explain the educational design approach and process employed to achieve the specified learning outcomes for the program</p> <p>Also see AP4 and AP5</p>	<p>a. Systematic top down/bottom up process for setting, reviewing and verifying achievement of the specified learning outcomes in the design of the program</p> <p>b. Units of study that contain progressive emphasis on independent learning, reflective practices, critical review, peer and self-assessment as the program progresses</p> <p>c. Integrated design of an adequate range of assessment tasks (with grading schema) that maps to validate attainment of intended learning outcomes at the unit of study level, and which aggregates to verify graduate capabilities matching the specified learning outcomes for the program</p> <p>d. Inclusion of reflective, self- and peer assessment processes, referenced to relevant standards and benchmarks, which enable students to track their progressive attainment of graduate capabilities that will ultimately match the specified learning outcomes for the program</p> <p>e. Systematic curriculum review processes that incorporate input from students, engineering practitioners and appropriate peer review and benchmarking</p> <p>The mapping developed for AP5 d. may also be used as evidence for AP2</p>
<p>AP3 Program structure and implementation framework</p> <p>Purpose: To articulate the education concept and program architecture consistent</p>	<p>a. Program structure compatible with delivery of the specified learning outcomes for the program</p> <p>b. Dual degree implementations which do not compromise the delivery of the full range of specified learning outcomes for the host engineering degree</p> <p>c. Implementation pathways such as electives, major and minor sequences, cooperative learning modes, study abroad, project/thesis options, workplace learning, online learning, distance mode and articulation routes that provide equivalence of graduate outcomes</p>

Accreditation Management System

Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

Mandated Criteria	Suggested Evidence of Attainment
with the design approach	<p>d. Structure has flexibility to allow students with advanced standing to progress; and implementation allows for the range of student backgrounds, individual learning abilities (covered in OE4 g.)</p> <p>e. Implementation is inclusive of the internationalised student population and global dimensions of engineering</p> <p>f. Adequate processes for analysing, monitoring and ensuring the equivalence of alternative implementation pathways and delivery modes</p>
<p>AP4 Engagement with professional practice Purpose: To describe how the graduate capabilities related to professional practice are developed throughout the entire program</p>	<p>AP4 and AP5 should be considered together</p> <p>a. Engagement with professional practice (other than formal work placement), used as an integrated learning activity embedded within units of study and contributing in a defined manner to the delivery of graduate capabilities matching the specified learning outcomes</p> <p>b. Formal work placements, where implemented, are documented with appropriate intended learning outcomes traced to the applicable EA Stage 1 Competency Standard</p> <p>c. Appropriate systems for recording, tracking and assessing delivery of the intended learning outcomes (such as e-portfolios)</p> <p>d. Experience with the working of engineering teams</p>
<p>AP5 Program curriculum (learning outcomes, content, pedagogy, assessment) Purpose: To verify that the education specification is achieved in the detailed design of the program</p>	<p>AP4 and AP5 should be considered together</p> <p>a. Specifications of intended learning outcomes for individual units of study, aggregating to deliver graduate capabilities matching the specified learning outcomes for the program (demonstrated by systematic mapping)</p> <p>b. Evidence that the Engineers Australia content guideline informs design of the program</p> <p>c. For each unit of study, a description of its intended learning outcomes, content, learning tasks, and assessments (including grading rubrics), as provided to students. Inclusion of mapping information to demonstrate linkage between intended learning outcomes and assessment measures as well as demonstrating the contributions that the unit of study is designed to make towards developing and validating the prescribed learning outcomes for the program</p> <p>d. Specific mapping to demonstrate how intended learning outcomes and assessment tasks from individual units of study aggregate to validate delivery of graduate capabilities which will match the specified learning outcomes</p>

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

3.2 Criteria and Suggested Evidence of Attainment for the Operational Environment (OE)

Mandated Criteria	Suggested Evidence of Attainment
<p>OE1 Organisational structure and commitment to engineering education Purpose: To show how the organisation is aligned to deliver the program</p>	<ul style="list-style-type: none"> a. Substantive organisational entity with clearly designated and devolved accountability for leadership and management of engineering education programs b. Long term, institutional commitment and strategic management to assure the development of the engineering discipline and the provision of appropriate resources c. Formally constituted committee structures and mechanisms for program review and approval
<p>OE2 Academic and support staff profile Purpose: To demonstrate how the staff profile and supporting practices enable delivery of the program</p>	<ul style="list-style-type: none"> a. Adequate academic staff numbers, with: <ul style="list-style-type: none"> i. Appropriate depth, mix and distribution of qualifications, experience and engineering practice exposure, scholarship and professional standing to match the range of specialist program offerings ii. Gender balance across academic appointment levels iii. Appropriate student/staff ratios b. Effective use of sessional and industry presenters to enrich staff skills profile and the exposure of students to practice c. Effective academic workload policies and practices d. Effective student learning support staffing and systems e. Appropriate technical and administrative support staff teams f. Adequate student counselling and advisory services
<p>OE3 Academic leadership and educational culture Purpose: To demonstrate the key leadership features that drive education delivery</p>	<ul style="list-style-type: none"> a. Effective program teams, with effective team leadership, to drive the educational design, implementation and improvement processes b. Cohesive program team inclusive of all teaching and relevant support staff c. Dynamic, cooperative learning community, inclusive of gender, culture, social differences; and engaged with: <ul style="list-style-type: none"> i. Progressive pedagogical frameworks and adoption of best practice in engineering education ii. Cooperative industry and community outreach iii. Encouraging diversity and the development of individual staff as learning facilitators iv. Interlinked research and teaching programs d. Staff role modelling the professional competencies of engineering practice e. Appropriate policy and record of staff development – in both pedagogical and professional practice skills f. Staff awareness of gender and cross-cultural issues, inclusive teaching approach

Accreditation Management System

Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

Mandated Criteria	Suggested Evidence of Attainment
<p>OE4 Funding, facilities and physical resources</p> <p>Purpose: To ensure that resources appropriate for delivery of a professional education program are available through the accreditation period</p>	<ul style="list-style-type: none"> a. Sound business planning for current commitments and proposed developments b. Appropriate principles for distributing funding to support the program c. Capacity to deliver current commitments and projected developments d. Appropriate experimental and project-based facilities to support both structured and investigatory learning within the specified engineering discipline e. Adequate IT facilities and support f. Access to simulation, visualisation, analysis, design, documentation, planning, communication and management tools as well as test and measurement equipment and information resources appropriate to current industry practice g. Learning support facilities appropriate to the development of the full range of graduate capabilities and matching the needs of individual students, including those with a disability
<p>OE5 Management of the student profile</p> <p>Purpose: To ensure that all graduates complete a program of study that verifiably delivers the Stage 1 competencies, inclusive of all pathways to the award of the qualification</p>	<ul style="list-style-type: none"> a. Appropriate policies and robust systems for: <ul style="list-style-type: none"> i. Defining and maintaining student admission standards, including full definition and consideration of all implementation pathways ii. Assessment and verification of prior learning and prior experience for awarding advanced standing iii. Determining qualification eligibility iv. Monitoring success, retention and graduation rates v. Monitoring enrolment trends and program viability

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

3.3 Criteria and Suggested Evidence of Attainment for Quality Systems (QS)

Mandated Criteria	Suggested Evidence of Attainment
<p>QS1 Engagement with external stakeholders Purpose: To ensure input from downstream stakeholders drives continuous improvement</p>	<p>a. Ongoing, regular input to the establishment, review and attainment monitoring of specified learning outcomes from a formal advisory body which includes representation of industry, the community and professional organisations</p> <p>b. External stakeholders facilitating appropriate professional practice exposure opportunities for students</p> <p>c. Productive industry linkages through collaborative project work and research, contributing to the professional development of staff and students</p> <p>d. Graduate, alumni, employer, advisory body and community input mechanisms</p>
<p>QS2 Engagement with students Purpose: To ensure student feedback informs ongoing improvement</p>	<p>a. Use of staff-student consultation forums, focus groups or other direct input mechanisms for on-going review and improvement</p> <p>b. Appropriate use of survey instruments and other means of obtaining systematic feedback</p>
<p>QS3 Continuous improvement of the education program Purpose: To embed continuous improvement as a normal education activity</p>	<p>a. Continuous improvement process involving all teaching staff</p> <p>b. Driven by a clear understanding of the 'big-picture' graduate capabilities</p> <p>c. Documented records of improvement processes</p> <p>d. Closing the loop within units of study: intended learning outcomes - learning activities – and assessment of unit capabilities</p> <p>e. Closing the loop on delivery of graduate outcomes matching the specified learning outcomes for the program</p> <p>f. Documented processes for:</p> <ul style="list-style-type: none"> i. New program approval, including demand analysis, establishing rationale, specification of program learning outcomes, educational design ii. Program amendment
<p>QS4 Dissemination to students of educational expectations Purpose: To provide the professional context of the program to students</p>	<p>a. Adequate documentation of the prescribed learning outcomes and the educational design philosophy in program and individual unit of study documents</p> <p>b. Clear mapping of the component contributions from individual units of study to the specified learning outcomes for the program</p> <p>c. Clear linkage between the intended unit learning outcomes, learning activities and performance assessment within the individual unit of study</p>
<p>QS5 Benchmarking Purpose: To comply with Higher Education Standards and facilitate strategic improvements to the program</p>	<p>a. Implementation of regular processes for external referencing of specified learning outcomes and observed graduate capabilities against the expectations of employers, as well as national/international practice</p> <p>b. Implementation of regular processes for external referencing of the success of student cohorts against comparable programs, including:</p> <ul style="list-style-type: none"> i. Analyses of success, retention progression rates, attrition rates and completion times and rates, and where applicable, for different locations of delivery and modes of study ii. The assessment methods and grading of students' achievements of specified learning outcomes for selected units of study within the program

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

Context of this Document in the AMS

This document, AMS-STD-10 Accreditation Standard – Higher Education, is located within the hierarchy of the Accreditation Management System as depicted in the table below.

PRINCIPLES	<i>Statement of accreditation principles (policy)</i>	
	AMS-POL-01	Accreditation Principles
STANDARDS	<i>Standards against which compliance is evaluated</i>	
	EA Stage 1	Competency Standards (at Engineers Australia website)
<i>This document</i>	AMS-STD-10	Accreditation Standard – Higher Education
	AMS-STD-20	Accreditation Criteria – VET Competency Programs
MANUALS	<i>Instructions for accreditation</i>	
	AMS-MAN-10	Accreditation Criteria Manual – Higher Education
	AMS-MAN-11	Accreditation Procedures Manual – Higher Education
	AMS-MAN-20	Accreditation Criteria Manual – VET Competency Programs
	AMS-MAN-21	Procedures Manual – VET Competency Programs
HANDBOOK	<i>Contextual information on professional practice</i>	
	AMS-HBK-01	Engineering Handbook (not yet available)
TEMPLATES	<i>Documents with specified format and structure</i>	
	AMS-TPL-xx	Accreditation Submission (Self-Study Report)
	AMS-TPL-xx	Table of Programs Offered for Accreditation
	AMS-TPL-xx	Admissions and Enrolments
	AMS-TPL-xx	Engineering School Academic Staff Profile
	AMS-TPL-xx	Pro forma for Staff CV
PRACTICE NOTES	<i>Information about, and examples of, good accreditation practice</i>	
	Code of Ethics	Engineers Australia Code of Ethics (at EA website)
	PPIR	Professional Performance, Innovation and Risk (Warren Centre)
	Various	To be developed

Accreditation Management System	
Accreditation Standard – Higher Education	Date: 15 December 2017
AMS-STD-10	Version: 1.0

Revision History of this Document

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15 December 2017	1.0	Initial release	Chair, Accreditation Board