ENGINEERING TEACHER PROFESSIONAL DEVELOPMENT ENDORSEMENT (ETPDE)

Document #3: DESCRIPTIVE SELF-RATING

ASEE
AMERICAN SOCIETY FOR
ENGINEERING EDUCATION

Please Print Clearly:

Organization Name from Official Program Summary: _____

Program Name from Official Program Summary: _____

Date of Submission: _____

For each element, you will first mark which sub-elements or rows you are choosing to submit. Provide a brief overview that tells the story of that element.

Review each row of the professional development matrix for how closely it aligns with your professional development program.

1. Mark each row to best describe the current implementation of your professional development program.
2. Give a brief justification of how your program meets the ranking you chose.
3. Give a link to the document or video clip that you are using as evidence to support your choice.

Instructions: Follow the instructions in "Required Components for Endorsement Application" to complete this descriptive self-rating. Note that to be considered for ASEE Engineering Teacher Professional Development Endorsement, a program must exhibit moderate to high emphasis on a minimum number of rows for each standard as shown in the following table:

Standard	# Rows to consider amount of emphasis	# Rows must be scored high or moderate emphasis to be considered for endorsement
A	19	13
B	9	6
C	4	1
D	12	4

PART I: Engineering Content and Pedagogical Content Knowledge (Standards A-B)

Standard A Overview

Sub-elements or Rows completed for review		Summary of Element A
A.1.1	A.6.1	
A.1.2	A.6.2	
A.1.3	A.6.3	
A.1.4	A.7.1	
A.1.5	A.8.1	
A.1.6	A.9.2	
A.2.1	A.10.1	
A.3.1	A.10.2	
A.4.1	A.11.1	
A.5.1		

Standard A: *Engineering Content and Practices: Professional development for teachers of engineering should address the fundamental nature, content and practices of engineering as defined in Standards for Preparation and Professional Development for Teachers of Engineering.*

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
To promote literacy in the category of engineering design, such professional development should:					
Engage teams of participants in authentic engineering practices and processes (i.e., participating in the engineering design process as initiated by a design challenge statement, through at least one improvement cycle, and involving communication of results);	A 1.1	Participants have the opportunity to complete multiple design challenges as initiated by design challenge statements.	Participants have one opportunity to complete a design process as initiated by a design challenge statement.	Participants have the opportunity to perform multiple steps of a design process as initiated by a design challenge statement; the remaining steps are considered but not performed by the participants.	Participants do not have the opportunity to perform multiple steps of a design process as initiated by a design challenge statement.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage teams of participants in authentic engineering practices and processes (i.e., participating in the engineering design process as initiated by a design challenge statement, through at least one improvement cycle, and involving communication of results); (Continued)	A 1.2	Participants engage in a facilitated process to develop a clear and concise problem statement for a given design challenge.	Participants engage in design challenges that are guided by explicit, clear and concise problem statements.	Participants engage in design challenges that are guided by implicit problem statements, but no explicit, clear and concise problem statements are provided.	Design challenges are not guided by clear implicit or explicit problem statements.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

	A 1.3	Participants engage in one or more design challenges that reflect authentic local or global engineering needs, and analyze the usefulness of the engineering design process to address such challenges.	Participants consider the usefulness of the engineering design process in addressing authentic local or global engineering challenges.	Participants are presented with information about the usefulness of the engineering design process in addressing authentic local or global engineering challenges.	No attention is paid to the usefulness of the engineering design process in addressing authentic local or global engineering challenges.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	A 1.4	Participants engage in, and reflect on the importance of, iteration in engineering design. Participants prototype a solution, test the solution, analyze the results, generate redesign ideas, and create a new prototype. Participants may complete further cycles of improvement, or simply consider the role of such cycles in engineering.	Participants prototype a solution and consider the process that they would undertake to iterate the solution, but do not complete the iterative cycle.	Participants are informed of the role of iteration in engineering design. Proto-typing, testing and redesign are described for participants.	No explicit attention is paid to the role of iteration in engineering design.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage teams of participants in authentic engineering practices and processes (i.e., participating in the engineering design process as initiated by a design challenge statement, through at least one improvement cycle, and involving communication of results); (Continued)	A 1.5	Participants engage in documenting, reflecting on, and discussing the key steps of the engineering design process each time the process is undertaken.	Participants engage in documenting, reflecting, and discussing the key steps of the engineering design process at least once.	Participants engage in one of the following at least once: documenting, reflecting, or discussing the key steps of the engineering design process.	Participants do not engage in an explicit discussion of or reflection on the engineering design process.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	A 1.6	Participants document and communicate engineering design solutions to peers or facilitators of the professional development and identify how they would modify this communication for presentation to a client.	Participants document and communicate engineering design solutions to peers or facilitators of the professional development.	Participants document engineering design solutions but do not communicate solutions to peers or facilitators of the professional development.	Participants do not document engineering design solutions.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Introduce participants to tools that enable success in engineering; such tools include engineering notebooks, simple tools (e.g., rulers) and more sophisticated technologies (e.g., computer probe-ware and software, digital multimeters);	A 2.1	Participants use tools that enable success in engineering and reflect on why these tools are important to engineers. Tools may be physical tools and/or tools that expand the mindset.	Participants use tools that enable success in engineering and are told why these tools are important to engineers. Tools may be physical tools and/or tools that expand the mindset.	Participants use tools that enable success in engineering and are told that these tools are important to engineers. Tools may be physical tools and/or tools that expand the mindset.	While they may use some tools, participants are not engaged in evaluating whether and why such tools might enable success in engineering.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Introduce participants to strategies that enable success in engineering; key strategies include engaging in teams, asking questions, communication about design, and carefully documenting work;	A 3.1	Participants use appropriate strategies to support the engineering design process and reflect on why these strategies are important to engineers.	Participants use strategies that enable success in engineering and are told why these strategies are important to engineers.	Participants use strategies that enable success in engineering and are told that these strategies are important to engineers.	While they may use some strategies, participants are not engaged in evaluating whether and why such strategies might enable success in engineering.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Encourage participants to reflect on multiple experiences with the engineering design process, whether these have occurred within or outside the context of the current professional development opportunity, to reinforce learning about engineering content and practices; and	A 4.1	Participants articulate multiple experiences with the engineering design process, whether these have occurred within or outside the context of the current professional development opportunity, and analyze how the engineering design process enabled an understanding of the Nature, Content and Practices of Engineering as defined in the Standards document.	Participants articulate a single experience with the engineering design process, whether this has occurred within or outside the context of the current professional development opportunity, and analyze how the engineering design process enabled an understanding of the Nature, Content and Practices of Engineering as defined in the Standards document.	Participants are given an example of how a particular experience with the engineering design process might enable an understanding of the Nature, Content and Practices of Engineering as defined in the Standards document.	No attention is paid to how the engineering design process might enable understanding of the Nature, Content and Practices of Engineering as defined in the Standards document.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Enable participants to compare design in engineering to design in other fields (e.g., fashion, architecture, art).	A 5.1	Participants are given opportunities to reflect on their prior knowledge of the meanings of the word "design"; to attend explicitly to the different meanings of the word "design" as used in everyday language and by different fields; and to compare the engineering design process to other conceptions of "design".	Participants reflect on how the engineering design process is an example of a broader conception of design, without comparing engineering design to other ways that "design" may be conceived.	Participants are presented with information about how the engineering design process is an example of a broader conception of design, without comparing engineering design to other ways that "design" may be conceived.	No explicit attention is paid to the engineering design process as an example of a broader conception of design.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Provide opportunities for participants to learn about engineering fields and professions;	A 6.1	Participants research and reflect on multiple engineering fields and professions.	Participants receive information about multiple engineering fields and professions.	Participants receive information about one engineering field and profession.	Participants receive no information about engineering fields and professions. Rather, engineering is described a single general professional field.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	A 6.2	Participants identify the types of engineers who would work on a team addressing a particular design challenge in a professional setting. Participants research the represented fields (i.e. professions, projects research areas) on which such engineers currently work.	Participants identify the types of engineers who would work on a team addressing a particular design challenge in a professional setting.	Participants are informed of the types of engineers who would work on a team addressing a particular design challenge in a professional setting.	No attention is paid to the types of engineers who would work on a team addressing a particular design challenge in a professional setting.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	A 6.3	Participants identify the roles and responsibilities of different engineers who would work on a team addressing a particular design challenge in a professional setting. For at least one role/responsibility, participants research other engineering professions in which such roles are available.	Participants identify the roles and responsibilities of different engineers who would work on a team addressing a particular design challenge in a professional setting.	Participants receive information about the roles and responsibilities of different engineers who would work on a team addressing a particular design challenge in a professional setting.	No attention is paid to the roles and responsibilities of different engineers who would work on a team addressing a particular design challenge in a professional setting.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in comparing engineering with non-engineering content areas (e.g., mathematics, science, social studies, English language arts, the arts, technology education);	A 7.1	For a particular engineering design challenge or activity, participants analyze connections between the engineering and non-engineering content. This analysis highlights both the unique nature of engineering and how the engineering content overlaps with, utilizes, or supports the non-engineering content.	For a particular engineering design challenge or activity, participants receive information about the connections between the engineering and non-engineering content. This information highlights both the unique nature of engineering and how the engineering content overlaps with, utilizes, or supports the non-engineering content.	Participants reflect on and/ or receive general information about connections between engineering and non-engineering content.	No attention is paid to the connections between engineering and non-engineering content.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in comparing classroom-based engineering experiences with professional engineering practice; and	A 8.1	In reference to a particular engineering design challenge or activity, participants analyze how the activity has been simplified for classroom use and compare this simplification with the complexity of similar activities that might be undertaken by professional engineers. This necessitates interaction with practicing engineers if the participants do not have engineering experience of their own.	In reference to a particular engineering design challenge or activity, participants receive information about how the activity has been simplified for classroom use. This information includes comparison of this simplification with the complexity of similar activities that might be undertaken by professional engineers.	Participants engage in a general discussion and/or receive general information about the simplified nature of engineering activities as adapted for classroom use.	No explicit attention is paid to the ways in which engineering design challenges or activities designed for classroom use represent simplified versions of similar activities that might be undertaken by professional engineers.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Provide opportunities for educators to learn about the pre-collegiate and collegiate academic preparation required for engineering careers.	A 9.1	Participants consider pathways for multiple careers/ jobs in engineering, including high school internships, technical certifications, two- year degrees, and four-year degrees.	Participants consider the pre-collegiate and collegiate academic preparation required for limited pathways to engineering careers (e.g., only formal two- or four-year engineering programs).	Participants consider the pre-collegiate and collegiate academic preparation required for only one pathway to engineering careers (e.g., a four-year engineering program).	Participants do not consider the pre-collegiate and collegiate academic preparation required for engineering careers.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

	A 9.2	Participants research and reflect on engineering career pathways and the connections between these pathways. The importance of multiple pathways is considered in the context of the labor market and student engagement.	Participants research and reflect on engineering career pathways.	Participants receive information about engineering career pathways.	Participants do not consider engineering career pathways.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Provide opportunities for participants to explore the work of engineers and their contributions to society, as well as ways in which some engineered solutions have caused societal challenges.	A 10.1	Participants research and reflect on how engineers have contributed to society.	Participants reflect on how engineers have contributed to society.	Participants receive information about how engineers have contributed to society.	Participants do not consider how engineers have contributed to society.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	A 10.2	Participants research and reflect on how engineered solutions have been, or might be, problematic. This reflection could include an examination of the nature of the problem, how the engineers behind the solution might have anticipated and avoided the problem, and how engineers working today might mitigate the problem.	Participants reflect on how engineered solutions have been, or might be, problematic. This reflection could include an examination of the nature of the problem, how the engineers behind the solution might have anticipated and avoided the problem, and how engineers working today might mitigate the problem.	Participants receive examples of engineered solutions that have been, or might be, problematic.	Participants do not consider how engineered solutions have been, or might be, problematic.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Standard B Overview:

Sub-elements or Rows completed for review	Summary of Element B
B.1.1	
B.2.1	
B.3.1	
B.3.2	
B.4.1	
B.4.2	
B.4.3	
B.4.4	
B.5.1	

Standard B: Pedagogical Content Knowledge for Teaching Engineering: *Professional development for teachers of engineering should emphasize engineering pedagogical content knowledge. It should:*

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
To promote literacy in the category of engineering design, such professional development should:					
Engage participants in exploring teaching and learning in engineering and how it is similar to, and different from, teaching and learning in science and/or mathematics;	B 1.1	Participants engage in (or recall past engagement in) activities involving the teaching and learning of engineering and science and/ or mathematics, drawing on these experiences to reflect on the similarities and differences between teaching and learning in these fields.	Participants receive information about the similarities and differences between science and/ or mathematics teaching and learning and engineering teaching and learning. Participants receive examples to illustrate these similarities and differences. Participants reflect on the provided information and illustrations.	Participants receive information about the similarities and differences between science and/or mathematics teaching and learning and engineering teaching and learning. Participants receive examples to illustrate these similarities and differences.	Participants do not consider explicitly the similarities and differences between science and/ or mathematics teaching and learning and engineering teaching and learning.
Justification of why you chose this level of emphasis:					
Link to supporting documentation or video:					
Introduce participants to effective classroom management strategies for enabling learning in engineering;	B 2.1	Participants research effective classroom management strategies for enabling learning in engineer-ing, identify multiple strategies to address common challenges in engineering education (e.g., team-ing strategies, materials manage-ment, project storage), and analyze these strategies to determine which will be most effective in their own classrooms.	Participants consider in- formation about classroom management strat-egies that address common chal-lenges in engineering education. Participants analyze this information in light of their own experiences to determine which will be most effec-tive in their own classrooms.	Participants consider in- formation about classroom management strategies that address common challeng-es in engineering educa-tion.	Participants do not consid-er classroom management strategies that address common challenges in en-gineering education.
Justification of why you chose this level of emphasis:					
Link to supporting documentation or video:					

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Foster participants' ability to develop design challenges that are appropri-ate for their student population, teaching environments, and/or local community;	B 3.1	Participants develop, pilot and refine a new design challenge – or adapt an existing design challenge – so that the result is appropriate for their stu-dent population, teaching environ-ments and/or local community.	Participants develop a new de-sign challenge – or adapt an ex-isting design challenge – so that the result is appropriate for their student population, teaching en-vironments and/or local commu-nity.	Participants consider how they would develop a new design challenge – or adapt an existing design challenge – so that the result is appropriate for their student population, teaching environments and/or local community.	Participants do not consid-er how they would develop or adapt design challenges to make them appropriate for their student population, teaching environments, and/or local community.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

	B 3.2	Participants consider and reflect on the demands and benefits of developing and employing a design challenge that is appropriate for their student popula-tion, teaching environment and/ or lo-cal community. Participants develop and implement a plan for addressing and overcoming the identified de-mands.	Participants consider and reflect on the demands and benefits of developing and employing a de-sign challenge that is appropriate for their student population, teaching environment and/ or local community. Participants develop a plan for addressing and overcoming the identified demands.	Participants consider the demands and benefits of developing and employ-ing a design challenge that is appropriate for their student population, teach-ing environment and/or local community.	Participants do not con-sider the demands and benefits of developing and employing a design chal-lenge that is appropriate for their student popula-tion, teaching environ-ments and/or local com-munity.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Facilitate participants' reflection upon their own teaching practice and encourage participants to seek feedback from others to refine and optimize their engineering teach-ing practice; and	B 4.1	Participants engage in multiple op-portunities to reflect on their engi-neering teaching practice. This re-flection draws on all of the following: experiences (e.g., instructional inter-actions, prior learning), evidence (e.g., formative assessments), and artifacts (e.g., lesson plans, work-sheets, assessments, student work) collected in their classrooms.	Participants engage in multiple opportunities to reflect on their engineering teaching practice, This reflection draws on some of the following: experiences (e.g., in-structional interactions, prior learn-ing), evidence (e.g., formative as-sessments), and artifacts (e.g., les-son plans, worksheets, assess-ments, student work) collected in their classrooms.	Participants engage in a single reflection on their engineering teaching prac-tice that draws on some or all of the following: experi-ences (e.g., instructional interactions, prior learn-ing), evidence (e.g., forma-tive assessments), and artifacts (e.g., lesson plans, worksheets, assessments, student work) collected in their classrooms.	Participants do not en-gage in reflection on their engineering teach-ing practice that draws on experiences (e.g., instruction- al interac-tions, prior learning), evidence (e.g., formative assessments), or artifacts (e.g., lesson plans, work-sheets, assessments, stu-dent work) collected in their classrooms.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	B 4.2	Participants form or join a learning community, or recruit a mentor or coach, to obtain feedback about their teaching practice.	Participants identify opportunities to form or join a learning community, or to recruit a mentor or coach, to obtain feedback about their teaching practice.	Participants receive information about the benefits of forming or joining a learning community, or recruiting a mentor or coach, to obtain feedback about their teaching prac-tice.	Participants do not receive information about the bene-fits of forming or joining a learning community, or recruiting a mentor or coach, to obtain feedback about their teaching prac-tice.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Facilitate participants' reflection upon their own teaching practice and encourage participants to seek feedback from others to re-fine and optimize their engineer-ing teaching practice; and (Con-tinued)	B 4.3	Participants consider and reflect on the elements of their practice that are essential to effective teaching of engi-neering, set goals for improving their practice, and develop and implement a plan for achieving those goals.	Participants consider and reflect on the elements of their practice that are essential to effective teach-ing of engineering, set goals for improving their practice, and de-velop a plan for achieving those goals.	Participants consider the elements of their practice that are essential to effective teaching of engineering. Participants identify oppor-tunities for improvement.	Participants do not consid-er the elements of their practice that are essential to effective teaching of engi-neering.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	B 4.4	Participants research approaches to mentoring (e.g., in-school mentoring, informal collaborations, professional learning communities, online pro-grams, partnerships with industry, internships, research experiences). Participants analyze these approach-es to identify which would be of great-est benefit to their implementation efforts and why.	Participants receive information about approaches to mentoring (e.g., in- school mentoring, infor-mal collaborations, professional learning communities, online pro-grams, partnerships with industry, internships, research experiences) and how these might support im-plementation. Participants analyze the provided information to identify the approaches that would best support their implementation ef-forts.	Participants receive infor-mation about approaches to mentoring (e.g., in- school mentoring, informal collaborations, profes-sional learning communi-ties, online programs, partnerships with industry, internships, research ex-periences) and how these might support implementa-tion.	Participants do not receive information about ap-proaches to mentoring (e.g., in-school mentoring, informal collaborations, professional learning com-munities, online programs, partnerships with industry, internships, research expe-riences) and how these might support implementa-tion.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Promote and support participants' engagement with engineering mentors who can, in turn, support participants' teaching of engineering through a variety of approaches (e.g., field experiences, field trips, internships, collaborations, classroom visits).	B 5.1	Participants develop and implement a plan to engage mentors with expertise in engineering for support during classroom implementation.	Participants develop a plan to engage mentors with expertise in engineering for support during classroom implementation.	Participants consider sources from which they might elicit mentors with expertise in engineering to support them during classroom implementation.	Participants do not consider sources from which they might elicit mentors with expertise in engineering to support them during classroom imple-mentation.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Standard C Overview:

Sub-elements or Rows completed for review	Summary of Element C
C.1.1	
C.2.1	
C.3.1	
C.4.1	

Standard C: Engineering as a Context for Teaching and Learning: *Professional development for teachers of engineering should make clear how engineering design and problem solving offer a context for teaching standards of learning in science, mathematics, language arts, reading, and other subjects. It should:*

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Enable participants to explore research that demonstrates how using engineering design and problem solving as a context for learning improves students' critical thinking skills and academic achievement;	C 1.1	Participants research and synthesize multiple studies linking engineering de-sign and problem solving with improved student academic achievement and criti-cal thinking skills.	Participants receive evidence link-ing engineering design and prob-lem solving with improved student academic achievement and critical thinking skills. Participants reflect on this evidence.	Participants receive evi-dence linking engineering design and problem solving with improved student aca-demic achievement and critical thinking skills.	Participants do not receive evidence linking engineer-ing design and problem solving with improved stu-dent academic achievement and critical thinking skills.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

	C 2.1	For one or more engineering design challenges, participants analyze and map connections to non-engineering content involved in the challenge. Partic-ipants identify which non-engineering content is required for successful com-pletion of the challenge, and which is useful as extensions to the challenge.	For one or more engineering design challenges, participants analyze and map connections to non-engineering content involved in the challenge.	For one or more engineering design challenges, participants receive information about the connections to non-engineering content involved in the challenge.	Participants do not receive evidence linking engineer-ing design and problem solving with improved stu-dent academic achievement and critical thinking skills.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Draw attention to the way in which engineering design and problem solving reinforce skills (e.g., 21st century skills such as creativity, communication, critical thinking, and collaboration) and practices (e.g., modeling, data analysis, and presentation) that are relevant to many fields; and	C 3.1	For one or more engineering design challenges, participants analyze and map connections to skills (e.g., 21st century skills such as creativity, communication, critical thinking, and collaboration) and practices (e.g., modeling, data analysis, and presentation) that are relevant to many fields.	For one or more engineering design challenges, participants are presented with evidence of connections to skills (e.g., 21st century skills such as creativity, communication, critical thinking, and collaboration) and practices (e.g., modeling, data analysis, and presentation) that are relevant to many fields. Participants reflect on this evidence.	For one or more engineering design challenges, participants are presented with evidence of connections to skills (e.g., 21st century skills such as creativity, communication, critical thinking, and collaboration) and practices (e.g., modeling, data analysis, and presentation) that are relevant to many fields.	Participants do not experience explicit opportunities to connect engineering design to skills (e.g., 21st century skills such as creativity, communication, critical thinking, and collaboration) and practices (e.g., modeling, data analysis, and presentation) that are relevant to many fields.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Encourage participants to integrate engineering into the existing curriculum.	C 4.1	Participants revise at least one unit of their existing curriculum to include engi-neering. Participants then reflect on how the curriculum is enhanced through the addition of engineering.	Participants are given examples of how other teachers have in-corporated engineering into their existing curriculum. Participants analyze these examples and identify specific opportunities in-tegrate engineering into their curricula.	Participants are given ex-amples of how other teachers have incorpo-rated engineering into their existing curriculum. Participants consider how they might similarly inte-grate engineering into their curricula.	Participants do not address the incorporation of engi-neering into their existing curriculum.Participants do not receive evidence linking engineering design and problem solving with im-proved student academic achievement and critical thinking skills.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Standard D Overview:

Sub-elements or Rows completed for review	Summary of Element D
D.1.1	
D.1.2	
D.2.1	
D.2.2	
D.3.1	
D.3.2	
D.4.1	
D.5.1	
D.5.2	
D.6.1	
D.6.2	
D.7.1	

Standard D: Engineering as a Context for Teaching and Learning: *Professional development for teachers of engineering should make clear how engineering design and problem solving offer a context for teaching standards of learning in science, mathematics, language arts, reading, and other subjects. It should:*

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Enable participants to identify engineering curriculum that is developmentally, instructionally, and cognitively appropriate for their students;	D 1.1	Participants analyze and provide evi-dence of the developmental, instruc-tional and cognitive appropriateness of a curriculum for a particular student population.	Participants receive evidence of the develop-mental, instructional and cognitive appropriateness of a curriculum for a particular stu-dent population. Participants reflect on the provided evidence.	Participants receive evidence of the developmental, instructional and cognitive appropriateness of a curriculum for a particular student population.	Participants do not consid-er the developmental, in-structional and cognitive appropriateness of a curric-ulum for a particular student population.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	D 1.2	Participants fully develop modifica-tions to improve the developmental, instructional and cognitive appropri-ateness of curricular materials.	Participants identify modifications that would improve the develop-mental, instructional and cognitive appropriateness of curricular mate-rials.	Participants consider whether modifications might improve the devel-opmental, instructional and cognitive appropri-ateness of curricular mate-rials.	Participants do not con-sider whether modifica-tions might improve the developmental, instruc-tional and cognitive ap-propriateness of curricular materials.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in evaluat-ing the potential of engineering curriculum to address one or more sets of student learning standards (e.g., ITEEA learning standards, Next Generation Science Standards, state stand-ards);	D 2.1	Participants analyze and provide evi-dence of how curriculum aligns with one or more sets of student learning standards.	Participants receive evidence of how a given curriculum aligns with one or more sets of student learn-ing standards. Participants reflect on the provided evidence.	Participants receive evi-dence of how a given cur-riculum aligns with one or more sets of student learn-ing standards.	Participants do not consid-er the alignment of curricu-lum with any particular set of student learning stand-ards.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in evaluating the potential of engineering curriculum to address one or more sets of student learning standards (e.g., ITEEA learning standards, Next Generation Science Standards, state standards); (Continued)	D 2.2	If the curriculum requires curricular extensions to increase alignment with student learning standards, partici-pants develop such extensions.	If the curriculum requires curricular extensions to increase alignment with student learning standards, participants identify opportunities to develop such extensions.	Participants consider whether curricular exten-sions might increase align-ment with student learning standards.	Participants do not con-sider whether curricular extensions might in-crease alignment with student learning stand-ards.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in evaluating the potential of engineering curriculum to support a particular set of engineering learning objectives;	D 3.1	Participants receive information about the engineering learning objectives for each activity. Participants analyze the curriculum materials to determine the extent to which these materials are nec-essary and sufficient to support the stated learning objectives.	Participants receive information about the engineering learning objectives for each activity, as well as evidence of the extent to which the curricular materials are neces-sary and sufficient to support these objectives. Participants reflect on the provided evidence.	Participants receive infor-mation about the engineer-ing learning objectives for each activity, as well as evidence of the extent to which the curricular mate-rials are necessary and sufficient to support these objectives.	Participants do not con-sider the engineering learning objectives for each activity.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	D 3.2	If the curriculum requires curricular ex-tensions to better support the stated engineering learning objectives, partic-ipants develop such extensions.	If the curriculum requires curricular extensions to better support the stated engineering learning objec-tives, participants identify opportu-nities to develop such extensions.	Participants consider whether curricular exten-sions might be developed to better support the stated engineering learning ob-jective.	Participants do not con-sider whether curricular extensions might better support the stated engi-neering learning objec-tives.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Engage participants in evalu-ating the adaptability of engi-neering curriculum to local conditions (e.g., schedul-ing/timing, emphasis on con-tent/methods, cultural context, similarity to other activities in an existing curriculum);	D 4.1	Participants analyze a particular curric-ulum to identify opportunities for adap-tation to address local conditions. Participants adapt one or more com-ponents of the curriculum to address these conditions.	Participants are given exam-ples of how other teachers have adapted a particular cur-riculum to address local condi-tions. Participants analyze these examples and identify ways in which they might simi-larly adapt a particular curricu-lum to address local condi-tions.	Participants consider the importance of adapting materials to address local conditions and are given examples of how other teachers have adapted a particular curriculum to ad-dress local conditions.	Participants do not consid-er the importance of adapt-ing materials to address local conditions.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

Engage participants in evaluating the available teacher support for a particular engineering curriculum;	D 5.1	Participants receive research-based information about what constitutes good teacher support. Participants analyze the teacher support provid-ed with a curriculum to determine the extent to which it is necessary and sufficient for its successful imple-mentation.	Participants receive research-based information about what constitutes good teacher sup-port, as well as evidence of the extent to which the teacher support provided with a curricu-lum is necessary and sufficient for its successful implementa-tion. Participants reflect on the provided evidence.	Participants consider whether additional teacher supports, beyond those provided with the curriculum, might be nec-essary for successful imple-mentation.	Participants do not consider whether additional teacher supports, beyond those provided with the curricu-lum, might be necessary for successful implementation.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	D 5.2	If successful implementation requires additional teacher supports, beyond those provided with the curriculum, participants develop and implement a plan for engaging such supports before and during implementation.	If successful implementation requires additional teacher sup-ports, beyond those provided with the curriculum, participants develop a plan for engaging such supports.	Participants consider whether additional teacher supports, beyond those provided with the curriculum, might be nec-essary for successful imple-mentation.	Participants do not consider whether additional teacher supports, beyond those provided with the curricu-lum, might be necessary for successful implementation.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Engage participants in examining the authenticity and appropriateness of formative and summative assessments embedded in a curriculum; and	D 6.1	Participants are provided with a curriculum's embedded assessments and the learning ob-jectives to which they are tied. Participants analyze and provide evidence of the authentic-ity and appropriateness of the embedded assessments.	Participants are provided with a curriculum's embed-ded assessments and evi-dence of their authenticity and appropriateness for evaluating associated learn-ing objectives. Participants reflect on the provided evidence.	Participants are provided with a curriculum's embed-ded assessments and evi-dence of their authenticity and appropriateness for evaluating associated learning objectives.	Participants do not consid-er the authenticity or appro-priateness of embedded assessments.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
	D 6.2	If the curriculum requires additional and/or modified assessments, participants develop such assessments.	If the curriculum requires additional and/or modified assessments, participants consider how they would develop such assess-ments.	Participants consider whether additional and/or modified assess-ments are required.	Participants do not con-sider whether additional and/or modified assess-ments are required.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video:

		HIGH EMPHASIS	MODERATE EMPHASIS	LOW EMPHASIS	NO EMPHASIS
Demonstrate connections and alignment between engineering curriculum, instruction, learning, and assessment.	D 7.1	For a given curriculum, participants analyze and provide evidence of the connections among all of the elements: curriculum, peda-gogy /instruction, student and teacher learn-ing, and assessment.	For a given curriculum, par-ticipants receive evidence of connections among all of the elements: curriculum, pedagogy/ instruction, stu-dent and teacher learning, and assessment. Partici-pants reflect on the provid-ed evidence.	For a given curriculum, participants receive evi-dence of connections among all of the elements: curriculum peda-gogy/ instruction, student and teacher learning, and assessment.	Participants do not consid-er the connections between curriculum, peda-gogy/ instruction, student and teacher learning, and assessment.

Justification of why you chose this level of emphasis:

Link to supporting documentation or video: