

American Institute of Constructors Constructor Certification Commission

How to Use the AIC Constructor Certification Commission Associate Certification Examination as a Direct Measure for 12 of the 20 ACCE Student Learning Outcomes



American Institute of Constructors
Constructor Certification Commission
19 Mantua Road
Mount Royal, NJ 08061 USA
P: +1 703-683-4999
E: info@professionalconstructor.org

Introduction

One of the major goals of educational institutions and programs along with their regional and specialized national accreditation agencies is to ensure students receive a high-quality education. This requires an effective, yet efficient comprehensive assessment process conducted in accordance with nationally acceptable psychometric guidelines. And because requirements for regular student learning and program assessments can be confusing and sometimes inconsistent, much unneeded time and effort is often expended by those involved in the process that could be more effectively devoted to other responsibilities.

The purpose of this document is to present a generic process that all ACCE accredited four year construction management programs can use to develop, implement, analyze and improve their programs to assess the mastery of ACCE's 12 (Outcomes 6, 7, 8, and 12 – 20) of the 20 required student learning outcomes using the results of the AIC Associate Constructor certification examination while adhering to all of the assessment guidelines or requirements of ACCE, their institution and their institution's regional accreditation agency.

Please note this document does not cover the development, implementation, and analysis of program outcomes – only program student learning outcomes.

Assessment Process

The following are the five steps that make up the comprehensive student learning outcome assessment process.

1. **Required Prerequisites for Success** – If the process described in this document is to be effective the following prerequisites must be in place:
 - A. All program faculty must be committed and be involved in the comprehensive assessment process – while portions of the design and implementation of the process can be delegated to individual faculty – it is critical that the faculty as a whole be involved in the entire process.
 - B. All construction-related courses pertaining to the 20 ACCE student learning outcomes must include course student learning objectives (or outcomes) and be included in the respective syllabi whether for one or several courses for the same ACCE outcome.
 - C. It is also recommended to make the comprehensive student learning outcome assessment process more efficient to not incorporate all of the 20 ACCE student learning outcomes individually into the Program assessment plan but to create at least three general program student learning outcome that cover all of the 20

ACCE outcomes and map them to the three general ones. Refer to the example in Step 2 of this document.

2. **Pre-Assessment Steps** – The program faculty through consensus accomplishes the following:

- A. Develop at least three general program student learning outcomes that cover all of the 20 ACCE program student learning outcomes which is approved and/or accepted by the educational institution's assessment office. Refer to the example below which has four program student learning outcomes.

Outcome One: Oral and written communication skills – Upon graduation, students will be able to demonstrate the ability to effectively communicate orally and in writing.

Outcome Two: Practices of effective management – Upon graduation, students shall be able to describe practices of effective management of personnel, materials, equipment, costs and time.

Outcome Three: Facilitate Advancement of Knowledge – Upon graduation students will facilitate advancement within the field of the management of construction processes by demonstration of ability to define problems and recognize solutions; further students will demonstrate an ability to apply creativity, team work and evaluation in their work.

Outcome Four: Upon graduation, students will demonstrate an understanding of professional ethics.

- B. Assign each ACCE student learning outcome (refer to list at the end of this document) to the one most appropriate CSM program student learning outcome. Refer to the example below.

Outcome One: Oral and written communication skills – Upon graduation, students will be able to demonstrate the ability to effectively communicate orally and in writing.

ACCE SLOs – 1 and 2

Outcome Two: Practices of effective management – Upon graduation, students shall be able to describe practices of effective management of personnel, materials, equipment, costs and time.

ACCE SLOs - 12, 13, 14, 15, 16, 17, 18, 19, 20

Outcome Three: Facilitate Advancement of Knowledge – Upon graduation students will facilitate advancement within the field of the management of construction processes by demonstration of ability to define problems and recognize solutions; further students will demonstrate an ability to apply creativity, team work and evaluation in their work.

ACCE SLOs – 3, 4, 5, 7, 8, 9, 10 and 11

Outcome Four: Upon graduation, students will demonstrate an understanding of professional ethics.

ACCE SLO – 6

- C. Develop a map or spread-sheet that identifies the course learning outcomes from all of the courses that directly relate to each of the ACCE student learning outcomes.
- D. Based on the AIC Constructor Certification Commission’s psychometric mapping of the ACCE outcomes to their bank of certification questions (relating to each ACCE outcome) the faculty decide that for ACCE student learning outcomes 6, 7, 8 and 12 – 20 the AIC AC certification examination will be used as the direct measure of them and that specific individual student assignments in the faculty selected courses will be used to assess the mastery of the remaining 8 ACCE student learning outcomes.
- E. Agree on a consistent way to indirectly assess the mastery of each ACCE student learning outcome. It should be noted that a second direct measure for any one outcome may be used to meet the ACCE Standards. One example of an indirect assessment would consist of one or more questions being asked of students (using a 5 point Likert scale) on how well they felt they were able to fulfill the respective outcome following the completion of the course where each outcome was directly measured or in the case of using the AIC AC examination as a direct measure, in the courses the faculty identify that are most appropriate based on the results of the mapping exercised described in item C above.
- F. For the specific assessment period, select minimum targets to be used as the basis of determining whether or not students mastered the 20 ACCE SLOs directly and indirectly. The targets could be all the same or differ among the SLOs. It is recommended to use the same target for all direct measures and the same target for all indirect measures. An example of a direct and indirect measure are as follows:

Direct – At least 70% of the students will directly demonstrate their mastery of understanding the basic principles of structural behavior by scoring a 70% or higher on the portion of the AIC AC certification examination covering ACCE Outcome 20.

Indirect – At least 70% of the students will indicate their mastery of understanding of the basic principles of structural behavior using a five point student-self-assessment survey by responding with a 3 or higher.

3. **Conduct assessments and summarize and document results.**
4. **Analyze results** – The analysis consists of comparing the actual student performance on the respective assessment instrument to the established targets for each outcome. The results of the analysis will be that the target was either met or not met.
5. **Use of the results of the analysis** – If the target was met, the faculty should decide whether to continue to use it for the next assessment cycle or change it in an increasing direction. Changing it in a decreasing direction is not advisable unless there is documented evidence to support such a decision. If the target was not met the faculty using the results of the mapping exercise described in Item 2 C above should meet to identify all possible causes both related to the instruction in the course(s) related to the respective SLO. Once the cause(s) are identified, the faculty will develop and implement a plan to make needed improvements with the goal of having students meet the targets set for the next assessment cycle.

The ACCE Program Student Learning Outcomes are as follows:

1. Create written communications appropriate to the construction discipline.
2. Create oral presentations appropriate to the construction disciplines.
3. Create a construction project safety plan.
4. Create construction project cost estimates.
5. Create construction project schedules.
6. Analyze professional decisions based on ethical principles.
7. Analyze construction documents for planning and management of construction processes.
8. Analyze methods, materials and equipment used to construct projects.
9. Apply construction management skills as an effective member of a multi-disciplinary team.
10. Apply electronic-based technology to manage construction projects.
11. Apply basic surveying techniques for construction layout and control.
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.

13. Understand construction risk management.
14. Understand construction accounting and cost control.
15. Understand construction quality assurance and control.
16. Understand construction project control processes.
17. Understand the legal implications of contract, common and regulatory law to manage a construction project.
18. Understand the basic principles of sustainable construction.
19. Understand the basic principles of structural behavior.
20. Understand the basic principles of mechanical, electrical and plumbing systems.

February 1, 2018