AIChE Education and Accreditation Committee
Guidelines for PEVs and Programs
13 July 2022

Introduction and Purpose

As provided in the charge of the AIChE Education and Accreditation (E&A) Committee, one function of the committee is that it "advises schools on methods and standards of chemical engineering education." In addition, the E&A Committee's Manual of Procedures (2005) indicates the c

the first time for visits in 2019-2020. Quoting the ABET web site for the Engineering Accreditation Commission:

> ABET understands that programs to be reviewed during the first year or two of the initial application of the revised criteria will require one or more years to make the transition. In these cases, it is important that programs develop a transition plan and be able to provide evidence that the plan is being followed at the time of their next general review.

beginning of the period covered by the self-study report (except possibly for programs that are seeking initial accreditation).

> Student Outcome 1 (SO1) “requires that students have the ability to solve complex problems. Programs will want to ensure that their problems are complex.” The definition of Complex Engineering Problems is included in the general criteria as having “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, inclvitng c lvi. TcTd( )(. T)5-20 (ke)4 0 T

Topics consists of courses pertaining to engineering and computer sciences and engineering design.

a. Engineering Sciences. Engineering Sciences have their roots in mathematics and basic sciences but carry knowledge further toward

regard to process safety, AIChE has adopted the use of “Recognized and Generally Accepted Good Engineering Practice (RAGAGEP)” which are “based on established codes, standards, published technical reports or recommended practices or similar documents”, and this definition has, in turn, been adopted by OSHA[a]. Consequently, “appropriate engineering standards” may be widely interpreted in the context of the program’s major chemical engineering design experience and the Program Educational Objectives. PEV evaluation of this requirement must be limited to determining whether programs use “appropriate engineering standards” in design without prescription of which ones are (or are not) used. Examples of appropriate engineering standards can include any of but are not limited to: Hazard identification and management (e.g., chemical and reactivity hazards, process hazard analysis, independent protection layers); protective systems (e.g., pressure relief, inerting, secondary containment); environment (e.g., emissions evaluation); process design (e.g., process flow diagrams, P&IDs); materials of construction (e.g., material properties and selection); process equipment design (e.g., equipment selection); instrumentation and process control (e.g., safety instrumented systems). Programs are encouraged to note the use of standards in engineering design where appropriate. Finally, reference to codified standards is not required to meet ABET requirements.

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The definition of Engineering Design in Criterion 5 requires that designs consider multiple realistic constraints. 34]

Chemical Engineering Program Criteria

physics or biology topics are mandated, but only those whose mastery would reasonably be required to achieve the objectives of the program. It is incumbent on the program to justify how their mathematics and basic science curriculum is appropriate in this context.

3. Engineering Application. The Program Curriculum Criterion also specifies that the curriculum include the engineering application of the program's sciences to the design (devising) of processes, to the analysis of the behavior of such processes under realistic constraints, to the control of such processes, and to the analysis and control of the hazards associated with such processes (process safety). As with other parts of the Program Curriculum Criterion, the criterion does not specify precisely what kinds of chemical, physical, or biological processes are to be devised, nor exactly under which or what realistic con1 (i)18 (ng))-7 (o)-201.-2 (i)-2 (s)0c (ex11 (wo)-20 ( )20)-4 ((t)-62 (i)1.1 (c)-20c8TJ0 Tct (r)-1

Biological engineering courses when appropriate

Such a determination for the curriculum can be made from course titles and course catalog descriptions. Neither the General Criteria nor the Program Criteria specify that the curriculum include specific course titles. As part of the Self-Study, Programs may find that listing required courses in each of these categories will facilitate the transcript evaluation process. For programs with titles that do not include in "biochemical," "biomolecular," or similar modifiers, the row labeled "Biological engineering courses when appropriate" can be left off.

Accreditation Policy and Procedure Manual: Facilities

For chemical engineering, the predominant issue which can arise from requirements in the Accreditation Policy and Procedure Manual (APPM 1.E.5.b) relates to whether instructional and learning environments are adequate and safe for the intended purpose. This policy and procedure applies to instructional and learning environments within the program and relevant instructional and learning environments within any supporting unit identified by the team. Safety is of paramount importance to the chemical engineering profession, and our program criteria require that the curriculum include analysistcun Phrli(f)29 (p)-4 ((h)16 (e cu)-4 at)-26 zi (a)-23.9 (cu3-11

Ensuring that personal protection equipment (PPE) is used;
Ensuring that extension cords and cables are appropriately used, secured, and are not tripping hazards;
Asking the faculty and technicians that teach/monitor the laboratory courses what safety protocols are in place for classes and what training is required; or
Asking safety personnel at international institutions about local safety regulations for educational institutions.

If a laboratory safety policy is not being followed by the program or its faculty (e.g., by many students in a lab without appropriate PPE) or if there is a clear program or institution safety violation observed during the visit, it will immediately be brought to the attention of the Program Head or Chair. If feasible, any safety violation should be corrected before the evaluation is presented during the exit meeting. Uncorrected safety violations will result in a program shortcoming cited under APPM I.E.5.b.(1).

It should be noted that the APPM makes clear that neither ABET nor its representatives (including PEVs) certify that the institution's facilities comply with any

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accreditation as specified in the APPM. All guidance with regard to new programs is made with the intention of being consistent with guidance provided in the APPM.

Relating to the Evaluation Visit

visit. The PEV should refer any communication from the POC to the Team Chair/Co-Chair.

Frequently Encountered Issues for Programs

The guidance and recommendations provided here are not intended to be in conflict with ABET

Committee reviews all findings based on the available documentation for the purpose of consistency between chemical engineering programs before final consideration by ABET