ENGINEERING ACCREDITATION COMMISSION

Self-Study Report Development Workshop

APRIL 2019

Agenda

A.M.

- Definitions
- Criterion 1. Students
- Criterion 2. Program Educational Objectives
- Criterion 3. Student Outcomes
- Criterion 4. Continuous Improvement

P.M.

- Criterion 4. (continued)
- Criterion 5. Curriculum
- Criterion 6. Faculty
- Criterion 7. Facilities
- Criterion 8. Institutional Support
- Program Criteria
- Supporting Institutional Documentation

This workbook contains information intended to guide the self-study development so that when the PEV reads it, he or she finds the information needed to properly evaluate the program **without looking hard for it**. The section for each criterion has the following structure:

1. Statement of the criterion
2. The section of the PEV Worksheet that the PEV must complete
3. A discussion of what the PEV needs to focus on to determine compliance
4. A discussion of common issues that have led to citations of shortcoming against the criterion
5. 2019-20 Self-Study Template instructions regarding the criterion
6. Lessons learned about demonstrating compliance with the criterion

Important Points to Remember:

1. The 2020-21 Self-Study Template will be published on or about August 1, 2019. If you anticipate a visit in the fall of 2020, **begin your work now**, using the 2019-20 template that is now published. Be aware that revised Criterion 3 and Criterion 5 language will be applicable in 2019-20 and thereafter. A mapping between criteria applicable prior to 2019-20 and the new language that will be applicable beginning in 2019-20 is found at the end of this handbook and is also available via a link on the ABET website at the Accreditation Changes page found here: https://www.abet.org/accreditation/accreditation-criteria/accreditation-changes/.

2. The Accreditation Criteria and the APPM that will apply beginning in the 2019-20 cycle are published on the ABET Web site at the following url:
   https://www.abet.org/accreditation/accreditation-criteria/
3. If your program plans for an initial review in the fall of 2020 and your program is required to submit a Readiness Review, the deadline for submission of Readiness Review materials is September 1, 2019.
4. This workshop is focused only on the review of baccalaureate level engineering programs. If your program is a master's level program,
   - please make your facilitator aware of your intent to seek master's level accreditation and
   - be aware that there that there is a separate Self-Study Template that is used for master's level programs and in some cases, it may be necessary to submit both a baccalaureate-level and a master's-level self-study.

Definitions

The criteria that are effective beginning in 2019-20 contain a section that provides definitions that are used by the EAC so that a common understanding of these terms can be fostered.

Definitions Common to all Commissions:

Program Educational Objectives - Program educational objectives are broad statements that describe what graduates are expected to attain within a few years after graduation. Program educational objectives are based on the needs of the program's constituencies.

Student Outcomes – Student outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviors that students acquire as they progress through the program.

Assessment – Assessment is one or more processes that identify, collect, and prepare data to evaluate the attainment of student outcomes. Effective assessment uses relevant direct, indirect, quantitative and qualitative measures as appropriate to the outcome being measured. Appropriate sampling methods may be used as part of an assessment process.

Evaluation – Evaluation is one or more processes for interpreting the data and evidence accumulated through assessment processes. Evaluation determines the extent to which student outcomes are being attained. Evaluation results in decisions and actions regarding program improvement.

Definitions used by the Engineering Accreditation Commission:

Basic Science – Basic sciences are disciplines focused on knowledge or understanding of the fundamental aspects of natural phenomena. Basic sciences consist of chemistry and physics and other natural sciences including life, earth, and space sciences.

College-Level Mathematics – College-level mathematics consists of mathematics that requires a degree of mathematical sophistication at least equivalent to that of introductory calculus. For illustrative purposes, some examples of college-level mathematics include calculus, differential equations, probability, statistics, linear algebra, and discrete mathematics.

Complex Engineering Problems – Complex engineering problems include one or more of the following characteristics: involving wide-ranging or conflicting technical issues, having no obvious solution, addressing problems not encompassed by current standards and codes, involving diverse groups of stakeholders, including many component parts or sub-problems, involving multiple disciplines, or having significant consequences in a range of contexts.

Engineering Design – Engineering design is a process of devising a system, component, or process to meet desired needs and specifications within constraints. It is an iterative, creative, decision-making process in which the basic sciences, mathematics, and engineering sciences are applied to convert resources into solutions. Engineering design involves identifying opportunities, developing requirements, performing analysis and synthesis, generating multiple solutions, evaluating solutions against requirements, considering risks, and making trade- offs, for the purpose of obtaining a high-quality solution under the given circumstances. For illustrative purposes only, examples of possible constraints include accessibility, aesthetics, codes, constructability, cost, ergonomics, extensibility, functionality, interoperability, legal considerations, maintainability, manufacturability, marketability, policy, regulations, schedule, standards, sustainability, or usability.

Engineering Science – Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other.

Team – A team consists of more than one person working toward a common goal and should include individuals of diverse backgrounds, skills, or perspectives.

Criterion 1. Students

Student performance must be evaluated. Student progress must be monitored to foster success in attaining student outcomes, thereby enabling graduates to attain program educational objectives. Students must be advised regarding curriculum and career matters.

The program must have and enforce policies for accepting both new and transfer students, awarding appropriate academic credit for courses taken at other institutions, and awarding appropriate academic credit for work in lieu of courses taken at the institution. The program must have and enforce procedures to ensure and document that students who graduate meet all graduation requirements.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
1. STUDENTS					
Evaluate student performance					
Monitor student progress					
Advise students regarding curricular and career matters					
Have and enforce policies for accepting both new and transfer students					
Have and enforce policies for awarding academic credit for courses taken at other institutions					
Have and enforce policies for awarding academic credit for work in lieu of courses taken at the institution					
Have and enforce procedures to ensure and document that students who graduate meet all graduation requirements					

What does the PEV need to focus on to determine compliance?

The operative phrases relative to student monitoring and advising are:

1. Performance must be **evaluated**
2. Progress must be **monitored to foster success in outcome attainment**
3. Students must be **advised** regarding **curriculum and career matters**

The critical phrases relative to policies and procedures are:

4. Policies for accepting new and transfer students in **place and enforced**
5. Policies for awarding transfer credit **appropriate**
6. Policies for awarding credit for work in lieu of courses **appropriate**
7. Procedures for ensuring that students who graduate meet all graduation requirements **in place and enforced**

Common issues leading teams to cite shortcomings against Criterion 1.

- Violations of prerequisite requirements that are not adequately explained
- Evidence that students are not properly advised
- Transcript review indicating that students have not completed all graduation requirements (without appropriately documented waivers and/or substitutions)

Self-Study Template Section

CRITERION 1. STUDENTS

For the sections below, attach any written policies that apply.

A. Student Admissions

Summarize the requirements and process for accepting new students into the program.

B. Evaluating Student Performance

Summarize the process by which student performance is evaluated and student progress is monitored. Include information on how the program ensures and documents that students are meeting prerequisites and how it handles the situation when a prerequisite has not been met.

C. Transfer Students and Transfer Courses

Summarize the requirements and process for accepting transfer students and transfer credit. Include any state-mandated articulation requirements that impact the program.

D. Advising and Career Guidance

Summarize the process for advising and providing career guidance to students. Include information on how often students are advised, who provides the advising (program faculty, departmental, college or university advisor).

E. Work in Lieu of Courses

Summarize the requirements and process for awarding credit for work in lieu of courses. This could include such things as life experience, Advanced Placement, dual enrollment, test out, military experience, etc.

F. Graduation Requirements

Summarize the graduation requirements for the program and the process for ensuring and documenting that each graduate completes all graduation requirements for the program. State the name of the degree awarded (Master of Science in Safety Sciences, Bachelor of Technology, Bachelor of Science in Computer Science, Bachelor of Science in Electrical Engineering, etc.)

G. Transcripts of Recent Graduates

The program will provide transcripts from some of the most recent graduates to the visiting team along with any needed explanation of how the transcripts are to be interpreted. **These transcripts will be requested separately by the Team Chair.** State how the program and any program options are designated on the transcript. (See 2019-2020 APPM, Section I.E.3.a.)

Understanding How to Demonstrate Compliance with Criterion 1:

Participants should understand these things about demonstrating compliance with Criterion 1:

- To show that **student performance is evaluated**, a program should expect to provide evidence that there is a reasonable grading system in place.

- To show that **student progress is monitored to foster success in attaining student outcomes** the program should expect to explain:
    - how it tracks student progress through the curriculum and
    - how it monitors that students are prepared to take the courses for which they enroll. This often involves processes for ensuring that students have met course prerequisites. In cases where students are allowed to take courses without having met prerequisites, the process for ensuring that the student is prepared to take the course should be explained.

- To show that students are **advised regarding curriculum and career matters**, the program must clearly describe the advising system that is in place. The program should expect to include information that will allow the PEV to understand how frequently students see advisors, who is doing the advising, when is advising done, what records are kept about advising, etc.

- To show that it **has and enforces policies for accepting both new and transfer students**, the program must describe the processes used for accepting students (both new and transfer students). Often, these processes and policies are those used by the institution as a whole. In some cases, the program itself may have its own admission policies. In these cases, the policies need to be explained and the mechanisms for enforcing them outlined.

- To show that it **has and enforces policies for awarding academic credit for courses taken at other institutions**, the program should describe how transfer credit is awarded. Who decides if a given course at another institution is equivalent to one at this institution? What is the basis for that determination? Is the department offering the equivalent course at this institution involved in determining the suitability of awarding transfer credit? What is the policy regarding minimum transferrable grades? Is the faculty of the program involved in evaluating the suitability of awarding transfer credit? How and where are records regarding the transfer credit that is awarded maintained? How is the policy enforced?

- To show that it **has and enforces policies for awarding academic credit for work in lieu of courses taken at the institutions**, the program should describe what these policies are. Under what circumstances is academic credit awarded in lieu of course work? Who determines what that academic credit is? How and where are the records concerning credit awarded in lieu of course work maintained?

- To show that it **has and enforces procedures to ensure and document that students who graduate meet all graduation requirements**, the program should:

- Describe how it verifies that each student who graduates has met all graduation requirements. This might include a description of any graduation check sheets and their use and/or any degree audit systems that might be in use. It should include information about who does the verification and how the fact that the student has met all requirements is documented.
- Provide information concerning the process used for approval of any course substitutions. It should also indicate where and how any substitutions are documented.
- Provide information concerning the processes used for approving any exceptions to graduation requirements.

Criterion 2. Program Educational Objectives

The program must have published program educational objectives that are consistent with the mission of the institution, the needs of the program's various constituencies, and these criteria. There must be a documented, systematically utilized, and effective process, involving program constituencies, for the periodic review of these program educational objectives that ensures they remain consistent with the institutional mission, the program's constituents' needs, and these criteria.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
2. PROGRAM EDUCATIONAL OBJECTIVES					
Published and consistent with institution's mission, the needs of the program's constituencies, and these criteria					
Documented, systematically utilized, and effective process, involving program constituencies, for the periodic review of the program educational objectives					

What does the PEV need to focus on to determine compliance?

The operative phrases relative to the PEOs are:

1. The PEOs must be **published**
2. The PEOs must be **consistent with**:
    a. the **institutional mission**
    b. the **needs** of the program's **constituencies**
    c. **applicable Commission accreditation criteria**

The critical phrases relative the process for PEO review are:

1. **Documented**
2. **Systematically utilized**
3. **Periodic**
4. **Effective**
5. **Involve program constituencies**
6. Ensures they remain **consistent with (a) – (c) above**

Common issues leading teams to cite shortcomings against Criterion 2.

- PEOs that are stated as descriptions of skills and attributes that students are expected to attain by the time of graduation. (This is evidence that the PEOs are not consistent with the applicable accreditation criteria.)
- Issues with constituent involvement in the review and revision process. (If there is little constituent involvement, how does the program know its PEOs are consistent with constituent needs?)
- Process of PEO review not periodically exercised in a systematic manner.

Self-Study Template Section

CRITERION 2. PROGRAM EDUCATIONAL OBJECTIVES

A. Mission Statement

Provide the institutional mission statement.

B. Program Educational Objectives

List the program educational objectives and state where these can be found by the general public as required by APPM Section I.A.6.a.

C. Consistency of the Program Educational Objectives with the Mission of the Institution

Describe how the program educational objectives are consistent with the mission of the institution.

D. Program Constituencies

List the program constituencies. Describe how the program educational objectives meet the needs of these constituencies.

E. Process for Review of the Program Educational Objectives

Describe the process that periodically reviews the program educational objectives including how the program's various constituencies are involved in this process. Describe how this process is systematically utilized to ensure that the program's educational objectives remain consistent with the institutional mission, the program constituents' needs and these Criteria.

Understanding How to Demonstrate Compliance with Criterion 2:

Participants should understand these things about demonstrating compliance with Criterion 2:

- To show that the PEOs are **published**, the program should indicate where they are published. The PEV will normally expect them to be published on the program's web site and in the university catalog at a minimum. The program should also expect that the PEV will look at the program web site and the catalog. ***They must be the same everywhere they are published.***

- To show that the PEOs are **consistent**
    - **with the institutional mission,** the program should provide information about what the institutional mission is and explain how these PEOs are consistent with this mission
    - **with the needs of the program's constituencies,** the program should provide information concerning:
        - what its constituencies are
        - what the needs of each of its constituencies are
        - how it knows what the needs of its constituencies are
        - an explanation of why the PEOs are consistent with the needs of its constituencies
    - **with the applicable Commission Criteria,** the program should provide evidence that the PEOs are consistent with the applicable Commission criteria. (In particular, the PEOs must be consistent with the definitions that are part of the Commissions' criteria and the program should explain why this is so.)
- To show that the process for review of the PEOs is compliant with Criterion 2
    - The program should provide information about where the review process is **documented.**
    - The program should explain how review process that is documented **involves** all of the constituencies of the program. (The PEOs <u>do not</u> have to be approved by all of the constituencies, but the program should describe how the constituencies are directly or indirectly involved in the review process.)
    - The program should provide information that describes how the review process is used. It should explain how it uses the process in a **systematic manner**.
    - The program should provide information about the **periodicity of the schedule** on which the review process is carried out.
    - To explain the **effectiveness** of the process, the program should discuss how it has used the information gained through the review process to inform its decisions.
    - The program should provide an explanation of how its process provides information that enables the program to **ensure** that the PEOs remain consistent with the institutional mission, the needs of its constituencies, and the applicable accreditation criteria.

Criterion 3.

Student Outcomes

The program must have documented student outcomes that support the program educational objectives. Attainment of these outcomes prepares graduates to enter the professional practice of engineering. Student outcomes are outcomes (1) through (7), plus any additional outcomes that may be articulated by the program.

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

3. an ability to communicate effectively with a range of audiences

4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives

6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
3. STUDENT OUTCOMES					
Program has documented student outcomes that prepare graduates to attain the program educational objectives					
1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics					
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors					
3. an ability to communicate effectively with a range of audiences					
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts					
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives					
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions					
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.					
Additional outcomes articulated by the program					

What does the PEV need to focus on to determine compliance?

1. The student outcomes are **documented**
2. The student outcomes **prepare graduates to attain the program's PEOs**
3. The program's student outcomes **encompass all aspects of each of the student outcomes required by the applicable Criterion 3.**

Common issues leading teams to cite shortcomings against Criterion 3.

1. One or more of the student outcomes required by the applicable Criterion 3 not covered by the program's outcomes.
2. No linkage of the student outcomes to attainment of the PEOs.

Self-Study Template Section

CRITERION 3. STUDENT OUTCOMES

A. Student Outcomes

List the student outcomes for the program and state where they may be found by the general public as required by APPM Section I.A.6.a. If the student outcomes are stated differently than those listed in Criterion 3, provide a mapping of the program's student outcomes to the student outcomes (1) through (7) listed in Criterion 3.

B. Relationship of Student Outcomes to Program Educational Objectives

Describe how the student outcomes prepare graduates to attain the program educational objectives.

Understanding How to Demonstrate Compliance with Criterion 3:

Participants should understand these things about demonstrating compliance with Criterion 3:

- The program should expect to state **what the student outcomes are** and **where they are documented**.
- The program must **explain how attainmen**t of the student outcomes **prepares graduates to attain** the program's PEOs.
- The program must **demonstrate that all of the student outcomes required by the applicable criteria are included** in the program's student outcomes. This is particularly important when the program has chosen to articulate its own student outcomes that are NOT the same as those required in the applicable criteria. In the event that a program has not stated any student outcome verbatim as cited in the Engineering Accreditation Criteria, all elements required by that outcome must be retained. Further, the program must not alter the intent or otherwise diminish the meaning of that outcome.

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.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
4. CONTINUOUS IMPROVEMENT					
Regular use of appropriate, documented processes for assessing and evaluating the extent to which the student outcomes are being attained					
Results of evaluations systematically utilized as input for the continuous improvement of the program					
Other information, if available, used to assist in continuous improvement					

What does the PEV need to focus on to determine compliance?

1. The assessment and evaluation processes are
    a. **Regularly used** to gather data about outcome attainment and evaluate that data
    b. **Appropriate** – the data gathered must provide information the program can use to determine the extent to which each of the student outcomes is attained
    c. **Documented**
2. Results of the evaluations must be **systematically** used as input for continuous improvement

Common issues leading teams to cite shortcomings against Criterion 4.

1. Assessment methods are not getting information that can actually be used to draw conclusions about the degree of outcome attainment
2. The assessment and evaluation process does not discern the extent of attainment of each outcome or lumps outcomes together
3. Overly heavy reliance on survey data or little direct evidence of outcome attainment in the methods used
4. Assessment methods that are ad hoc or inconsistently used
5. Immature assessment and evaluation process, or processes that are not fully implemented
6. Outcome attainment determined at the tool or course level but not at the program level
7. Data collected but not disaggregated for the program being evaluated (so it is not possible to determine attainment for the program in question independently of other programs)
8. Assessment and evaluation processes are not documented
9. Assessment and evaluation processes are not sustainable
10. Use of the results of the assessment and evaluation process as input for continuous improvement is ad-hoc, inconsistent, or nonexistent.

Self-Study Template Section

CRITERION 4. CONTINUOUS IMPROVEMENT

This section of your Self-Study Report should document your processes for regularly assessing and evaluating the extent to which the student outcomes are being attained. This section should also document the extent to which the student outcomes are being attained. It should also describe how the results of these processes are utilized to affect continuous improvement of the program.

Assessment is defined as one or more processes that identify, collect, and prepare the data necessary for evaluation. Evaluation is defined as one or more processes for interpreting the data acquired though the assessment processes in order to determine how well the student outcomes are being attained.

Although the program can report its processes as it chooses, the following is presented as a guide to help you organize your Self-Study Report.

A. Student Outcomes

It is recommended that this section include (a table may be used to present this information):

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 of data collection processes may include, but are not limited to, specific exam questions, student portfolios, internally developed assessment exams, senior project presentations, nationally-normed exams, oral exams, focus groups, industrial advisory committee meetings, or other processes that are relevant and appropriate to the program.
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

B. 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.

C. Additional Information

Copies of any of the assessment instruments or materials referenced in 4.A. and 4.B must be available for review at the time of the visit. Other information such as minutes from meetings where the assessment results were evaluated and where recommendations for action were made could also be included.

Understanding How to Demonstrate Compliance with Criterion 4:

Participants should understand these things about demonstrating compliance with Criterion 4:

- To show that a process is **regularly used**, a program should expect to provide evidence that the process is executed on a schedule that assesses and evaluates outcome attainment for each outcome in a scheduled manner. It is not necessary that assessment of each outcome be done every year, just that it be done in a regularly scheduled manner. Frequency more often than every 6 years is most likely to be deemed acceptable.
- To show that the processes are **documented**, the program needs to provide information about where it is documented and be prepared to show that while the team is on site.
- To show that the assessment and evaluation processes are **appropriate**, the program needs to clearly describe what the processes are. **The PEV, when reading the self-study, needs to find answers to the following questions:**
    - What data is collected by the program for determination of the degree to which each of the student outcomes is attained?
    - When is that data collected (i.e. what is the schedule that is followed for data collection)?
    - Who is responsible for the data collection and what instruments are used to collect the data?
    - How is the data evaluated to determine the extent to which the student outcomes are attained, who does this evaluation, and what is the schedule on which evaluation of the data is done?
        - What is the expected degree of attainment?
            - How has the program defined the expected degree of attainment?
            - What does a student need to do to demonstrate attainment? (It is probably the case that what is needed to demonstrate attainment depends on the student outcome in question.)
    - What results have the assessment and evaluation processes produced?
        - Summary of data collected for each outcome and what the evaluation results are should be in the self-study. In the ideal case, multiple years of data and resulting assessment information would be included in the self-study.
    - **NOTE:** The EAC expects the program to independently assess all student outcomes. When programs share courses, assessment data must be disaggregated by program in order to ensure the individual program's outcomes are being independently assessed.

The program must also provide evidence that the assessment and evaluation results have been "systematically utilized as input for the continuous improvement of the program".

This means that the program must also discuss substantive actions it has taken to accomplish program improvements. The program should identify the reasons why these actions have been taken.

- It is **NOT** necessary for all actions taken for improvement be stimulated by assessment and evaluation results.
- If the assessment and evaluation results indicate that there is some area (or areas) in which there is a need to improve, the program should definitely provide evidence of actions taken that are intended to address the issue(s)
    - It's even better if the program can provide evidence that the actions taken have been effective in addressing the issue(s)!
- If the assessment and evaluation results indicate that all is well – attainment targets are being met – the program should show that it has considered this as input for continuous improvement. There is no need to make changes for the sake of making changes!!
- It is entirely possible that improvement actions could be stimulated by faculty observation, student suggestion, industrial advisory committee suggestion, etc. All of these may be appropriate stimuli.
- It is probably a **bad idea** for the program to say that there have been no actions taken for continuous improvement. Nobody believes that anything is so good that there is no opportunity for improvement! However, if the program can demonstrate that it is attaining/maintaining the extent to which outcomes are attained…then this is possible.

Criterion 5. Curriculum

The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The program curriculum must provide adequate content for each area, consistent with the student outcomes and program educational objectives, to ensure that students are prepared to enter the practice of engineering. The curriculum must include:

(a) a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience appropriate to the program.

(b) a minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools.

(c) a broad education component that complements the technical content of the curriculum and is consistent with the program educational objectives.

(d) a culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
5. CURRICULUM					
Devotes adequate attention and time to each component, consistent with the outcomes and objectives of the program and institution					
A minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience appropriate to the program					
A minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools					
A broad education component that complements the technical content of the curriculum and is consistent with the program educational objectives					
A culminating major engineering design experience that incorporates appropriate engineering standards and multiple constraints, and is based on the knowledge and skills acquired in earlier course work					

What does the PEV need to focus on to determine compliance?

The critical language in the criterion is found in the phrases:

The program curriculum **must provide adequate content for each area**, consistent with the student outcomes and program educational objectives, to ensure that students are **prepared to enter the practice of engineering**. The curriculum must include:

(a) a **minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences** with experimental experience appropriate to the program.

(b) a **minimum of 45 semester credit hours (or equivalent) of engineering topics** appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools.

(c) a broad education component that **complements consistent with the program educational objectives the technical content** of the curriculum and is.

(d) A **culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work**.

NOTE: The words in (a) (b) and (d) above have meaning:

- **Basic Science** - Basic sciences are disciplines focused on knowledge or understanding of the fundamental aspects of natural phenomena. Basic sciences consist of chemistry and physics and other natural sciences including life, earth, and space sciences.
- **College-Level Mathematics** - College-level mathematics consists of mathematics that requires a degree of mathematical sophistication at least equivalent to that of introductory calculus.
- **Engineering Design** – Engineering design is a process of devising a system, component, or process to meet desired needs and specifications within constraints.
- **Engineering Topics** – Engineering and computer sciences and engineering design. Thus, engineering topics include topics that have traditionally been considered engineering science and engineering design but also include computer sciences.

Common issues leading teams to cite shortcomings against Criterion 5.

1. Not enough hours in mathematics and basic sciences
2. Not enough engineering topics content in the curriculum

3. The major design experience does not reflect enough design to be considered a major design experience or is primarily research (as opposed to design) in content
4. The major design experience does not incorporate appropriate engineering standards and/or multiple constraints
5. The curriculum does not adequately support one or more of the student outcomes

Self-Study Template Section

CRITERION 5. CURRICULUM

A. Program Curriculum

1. Complete Table 5-1 that describes the plan of study for students in this program including information on course offerings in the form of a recommended schedule by year and term along with maximum section enrollments for all courses in the program for the last two terms the course was taught. If there is more than one curricular path or option for a program, Table 5-1 should be provided for each path or option. State whether the institution operates on quarters or semesters.
2. Describe how the curriculum aligns with the program educational objectives.
3. Describe how the curriculum and its associated prerequisite structure support the attainment of the student outcomes.
4. Attach a flowchart or worksheet that illustrates the prerequisite structure of the program's required courses.
5. Describe how the program meets the requirements in terms of hours and depth of study for each subject area (Math and Basic Sciences, Engineering Topics) specifically addressed by either the general criteria or the program criteria.
6. Describe the broad education component and how it complements the technical content of the curriculum and how it is consistent with the program educational objectives.
7. Describe the major design experience that prepares students for engineering practice. Describe how this experience is based upon the knowledge and skills acquired in earlier coursework, and incorporates appropriate engineering standards and multiple design constraints.
8. If the program allows cooperative education to satisfy curricular requirements specifically addressed by either the general or program criteria, describe the academic component of this experience and how it is evaluated by the faculty.
9. Describe the materials (course syllabi, textbooks, sample student work, etc.), that will be available for review during the visit to demonstrate achievement related to this criterion. (See the 2019-2020 APPM Section I.E.5.b.(2) regarding display materials.)

NOTE: Display Materials at the Time of the Visit

Evaluators will review samples of displayed course materials including course syllabi, textbooks, example assignments and exams, and examples of student work, typically ranging from excellent through poor for only those courses that:

a) support attainment of the program's student outcomes;
b) develop subject areas supporting student outcomes, program criteria (if applicable), and program educational objectives.

At the program's discretion, other materials that document efforts made to continuously improve curricula, or that illustrate novel, unusual or creative efforts to enrich the curriculum and/or attainment of student outcomes may be provided.

Wherever possible, materials should be provided online or electronically.

B. Course Syllabi

In Appendix A, include a syllabus for each course used to satisfy the mathematics, science, and discipline-specific requirements required by Criterion 5 or any applicable program criteria.

Table 5-1 Curriculum

Name of Program

Course (Department, Number, Title) List all courses in the program by term starting with the first term of the first year and ending with the last term of the final year.	Indicate Whether Course is Required, Elective or a Selected Elective by an R, an E or an SE.[1]	*Subject Area (Credit Hours)*			Last Two Terms the Course was Offered: Year and, Semester, or Quarter	Maximum Section Enrollment for the Last Two Terms the Course was Offered[2]
		Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	Other		
Add rows as needed to show all courses in the curriculum.						
TOTALS (in terms of semester credit hours)						
Total must satisfy minimum credit hours — Minimum Semester Credit Hours		30 Hours	45 Hours			

1. **Required** courses are required of all students in the program, **elective** courses (often referred to as open or free electives) are optional for students, and **selected elective** courses are those for which students must take one or more courses from a specified group.
2. For courses that include multiple elements (lecture, laboratory, recitation, etc.), indicate the maximum enrollment in each element. For selected elective courses, indicate the maximum enrollment for each option.

Instructional materials and student work verifying compliance with ABET criteria for the categories indicated above will be required during the campus visit.

Understanding How to Demonstrate Compliance with Criterion 5:

Participants should understand these things about demonstrating compliance with Criterion 5:

- The program **must document** the program of study clearly and completely, indicating the required courses, restricted electives, and undesignated electives.
- The program must address the curriculum requirements relative to the four parts of the curriculum:
  - The math and basic sciences component
    - The program must provide evidence that this component contains a minimum of **30 semester credit hours (or equivalent)** of **college level mathematics** and **basic science**. College-level mathematics is mathematics that requires a **degree of mathematical sophistication at least equivalent to that of introductory calculus**. The basic sciences **include chemistry and physics and other natural sciences including life, earth, and space sciences.** They **do not include the social sciences and they do not include computer science**. Some of the basic science portion must include experimental experience. The mathematics and basic science topics must be appropriate to the discipline.
  - The engineering topics component
    - The program must provide evidence that this component contains a minimum of 45 **semester credit hours (or equivalent) of engineering topics (i.e. engineering science and engineering design and computer sciences)** ***appropriate to the program***. The curricular content in engineering topics ***must utilize modern engineering tools***.
  - The general education component
    - The program must provide evidence that this component contains a general education component that **complements the technical content and is consistent with the program educational objectives.**
  - The culminating major design experience
    - The program must provide evidence that <u>every path</u> through the program includes a **major engineering design experience**. The program must demonstrate that this is a **design** experience and it must show how the experience **incorporates appropriate engineering standards <u>and</u> multiple constraints**.

Criterion 6. Faculty

The program must demonstrate that the faculty members are of sufficient number and they have the competencies to cover all of the curricular areas of the program. There must be sufficient faculty to accommodate adequate levels of student-faculty interaction, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners, as well as employers of students.

The program faculty must have appropriate qualifications and must have and demonstrate sufficient authority to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program. The overall competence of the faculty may be judged by such factors as education, diversity of backgrounds, engineering experience, teaching effectiveness and experience, ability to communicate, enthusiasm for developing more effective programs, level of scholarship, participation in professional societies, and licensure as Professional Engineers.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
6. FACULTY					
Sufficient number and competencies to cover all curricular areas					
Adequate levels of student-faculty interaction					
Adequate levels of student advising and counseling					
Adequate levels of university service activities					
Adequate levels of professional development					
Adequate levels of interaction with practitioners and employers					
Appropriate qualifications					
Sufficient authority for program guidance and implementation of processes for evaluation, assessment, and continuous improvement					
Overall competence (see criterion statement)					

What does the PEV need to focus on to determine compliance?

1. Program must **demonstrate**:
    a. the faculty members are of **sufficient number**
        i. **With competencies to cover all of the curricular areas of the program**
        ii. Sufficient faculty to **accommodate adequate levels** of
            1. student-faculty interaction
            2. student advising and counseling
            3. university service activities
            4. faculty professional development
            5. interactions with industrial and professional practitioners, as well as employers of students
2. The faculty must
    a. **Have appropriate qualifications**
    b. **Have and demonstrate sufficient authority** to ensure the proper guidance of the program and to develop and implement processes for the evaluation, assessment, and continuing improvement of the program.

Common issues leading teams to cite shortcomings against Criterion 6.

1. Faculty numbers not adequate for advising, interaction, professional development, etc.
2. The faculty (collectively) does not have the competencies to cover all of the curricular areas of the program.
3. Faculty without appropriate education or experience teaching core courses
4. No reward structure for professional development, student interaction, etc.
5. Faculty do not have the appropriate authority for program guidance
6. Faculty size currently adequate but factors such as program growth, attrition, etc. could jeopardize the adequacy of faculty size.

Self-Study Template Section

CRITERION 6. FACULTY

A. Faculty Qualifications

Describe the qualifications of the faculty and how they are adequate to cover all the curricular areas of the program and also meet any applicable program criteria. This description should include the composition, size, credentials, and experience of the faculty. Complete Table 6-1. Include faculty resumes in Appendix B.

B. Faculty Workload

Complete Table 6-2, Faculty Workload Summary and describe this information in terms of workload expectations or requirements.

C. Faculty Size

Discuss the adequacy of the size of the faculty and describe the extent and quality of faculty involvement in interactions with students, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners including employers of students.

D. Professional Development

Provide detailed descriptions of professional development activities for each faculty member.

E. Authority and Responsibility of Faculty

Describe the role played by the faculty with respect to course creation, modification, and evaluation, their role in the definition and revision of program educational objectives and student outcomes, and their role in the attainment of the student outcomes. Describe the roles of others on campus, e.g., dean or provost, with respect to these areas.

Table 6-1. Faculty Qualifications
Name of Program

Faculty Name	Highest Degree Earned- Field and Year	Rank [1]	Type of Academic Appointment[2] T, TT, NTT	FT or PT[3]	Years of Experience			Professional Registration/ Certification	Level of Activity[4] H, M, or L		
					Govt./Ind. Practice	Teaching	This Institution		Professional Organizations	Professional Development	Consulting/summer work in industry

Instructions: Complete table for each member of the faculty in the program. Add additional rows or use additional sheets if necessary. Updated information is to be provided at the time of the visit.

1. Code: P = Professor ASC = Associate Professor AST = Assistant Professor I = Instructor A = Adjunct O = Other
2. Code: TT = Tenure Track T = Tenured NTT = Non Tenure Track
3. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
4. The level of activity (high, medium or low) should reflect an average over the three years prior to the visit.

Table 6-2. Faculty Workload Summary
Name of Program

Faculty Member (name)	PT or FT[1]	Classes Taught (Course No./Credit Hrs.) Term and Year[2]	Program Activity Distribution[3]			% of Time Devoted to the Program[5]
			Teaching	Research or Scholarship	Other[4]	

1. FT = Full Time Faculty or PT = Part Time Faculty, at the institution
2. For the academic year for which the Self-Study Report is being prepared.
3. Program activity distribution should be in percent of effort in the program and should total 100%.
4. Indicate sabbatical leave, etc., under "Other."
5. Out of the total time employed at the institution.

Understanding How to Demonstrate Compliance with Criterion 6:

Participants should understand these things about demonstrating compliance with Criterion 6:

- The program must provide ***evidence*** that **there are enough faculty** to support the program and **enough faculty with competencies to cover all of the curricular areas of the program**.
- The program must provide evidence that there are enough faculty to provide adequate levels of
  - student-faculty interaction
  - student advising and counseling
  - university service activities
  - faculty professional development
  - interactions with industrial and professional practitioners, as well as employers of students
- The program must provide evidence that the faculty members have **qualifications that are appropriate** for their roles in the program.
- The program must provide evidence that the **faculty has the authority** to engage in appropriate program development as well as the authority to develop and implement appropriate assessment, evaluation, and continuous improvement processes **and has demonstrated that authority**.

Criterion 7. Facilities

Classrooms, offices, laboratories, and associated equipment must be adequate to support attainment of the student outcomes and to provide an atmosphere conducive to learning. Modern tools, equipment, computing resources, and laboratories appropriate to the program must be available, accessible, and systematically maintained and upgraded to enable students to attain the student outcomes and to support program needs. Students must be provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories available to the program.

The library services and the computing and information infrastructure must be adequate to support the scholarly and professional activities of the students and faculty.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
7. FACILITIES					
Adequate to support attainment of student outcomes and provide an atmosphere conducive to learning: classrooms, offices, laboratories, associated equipment					
Modern tools, equipment , computing resources, and laboratories are available, accessible, and systematically maintained and upgraded					
Students provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories					
Adequate library services and computing and information infrastructure					

What does the PEV need to focus on to determine compliance?

1. Physical infrastructure and facilities must be **adequate to support attainment of the student outcomes** and **provide an atmosphere conducive to learning**.

2. The tools, equipment, computing resources, and laboratories **appropriate for the program** must be **modern, available, accessible, and systematically maintained and upgraded**.

3. The facilities must be adequate to **enable students to attain the student outcomes** and to **support program needs**.

4. Students must be provided with **appropriate guidance in the proper use** of the facilities and equipment.

5. The library and computing and information infrastructure must **adequately support scholarly and professional activities of both students and faculty**.

Common issues leading teams to cite shortcomings against Criterion 7.

1. Equipment is in need of upgrade, repair, or maintenance
2. The students do not have access to appropriate modern equipment or tools
3. Current issues with the adequacy of the space or its condition
4. Out of date library facilities and holdings
5. Spaces and equipment currently adequate, but reason to anticipate that increased enrollment or current budgeting trends may jeopardize this
6. Safety hazards or other laboratory operational issues
7. Adequacy of the classroom facilities available to the program
8. Issues with the adequacy of available facilities at a remote site.

Self-Study Template Section

CRITERION 7. FACILITIES[1]

A. Offices, Classrooms and Laboratories

Summarize each of the program's facilities in terms of their ability to support the attainment of the student outcomes and to provide an atmosphere conducive to learning.

1. Offices (such as administrative, faculty, clerical, and teaching assistants) and any associated equipment that is typically available there.

2. Classrooms and associated equipment that are typically available where the program courses are taught.

3. Laboratory facilities including those containing computers (describe available hardware and software) and the associated tools and equipment that support instruction. Include those facilities used by students in the program even if they are not dedicated to the program and state the times they are available to students. Complete Appendix C containing a listing of the major pieces of equipment used by the program in support of instruction.

B. Computing Resources

Describe any computing resources (workstations, servers, storage, networks including software) in addition to those described in the laboratories in Part A, which are used by the students in the program. Include a discussion of the accessibility of university-wide computing resources available to all students via various locations such as student housing, library, student union, off-campus, etc. State the hours the various computing facilities are open to students. Assess the adequacy of these facilities to support the scholarly and professional activities of the students and faculty in the program.

C. Guidance

Describe how students in the program are provided appropriate guidance regarding the use of the tools, equipment, computing resources, and laboratories.

D. Maintenance and Upgrading of Facilities

Describe the policies and procedures for maintaining and upgrading the tools, equipment, computing resources, and laboratories used by students and faculty in the program.

E. Library Services

Describe and evaluate the capability of the library (or libraries) to serve the program including the adequacy of the library's technical collection relative to the needs of the program and the faculty, the

[1]Include information concerning facilities at all sites where program courses are delivered.

adequacy of the process by which faculty may request the library to order books or subscriptions, the library's systems for locating and obtaining electronic information, and any other library services relevant to the needs of the program.

F. Overall Comments on Facilities

Describe how the program ensures the facilities, tools, and equipment used in the program are safe for their intended purposes (See the 2019-2020 APPM Section I.E.5.b.(1).)

Understanding How to Demonstrate Compliance with Criterion 7:

Participants should understand these things about demonstrating compliance with Criterion 7:

- The PEV needs to see information that convinces him/her that:
  - **Classrooms are appropriately equipped and configured** as reasonable learning spaces
  - **Faculty offices** are work spaces that **provide appropriate privacy for student consultation** and are configured so that **faculty can be work with students and be productive as professionals**
  - **Laboratories are configured and equipped** in a manner that supports the laboratory component of the program, allowing students to do experiments, projects, and other tasks in a reasonable environment that is not overly crowded

- The PEV needs to see evidence that convinces him/her that
  - **Appropriate modern tools, equipment, computing resources and laboratories are available** to the students
  - **Students have access** to these tools, equipment, computing resources and laboratories that is sufficient to allow them to gain the skills and knowledge implicit in the student outcomes
  - The tools, equipment, computing resources, and laboratories **are systematically maintained and upgraded**

- The PEV needs to see evidence that allows him/her to understand what kinds of **guidance and training** students are given in use of these resources

- The PEV needs to find information concerning the **nature, scope, and availability** of library services, as well as computing and information infrastructure.

Criterion 8. Institutional Support

Institutional support and leadership must be adequate to ensure the quality and continuity of the program.

Resources including institutional services, financial support, and staff (both administrative and technical) provided to the program must be adequate to meet program needs. The resources available to the program must be sufficient to attract, retain, and provide for the continued professional development of a qualified faculty. The resources available to the program must be sufficient to acquire, maintain, and operate infrastructures, facilities, and equipment appropriate for the program, and to provide an environment in which student outcomes can be attained.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
8. INSTITUTIONAL SUPPORT					
Institutional support and leadership adequate to ensure the quality and continuity of the program					
Institutional services, financial support, and staff adequate to meet program needs					
Sufficient to attract and retain, and provide for the continued professional development of a qualified faculty					
Sufficient to acquire, maintain, and operate infrastructure, facilities, and equipment					
Sufficient to provide an environment to attain student outcomes					

What does the PEV need to focus on to determine compliance?

1. Institutional **support and leadership** must be **adequate to ensure the quality and continuity** of the program.
2. Institutional services, financial support, and staff (both administrative and technical) provided to the program must be **adequate to meet program needs.**
3. Resources available must be sufficient to **attract, retain, and provide for the continued professional development of a qualified faculty.**
4. Resources available must be sufficient to **acquire, maintain, and operate infrastructures, facilities, and equipment** appropriate for the program, and to **provide an environment in which student outcomes can be attained**.

Common issues leading teams to cite shortcomings against Criterion 8.

1. Insufficient support for laboratories and teaching assistants
2. Insufficient technical support staff
3. Evidence of excessive faculty turnover, inability to attract well qualified faculty, or other factors pointing to the inability of the program to attract, retain, and provide for professional development of the faculty
4. Unstable leadership that jeopardizes the quality and continuity of the program
5. Perceived lack of institutional commitment to the program

Self-Study Template Section

CRITERION 8. INSTITUTIONAL SUPPORT

A. Leadership

Describe the leadership of the program and discuss its adequacy to ensure the quality and continuity of the program and how the leadership is involved in decisions that affect the program.

B. Program Budget and Financial Support

1. Describe the process used to establish the program's budget and provide evidence of continuity of institutional support for the program. Include the sources of financial support including both permanent (recurring) and temporary (one-time) funds.
2. Describe how teaching is supported by the institution in terms of graders, teaching assistants, teaching workshops, etc.
3. To the extent not described above, describe how resources are provided to acquire, maintain, and upgrade the infrastructures, facilities, and equipment used in the program.
4. Assess the adequacy of the resources described in this section with respect to the students in the program being able to attain the student outcomes.

C. Staffing

Describe the adequacy of the staff (administrative, instructional, and technical) and institutional services provided to the program. Discuss methods used to retain and train staff.

D. Faculty Hiring and Retention

1. Describe the process for hiring of new faculty.
2. Describe strategies used to retain current qualified faculty.

E. Support of Faculty Professional Development

Describe the adequacy of support for faculty professional development, how such activities such as sabbaticals, travel, workshops, seminars, etc., are planned and supported.

Understanding How to Demonstrate Compliance with Criterion 8:

Participants should understand these things about demonstrating compliance with Criterion 8:

- The PEV needs to see information that convinces him/her that the **institutional leadership**:
  - is committed to providing support for the program that **ensures continued quality and program stability**
  - provides **services, financial support, and staffing at levels that meet the program's needs**
  - supports an environment to which **qualified faculty are attracted and retained**
  - provides support for **continued professional development** of the faculty
  - provides support that is adequate for infrastructure, facility, and equipment **acquisition, maintenance, and operation**
  - provides support and resources for an **environment in which student outcomes can be attained**

Program Criteria

If the program name requires evaluation under one or more program criteria, this section of the self-study must be completed.

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
PROGRAM CRITERIA					
Curricular topics (if any)					
Faculty qualifications (if any)					

Self-Study Template Section

PROGRAM CRITERIA

Describe how the program satisfies any applicable program criteria. If already covered elsewhere in the self-study report, provide appropriate references.

Accreditation Policies and Procedures

The program must be in compliance with the Accreditation Policy and Procedure Manual

PEV Worksheet

Enter "C" for concern, "W" for weakness, "D" for deficiency, and "R" if issue has been resolved	Pre-visit	Day 0	Day 1	Exit Statement	Comments
ACCREDITATION POLICY AND PROCEDURE MANUAL					
I.A.4 Accreditation status represented unambiguously					
I.A.5 No implication of accreditation under improper criteria					
I.A.6 Accreditation, PEOs, SOs, enrollment, & graduation data properly publicized					
I.C.4 Program names must meet ABET requirements					
I.D.1 All documentation in English					
I.E.5.b.(1) Facilities adequate and safe for intended purposes					

Common issues leading teams to cite shortcomings against the APPM.

1. Identification of accredited programs not in compliance with requirements in the APPM
2. Evidence of facility conditions that could jeopardize student or staff safety.
3. Program name on transcripts does not agree with RFE, catalogs, brochures, etc.
4. Display of instructional materials does not allow the team to understand what course content is or what students are expected to learn. (Instructional materials must be available and accessible to the program evaluator. Some or all of these materials may be in electronic form.)

Appendices

Appendix A – Course Syllabi

Appendix B – Faculty Vitae

Appendix C – Equipment

Appendix D – Institutional Summary

Signature Attesting to Compliance

Appendix A – Course Syllabi

Please use the following format for the course syllabi (2 pages maximum in Times New Roman 12 point font)

1. Course number and name

2. Credits and contact hours

3. Instructor's or course coordinator's name

4. Text book, title, author, and year
    a. other supplemental materials

5. Specific course information
    a. brief description of the content of the course (catalog description)
    b. prerequisites or co-requisites
    c. indicate whether a required, elective, or selected elective (as per Table 5-1) course in the program

6. Specific goals for the course
    a. specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.
    b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

7. Brief list of topics to be covered

Appendix B – Faculty Vitae

Please use the following format for the faculty vitae (2 pages maximum in Times New Roman 12 point type)

1. Name
2. Education – degree, discipline, institution, year
3. Academic experience – institution, rank, title (chair, coordinator, etc. if appropriate), when (ex. 2002-2007), full time or part time
4. Non-academic experience – company or entity, title, brief description of position, when (ex. 2008-2012), full time or part time
5. Certifications or professional registrations
6. Current membership in professional organizations
7. Honors and awards
8. Service activities (within and outside of the institution)
9. Briefly list the most important publications and presentations from the past five years – title, co-authors if any, where published and/or presented, date of publication or presentation
10. Briefly list the most recent professional development activities

Appendix C – Equipment

Please list the major pieces of equipment used by the program in support of instruction.

Appendix D – Institutional Summary

Programs are requested to provide the following information.

1. The Institution

a. Name and address of the institution

b. Name and title of the chief executive officer of the institution

c. Name and title of the person submitting the Self-Study Report.

d. Name the organizations by which the institution is now accredited, and the dates of the initial and most recent accreditation evaluations.

2. Type of Control

Description of the type of managerial control of the institution, e.g., private-non-profit, private-other, denominational, state, federal, public-other, etc.

3. Educational Unit

Describe the educational unit in which the program is located including the administrative chain of responsibility from the individual responsible for the program to the chief executive officer of the institution. Include names and titles. An organization chart may be included.

4. Academic Support Units

List the names and titles of the individuals responsible for each of the units that teach courses required by the program being evaluated, e.g., mathematics, physics, etc.

5. Non-academic Support Units

List the names and titles of the individuals responsible for each of the units that provide non-academic support to the program being evaluated, e.g., library, computing facilities, placement, tutoring, etc.

6. Credit Unit

It is assumed that one semester or quarter credit normally represents one class hour or three laboratory hours per week. One academic year normally represents at least 28 weeks of classes, exclusive of final examinations. If other standards are used for this program, the differences should be indicated.

7. Tables

Complete the following tables for the program undergoing evaluation.

Table D-1. Program Enrollment and Degree Data

Name of the Program

	Academic Year		Enrollment Year					Total Undergrad	Total Grad	Degrees Awarded			
			1st	2nd	3rd	4th	5th			Associates	Bachelors	Masters	Doctorates
Current Year		FT											
		PT											
1 year prior to current year		FT											
		PT											
2 years prior to current year		FT											
		PT											
3 years prior to current year		FT											
		PT											
4 years prior to current year		FT											
		PT											

Give official fall term enrollment figures (head count) for the current and preceding four academic years and undergraduate and graduate degrees conferred during each of those years. The "current" year means the academic year preceding the on-site visit.

FT--full time
PT--part time

Table D-2. Personnel

Name of the Program

Year[1]: _____

	HEAD COUNT		FTE[2]
	FT	PT	
Administrative[2]			
Faculty (tenure-track)[3]			
Other Faculty (excluding student Assistants)			
Student Teaching Assistants[4]			
Technicians/Specialists			
Office/Clerical Employees			
Others[5]			

Report data for the program being evaluated.

1. Data on this table should be for the fall term immediately preceding the visit. Updated tables for the fall term when the ABET team is visiting are to be prepared and presented to the team when they arrive.

2. Persons holding joint administrative/faculty positions or other combined assignments should be allocated to each category according to the fraction of the appointment assigned to that category.

3. For faculty members, 1 FTE equals what your institution defines as a full-time load

4. For student teaching assistants, 1 FTE equals 20 hours per week of work (or service).

5. Specify any other category considered appropriate, or leave blank.

Signature Attesting to Compliance

Only the Dean or Dean's Delegate can electronically submit the Self-study Report.

ABET considers the on-line submission as equivalent to that of an electronic signature of compliance attesting to the fact that the program conducted an honest assessment of compliance and has provided a complete and accurate disclosure of timely information regarding compliance with ABET's *Criteria for Accrediting Engineering Programs* to include the General Criteria and any applicable Program Criteria, and the ABET *Accreditation Policy and Procedure Manual.*

Mapping Between Criteria Applicable Prior to 2019-20 and Criteria Applicable Beginning in 2019-20

The mapping between the criteria are presented in three tables, one for the introductory section, including definitions (Table 1) and one for each of the two criteria (Criterion 3 in Table 2 and Criterion 5 in Table 3). Each table contains one column with the elements of the criteria in effect prior to 2019-20 and one with the language that was approved by the Engineering Area Delegation on October 20, 2017 for implementation in 2019-20

Table 1. Changes in Introduction, Including Definitions

EAC Criteria Applicable Prior to the 2019-20 Cycle	EAC Criteria Applicable Beginning in the 2019-20 Cycle
These criteria are intended to assure quality and to foster the systematic pursuit of improvement in the quality of engineering education that satisfies the needs of constituencies in a dynamic and competitive environment. It is the responsibility of the institution seeking accreditation of an engineering program to demonstrate clearly that the program meets the following criteria.	These criteria apply to all accredited engineering programs. Furthermore, these criteria are intended to foster the systematic pursuit of improvement in the quality of engineering education that satisfies the needs of its constituencies in a dynamic and competitive environment. It is the responsibility of the institution seeking accreditation of an engineering program to demonstrate clearly that the program meets the following criteria.
Definitions In the current criteria are embedded in Criterion 3 and Criterion 5 (as indicated below)	**Definitions** The Engineering Accreditation Commission of ABET recognizes that its constituents may consider certain terms to have certain meanings; however, it is necessary for the Engineering Accreditation Commission to have consistent terminology. Thus, the Engineering Accreditation Commission will use the following definitions in applying the criteria:
Currently in Criterion 5: Basic sciences are defined as biological, chemical, and physical sciences.	Basic Science – Basic sciences are disciplines focused on knowledge or understanding of the fundamental aspects of natural phenomena. Basic sciences consist of chemistry and physics and other natural sciences including life, earth, and space sciences.

Not explicitly defined in current criteria.	College-level Mathematics – College-level mathematics consists of mathematics that requires a degree of mathematical sophistication at least equivalent to that of introductory calculus. For illustrative purposes, some examples of college-level mathematics include calculus, differential equations, probability, statistics, linear algebra, and discrete mathematics.
Not explicitly defined in current criteria.	Complex Engineering Problems - Complex engineering problems include one or more of the following characteristics: involving wide-ranging or conflicting technical issues, having no obvious solution, addressing problems not encompassed by current standards and codes, involving diverse groups of stakeholders, including many component parts or sub-problems, involving multiple disciplines, or having significant consequences in a range of contexts.
From current Criterion 3. …-within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability From current Criterion 5: Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.	Engineering Design – Engineering design is a process of devising a system, component, or process to meet desired needs and specifications within constraints. It is an iterative, creative, decision-making process in which the basic sciences, mathematics, and engineering sciences are applied to convert resources into solutions. Engineering design involves identifying opportunities, developing requirements, performing analysis and synthesis, generating multiple solutions, evaluating solutions against requirements, considering risks, and making trade-offs, for the purpose of obtaining a high-quality solution under the given circumstances. For illustrative purposes only, examples of possible constraints include accessibility, aesthetics, codes, constructability, cost, ergonomics, extensibility, functionality, interoperability, legal considerations, maintainability, manufacturability, marketability, policy, regulations, schedule, standards, sustainability, or usability.

Currently in Criterion 5: The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other.	Engineering Science – Engineering sciences are based on mathematics and basic sciences but carry knowledge further toward creative application needed to solve engineering problems. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other.
Not explicitly defined in current criteria.	Team – A team consists of more than one person working toward a common goal and should include individuals of diverse backgrounds, skills, or perspectives.

Table 2. Changes in Criterion 3 - Student Outcomes

EAC Criteria Applicable Prior to the 2019-20 Cycle	EAC Criteria Applicable Beginning in the 2019-20 Cycle
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.	**Criterion 3. Student Outcomes** The program must have documented student outcomes that support the program educational objectives. Attainment of these outcomes prepares graduates to enter the professional practice of engineering. Student outcomes are outcomes (1) through (7), plus any additional outcomes that may be articulated by the program.
(a) an ability to apply knowledge of mathematics, science, and engineering (e) an ability to identify, formulate, and solve engineering problems	1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
(d) an ability to function on multidisciplinary teams	5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
(f) an understanding of professional and ethical responsibility (h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context (j) a knowledge of contemporary issues	4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

(g) an ability to communicate effectively	3. an ability to communicate effectively with a range of audiences
(i) a recognition of the need for, and an ability to engage in life-long learning	7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies
(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	Implied in 1, 2, and 6

Table 3. Changes in Criterion 5 - Curriculum

EAC Criteria Applicable Prior to the 2019-20 Cycle	EAC Criteria Applicable Beginning in the 2019-20 Cycle
The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The faculty must ensure that the program curriculum devotes adequate attention and time to each component, consistent with the outcomes and objectives of the program and institution. The professional component must include:	The curriculum requirements specify subject areas appropriate to engineering but do not prescribe specific courses. The program curriculum must provide adequate content for each area, consistent with the student outcomes and program educational objectives, to ensure that students are prepared to enter the practice of engineering. The curriculum must include:
(a) one year of a combination of college level mathematics and basic sciences (some with experimental experience) appropriate to the discipline. Basic sciences are defined as biological, chemical, and physical sciences.	(a) a minimum of 30 semester credit hours (or equivalent) of a combination of college-level mathematics and basic sciences with experimental experience appropriate to the program.
(b) one and one-half years of engineering topics, consisting of engineering sciences and engineering design appropriate to the student's field of study. The engineering sciences have their roots in mathematics and basic sciences but carry knowledge further toward creative application. These studies provide a bridge between mathematics and basic sciences on the one hand and engineering practice on the other. Engineering design is the process of devising a system, component, or process to meet desired needs. It is a decision-making process (often iterative), in which the basic sciences, mathematics, and the engineering sciences are applied to convert resources optimally to meet these stated needs.	(b) a minimum of 45 semester credit hours (or equivalent) of engineering topics appropriate to the program, consisting of engineering and computer sciences and engineering design, and utilizing modern engineering tools.
(c) a general education component that complements the technical content of the curriculum and is consistent with the program and institution objectives.	(c) a broad education component that complements the technical content of the curriculum and is consistent with the program educational objectives.

Students must be prepared for engineering practice through a curriculum culminating in a major design experience based on the knowledge and skills acquired in earlier course work and incorporating appropriate engineering standards and multiple realistic constraints.	(d) a culminating major engineering design experience that 1) incorporates appropriate engineering standards and multiple constraints, and 2) is based on the knowledge and skills acquired in earlier course work.