



Preparing the Self-Study Report for Engineering

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Disclaimer

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Getting Started

- Download from the ABET website at <http://www.abet.org/accreditation> the current versions of:
 - Accreditation Policies and Procedures Manual, 2014-2015 (APPM)
 - Criteria for Accrediting Engineering Programs, 2014-2015
 - Engineering Self-Study Questionnaire Template, 2014-2015 (SSQ)

Recent Changes

- Criterion 4 no longer requires that the extent to which graduates attain Program Educational Objectives be measured
- Criterion 2 still requires that the Program Educational Objectives be periodically reviewed to ensure that they are consistent with the institutional mission and constituency needs

Self-Study Questionnaire (SSQ)

- Guided tour of what you will want to put into the Self-Study Report (SSR)
- Can be used as a check list
- Not intended to be limiting
- Usually posted on the ABET website in July of the year prior to the visit

Some Self-Study Myths

Myth #1

We can wait to start the Self-Study

- Self-Study preparation should begin NO LATER than the fall prior to year of visit
- Provide time to:
 - Synthesize materials into coherent whole
 - Engage faculty and staff to ensure Self-Study is representative of program
 - Review by someone not involved in the preparation

Myth #2

We do not need to answer all questions

- The reader expects to see your Self-Study Report developed in the format of the Self-Study Questionnaire (SSQ)
- Be sure to include all items that appear in the *SSQ Table of Contents*
- If a section does not apply or you need to deviate in the location of material, make it clear to the reader why, and how to find the material

Myth #3

Faculty members do not need to be involved in Self-Study development

- Although all faculty members do not need to participate in the writing of the Self-Study, they should contribute to its development by reviewing, providing data/information, and be able to respond to questions about its content
 - The Self-Study is representative of the program
 - Faculty members can speak to the various elements of the program during the Site Visit

Myth #4

We do not need to tell ABET about significant changes until visit

- Report significant changes in:
 - Program name
 - Faculty
 - Program objectives
 - Curricular content
 - Student body
 - Administration
 - Facilities
 - Institutional commitment
 - Financial status
- May result in:
 - Accreditation maintained until next scheduled review
 - Interim focused review
- If in doubt – better to check

What is a “significant” change?

- Characteristics to consider:
 - Has a direct effect on the accredited program
 - Affects ability to meet ABET criteria or policy
 - Affects ability to deliver instruction
 - Affects timely completion of degree

Self-Study Basics and Context

- Presents your program to the evaluation team
- Informs team of elements of the program as they relate to the criteria
- Affords team its **FIRST IMPRESSION** of the extent to which the program meets the criteria
- Gives an impression of the institution's preparation for the upcoming visit

The Preparation Activity

Accreditation Schedule

Year 1	November	Readiness review (new-to-ABET institutions)
	December	
	January	Request for evaluation submitted
	February	
	March	
	April	
	May	Visit dates set / Teams assembled
	June	
	July	Self-study reports submitted
	August	PEVs review reports, send pre-visit questions, set visit schedule
	September	
	October	
Year 2	November	Visits occur
	December	
	January	
	February	Due process
	March	<ul style="list-style-type: none"> Exit Statements edited to Draft Statements Institutions respond to Draft Statements Final Statements edited
	April	
	May	
	June	
	July	Accreditation actions approved
	August	
	September	Institutions notified of accreditation actions

Time Frame for Responses

- Responses to the SSQ items are generally for the year in which self-study is prepared (year prior to visit)
- Self-Study is due July 1 of year of visit
- Readiness Review--for new programs that have no “sister” programs in any of the four commissions
- Assessment results will cover previous years as well
- Some tables request information for years prior to year of visit
- Updates for year of visit can be provided on-site to evaluation team
- Upcoming changes should be noted in Self-Study
- Self-study is a snap-shot of a continuous process

Audience for Self Study Report

- Program Evaluator(s) - Primary
 - Concerned with program-specific details
 - Will coordinate findings with other PEVs on team and with team chair to seek consistent and appropriate interpretation relative to the criteria
 - Expertise in specific discipline
 - May or may not have a lot of ABET experience, but will have extensive training conducted by ABET and is evaluated using the ABET PEV Competency Model.
- Team Chair - Secondary
 - Overall team manager
 - Responsible for overall report and presentation to commission detailing findings

Tips to Connect with Your Audience

- Make it easy for the reader to find information required
 - Table of Contents
 - Concise to-the-point responses
 - Specific pointers to documents or other sections as appropriate
- Clearly explain institution or program-specific jargon
- OK to use disciplinary jargon
- Footnote, if not sure what response is expected, to explain your interpretation

Preparation Tips

- Appoint leader of Self-Study preparation in fall prior to year of visit – or earlier
- Assign tasks to key persons at program, college, and institutional level as appropriate
- Synthesize materials into coherent whole
- Leave time for review before due date
 - By someone not involved in the preparation, if possible

Considerations for Evaluation Success

- Read through the SSQ, particularly the comments about preparation
- During preparation, retain instructions as to how to fill out the SSQ in the SSR sections and tables as you are preparing the report (eliminate in the final product)
- Turn on the spell and grammar checkers
- Demonstrate on-going compliance with criteria
- Approach evaluation as opportunity for constructive input

How is Self-Study Report Organized?

- In concert with the criteria
 - Students
 - Program Educational Objectives
 - Student Outcomes
 - Continuous Improvement
 - Curriculum
 - Faculty
 - Facilities
 - Support
 - Program Criteria (as applicable)

Types of Responses

- Respond directly and succinctly to the questions in each section of the SSQ
- Narrative explanations
- Tables and figures
- Appendices (vitae, course descriptions, institutional summary)

What about Tables and Figures?

- Do not change the format without a good reason
- Feel free to add additional tables and/or figures to make your self-study more understandable and to explain relevant points about your program
- The goals are content (numbers, facts, and trends) and clear communication
- Update tables immediately before visit when appropriate

Criterion Specifics

Criterion 1. Students

- The quality and performance of students and graduates is an important success factor
- To determine success, the institution must evaluate, advise, and monitor students
- Policies/procedures must be in place and enforced for acceptance of transfer students and validation of courses taken elsewhere
- Assure that all students meet all program graduation requirements

Typical Student Issues

- No procedures to ensure any transfer credits are properly validated for equivalency with program curriculum
- Prerequisite violations
- Students do not meet with a faculty member for career advising
- Difficulty in determining how students meet graduation requirements
 - Provide graduation check sheets / explanation with transcripts

Criterion 2. Program Educational Objectives

- Broad statements that describe what graduates are expected to attain within a few years of graduation

Criterion 2. Program Educational Objectives

- Published Educational Objectives (PEOs) consistent with the mission of the institution, the needs of the constituencies and these criteria
- A documented, systematically utilized effective process, involving the constituencies, that periodically reviews the objectives to ensure they remain consistent with the mission, constituent needs and these criteria

Criterion 2. Program Educational Objectives

- The process needs to document and demonstrate that the PEOs are based on constituent needs which were determined by involving them in some manner
- PEOs are also to be reviewed and revised as needed
- Assessment and evaluation of PEO attainment is no longer required
 - Change creates opportunity for aspirational PEOs that cannot be easily measured

Typical PEO Issues

- Do not meet PEO definition – accomplishments of graduates
 - Should be broad statements that describe what graduates are expected to attain within a few years
 - Should not contain Student Outcome language
 - ‘are capable of...’
 - ‘are equipped with...’
- Demonstration of constituent needs
 - Large number of constituents – many not involved in establishment/review of PEOs
 - Involvement is required – approval is not
- Process for revision not periodic or documented

Example Summary of PEO Input

Input Method	Schedule	Constituent
Alumni survey	Every three years	Alumni 2-5 years out
Employer focus group	Every two years during Career Fair	Employers (and recruiters); some are alumni
Senior exit interview	Annually	Students; retrospective discussion of PEOs and their intended career paths
Advisory Council discussions	As needed—available annually	Industrial representatives, employers, alumni
Curriculum Committee meetings	Available as frequently as needed	Faculty and students

Criterion 3. Student Outcomes

- The program must have documented student outcomes that prepare graduates to attain the program educational objectives
- Student outcomes are outcomes (a) through (k) plus any additional outcomes that may be articulated by the program
- Any additional outcomes must be assessed according to Criterion 4

Criterion 4: Continuous Improvement

- The program **must** regularly use appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained. The results of these evaluations **must** be systematically utilized as input for the continuous improvement of the program
- Other available information **may** also be used to assist in the continuous improvement of the program

Criterion 4: Continuous Improvement

- Criterion 4 essentially now contains two components, namely
 - A documented process incorporating relevant data to regularly assess and evaluate the extent to which each of the Student Outcomes is being met
 - Any other actions taken to improve the program, regardless of how information/data was obtained or what prompted the improvement action

What does Continuous Improvement Mean?

- An educational program process should involve a clear understanding of:
 - Mission
 - Constituents
 - Objectives (what one is trying to achieve)
 - Outcomes (learning that takes place to meet objectives)
 - Processes (internal practices to achieve the outcome)
 - Facts (data collection)
 - Evaluation (interpretation of facts)
 - Action (change, improvement)

Continuous Improvement

- Describe how the results of evaluation processes for the student outcomes and any other available information have been systematically used as input in the continuous improvement of the program.
- Describe the results of any changes (whether or not effective) in those cases where re-assessment of the results has been completed.
- Indicate any significant future program improvement plans based upon recent evaluations.
- Provide a brief rationale for each of these planned changes

We Made Major Changes in the Program Recently. What Do We Do?

- Great! You identified (perhaps through your program of assessment and analysis) that a change was needed to achieve outcomes, or to improve some other aspect of your program
- Relate the changes to statements in the criteria as appropriate and describe them in the parts of the self-study that relate to these criteria
- Include what led to them, when they took/take effect, and when their impact will be assessed

Assessment of Student Outcomes

1. A listing and description of the assessment processes used to gather the data upon which the evaluation of each student outcome is based.

Examples (not all inclusive): specific exam questions, student portfolios, internally developed assessment exams, senior project presentations, nationally-normed exams, oral exams, focus groups

2. The frequency with which these assessment processes are carried out
3. The expected level of attainment for each of the student outcomes
4. Summaries of the results of the evaluation process and an analysis illustrating the extent to which each of the student outcomes is being attained
5. How the results are documented and maintained

Assessment of Student Outcomes

- The process of assessment and evaluation needs to demonstrate the degree to which outcomes are attained, however, there is no language
 - that says all outcomes must be attained to the same degree
 - that says anything about a numeric scale measuring degree of attainment
 - Although “degree” implies some quantitative gauge

Assessment of Student Outcomes

- What about assessment data? What is adequate data?
 - Does it **all** have to be objective/direct? (NO)
 - Can it be subjective? (Some of it may be; nothing says it has to be)
 - Is the observation or conclusion of course instructor adequate? (What was his or her basis for the observation?)
 - Does evidence for each outcome have to be in the form of work the student has produced? (No, however, the PEV & ultimately the team, needs to be convinced that outcome attainment has been demonstrated.)

Some examples...

- Major design experience for engineering programs:
 - Involves both technical and non-technical outcomes
- FE Exam results
 - (f) ethics and others
- Laboratory experience and reports
 - Evaluate aspects related to outcomes during grading
- Presentation evaluations
- Imbedded test questions

Sample Assessment Plan

Performance Indicators	Method(s) of Assessment	Where data are collected (summative)	Length of assessment cycle (yrs)	Year(s) of data collection	Target for Performance
1) Problem statement shows understanding of the problem	Faculty assessment of design problem statement	EGR 4090	3 years	2007, 2010	90%
	Senior Survey	On-line survey			
2) Solution procedure and methods are defined	Faculty assessment of senior project plan	EGR 4090	3 years	2007, 2010	85%
	Senior Survey	On-line survey			
3) Problem solution is appropriate and within reasonable constraints	Faculty assessment of senior design solution	EGR 4090	3 years	2007, 2010	80%
	Senior Survey	On-line survey			

Sample Evaluation Plan

Time	Activity
Late summer / early fall	<ul style="list-style-type: none">• Review course outcomes and previous course reviews• Incorporate any changes for improvement
Fall / spring	<ul style="list-style-type: none">• Conduct and record student assessment for designated outcomes• Annual faculty reviews
End of semester	<ul style="list-style-type: none">• End of course surveys• Complete course review (included outcome assessment)
Late spring semester	<ul style="list-style-type: none">• Web-based survey• Senior exit interview• Co-op surveys
Early summer	<ul style="list-style-type: none">• Compilation of assessment results for all courses
Early- to mid-summer	<ul style="list-style-type: none">• Curriculum committee meets to review assessment results and make recommendations
Mid- to late-summer	<ul style="list-style-type: none">• Recommendations to faculty• Suggest changes for curriculum and program improvement

Summarize Changes Resulting from Continuous Improvement Process

- Provide a list of changes implemented since last visit
- Include all improvements (i.e. not only those resulting from assessment results)

Sample Change Description

Action Taken	Created a two-course major design sequence. Added a new course, EECE 4279 Professional Development and Capstone Design, as a prerequisite to EECE 4280, Electrical and Computer Engineering Design.
Basis for Action	Improve compliance with respect to outcomes (f), (h), and (i) and Criterion 5, based on EAC of ABET visit comments .
Date	Fall 2007
Results	In EECE 4279, additional time is devoted prior to the implementation of the design project on activities related to outcomes (f), (h), and (i). Students must write and orally defend a major design project proposal before the start of EECE 4280. Students devote more time in EECE 4280 to the implementation of the project.

Criterion 5: Curriculum

- One year of a combination of college level mathematics and basic sciences appropriate to the discipline
- One and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study
- Curriculum culminating in a major design experience incorporating appropriate engineering standards and multiple realistic constraints

Course Syllabi

- Support classification of courses as shown in curriculum table
- Show scope of courses – breadth/depth of topics
- Indicate textbooks or other supporting documents
- Follow specified outline (specifies minimum required information) for all courses
- Alternative formats possible, perhaps desirable
- EAC: No more than two pages for each course, some programs capture all the information in a single page

Typical Curriculum Issues

- Split of an course between Math/Basic Science and Engineering Topics categories
- Significant design cited in Table 5.1 courses that is not evident in course syllabi or student work
- Major design experience missing or lacking critical components
 - Standards
 - Constraints

Standards / Constraints Summary

	Student				
	1	2	3	4	5
Title					
Constraints					
Economic					
Environmental					
Manufacturability					
Ethical					
Health & Safety					
Other					
Standards					
ASTM					
Code					

Program Criteria

- There are Program Criteria for most programs to cover discipline-specific requirements related to
 - Curriculum
 - Faculty
- Program criteria do not add outcomes, unless program chooses to do so

Criterion 6: Faculty

- Sufficient number to achieve program objectives.
- Competent to cover all curricular areas of program.
- Authority for creation, delivery, evaluation, modification and continuous improvement of the program.

Criterion 6: Faculty

- Summary and description of faculty in Tables 6.1 & 6.2
 - Composition (including size), credentials, experience, and workload of program faculty
 - Teaching, research, and other scholarly activity and performance
 - Service activity and performance
 - Course and program development and delivery
 - Competencies
 - Professional development activities

Faculty Vitae / Resumes

- Support summary in faculty analysis table
- Show education, experience, recent and current activities, currency in the field
- Help program evaluator identify whom to interview
- Common format for all faculty
- EAC: 2-page limit

Typical Faculty Issues

- Professional development & institutional support
- Little evidence of currency in the field or plans to maintain currency
- Number of faculty to teach all course while maintaining reasonable teaching load / class sizes

Criterion 7: Facilities

- Adequate to accomplish educational objectives and outcomes of the program.
- Foster faculty-student interaction; encourages professional development & professional activities; and provide opportunities to use modern engineering tools.

Typical Faculty Issues

- Outdated laboratory equipment
- Lack of modern computing hardware and software relevant to program
- Lack of identified source of funding for equipment acquisition, maintenance and replacement
- Safety not explicitly mentioned in Criteria, but
 - Safety training is part of “appropriate guidance”
 - APPM: II.G.6.b.(1) Facilities - to assure the instructional and learning environments are adequate and are **safe** for the intended purposes.

Criterion 8: Support

- Sufficient to attract, retain, and provide for continued professional development of faculty
- Sufficient to acquire, maintain, and operate facilities & equipment appropriate for the program
- Constructive leadership

Typical Support Issues

- Funding uncertainties
 - Laboratory supplies
 - Faculty lines
 - Support staff
- Changing leadership

Preparing for the Visit

Pre-Visit / Visit

- Good communication with Team Chair and Program Evaluators
 - Do not hesitate to ask questions
- Many issues can be resolved prior to visit
 - Allows for more positive, productive and pleasant visit
- Prompt 7-day and due-process responses
 - Keeps process moving

Display Material Guidelines

- Make easy for program evaluator to find and follow
- Well-organized and clearly labeled
- Some will repeat or expand on what is included in Self-Study

Myth #5

We must display materials by outcome

- Display materials are needed to
 - Demonstrate coverage of specific topics as well as breadth and depth of material included in each course
 - Support classification of course as math/science, engineering topics
 - Demonstrate achievement of student outcomes
- Neither the criteria nor APPM prescribe how to organize the materials
- Objective is to make it easy for PEV to evaluate

Myth #6

We must provide student work only to demonstrate outcome attainment

- Student work is needed to demonstrate
 - Type and level of work required in courses
 - Grading standards
 - Feedback provided to students
 - Achievement of student outcomes
 - Validation of curriculum table

Examples of Display Materials



Home Content

Content

Add Content Rearrange Reports Utilities Submissions Preferences

- ChE 201 Fall, 2009
- ChE 201 Spring, 2010
- ChE 210 Fall, 2009
- ChE 210 Spring, 2010
- ChE 301 Fall, 2009
- ChE 311 Fall, 2009
- ChE 312 Spring, 2010
- ChE 316 Spring, 2010
- ChE 321 Spring, 2010

Can also display scanned materials electronically if accessible to PEV.



Myth #7

We need course materials for every course in the curriculum

- Course materials/syllabi and student work are needed for the technical courses included in the curriculum and your assessment plan
 - Regardless of frequency offered
 - Includes the required math / science courses (however, no student work needed for these)
- Course materials/syllabi and student work are NOT needed for Gen Ed courses

Related Opportunities

- On-Site Review Logistics (Panel)
 - Thursday, April 23, 2:30 pm – 3:45 pm
- How to Effectively and Efficiently Navigate and Accreditation Team Through Display Materials
 - Friday, April 24, 9:10 am to 10:00 am
- Self-Study Report Room Open
 - Wednesday, April 22 12 pm – 5 pm
 - Thursday, April 23, 9 am – 5 pm
 - Friday, April 24, 9 am – 5 pm
 - Saturday, April 25, 8 am – 12 pm

Summary

- Self-Study Report
 - Demonstrate compliance to program evaluator
 - Opportunity for self evaluation
- Approach evaluation as an opportunity for constructive feedback on program