

# **APPENDIX HB**

## **SECTION THREE:**

### **CURRICULUM FOR THE BACHELOR OF SCIENCE DEGREE**

#### **HVACR EDUCATION PROGRAMS**

## **SECTION THREE: CURRICULUM FOR THE HVACR BACHELOR OF SCIENCE DEGREE**

**STANDARD 3: The Degree Program shall contain a required curriculum that includes business and management courses as well as HVACR courses that address all prescribed Student Learning Outcomes.**

To meet this standard, the curriculum of the Degree Program shall:

- Account for the semester hours (or quarter hours) of the categories specified in Table 3.3.1 and
- Contain required HVACR Courses that have learning outcomes that address all the Student Learning Outcomes listed in Section 3.4.

### **3. REQUIREMENTS**

#### **3.1. DEGREE PROGRAMS**

It is the Degree Program's responsibility to develop its own goals, objectives, and particular emphasis, and prescribe the number of courses for graduation, sequencing of study, course numbers, and titles.

- 3.1.1. The Degree Program shall be consistent with the teaching philosophy and the purposes of both the educational unit and the institution.
- 3.1.2. The Degree Program curriculum shall be related to the needs of society and the HVACR profession.
- 3.1.3. The Degree Program curriculum may require specific General Education courses for graduation to provide the desired educational experience for students. These courses have been identified, and a description of how each course supports the HVACR curriculum has been provided.

#### **3.2. PROFESSIONAL ADMINISTRATION**

- 3.2.1. Only general and fundamental business topics can be used for this requirement and are intended as foundational knowledge for HVACR business practices. These topics shall be taught outside of the Degree Program unless the courses are unavailable at the Institution.
- 3.2.2. They shall be separate and distinct and are not to be confused or intermingled with the HVACR core subject area.

Graduates of Bachelor of Science Degree Programs shall have an understanding of the fundamentals of:

- Professional Communication, and
- Information Technology, and
- Ethics, and
- Principals of Management.

*A minimum of 12 semester hours (18 quarter hours) is required in the professional administration core subject area.*

### 3.3. HVACR

Required courses counted in the core subject area of HVACR shall address all the Student Learning Outcomes listed in Section 3.4.

*A minimum of 50 semester hours (75 quarter hours) is required in the HVACR core subject area.*

Table 3.3.1 Summary of Category Semester (Quarter) Hour Requirements

Curriculum Categories	Associate Degree	
	SH*	QH**
3.2 Professional Administration	12	18
3.3 HVACR	50	75

\* Semester Hour

\*\* Quarter Hour

### 3.4. STUDENT LEARNING OUTCOMES

**Note:** In defining the Learning Outcomes for apprenticeship programs, the following verbs consistent with Bloom's taxonomy are used:

**Create:** At the highest level, students are producing new ideas or products that integrate the knowledge they have gained. When students are involved in creating new artifacts, they are actively engaged in the subject matter.

**Evaluate:** This level requires the student to make criteria-based judgements through the processes of critiquing and checking.

**Analyze:** Students begin to develop higher order thinking. They may be asked to compare and contrast or take a concept and break it into parts to explore the relationships present.

**Apply:** At this level, students begin to put the information they are learning into context. Here they are able to integrate ideas across multiple situations or utilize the content in a new way.

The reference for the detail of the following will be the documents: Curriculum Guide by Air-Conditioning, Heating & Refrigeration Institute (AHRI), Arlington, VA, latest edition and the ACCA's ANSI-Approved Quality Standards. Upon completion of an accredited ACCE BS education, graduates shall be able to:

1. Create written communications appropriate to the HVACR discipline.
2. Create oral presentations appropriate to the HVACR discipline.
3. Create mechanical control systems.
4. Create system servicing and troubleshooting.
5. Create a preventative maintenance program.
6. Create designs of mechanical, piping, and HVACR systems.
7. Create load calculations.
8. Create installation, start-up, commissioning, and operations for mechanical systems.
9. Evaluate tools and technology common to the HVACR discipline.
10. Analyze the legal implications of contract and regulatory law regulations to manage a mechanical system project.

11. Analyze indoor air quality.
12. Apply appropriate safety measures.

3.4.1. Provide an index, crosstab, curriculum map, or other form of summary relating courses used to meet the 50 semester hours (75 quarter hours) HVACR core requirements to the Student Learning Outcomes. The Educational Program must demonstrate that required HVACR courses adequately prepare graduates to be able to achieve all required SLOs.

3.4.2. Provide a syllabus for each course used in fulfillment of the required 50 semester hours (75 quarter hours) in HVACR (reference Table 3.3.1). Syllabi for the courses taught by the program shall include the following:

- Course Learning Outcomes in relation to the Student Learning Outcomes,
- Instructional methods,
- Topical outline,
- Method of assessment of Course Learning Outcomes, and
- Grade performance criteria.

### **3.5. COURSES DELIVERED BY ALTERNATIVE FORMS OF DELIVERY**

Courses delivered by alternative forms of delivery to the traditional face-to-face classroom (e.g., distance learning or online courses via synchronous or asynchronous delivery) may be incorporated in an accredited Degree Program's curriculum under the following conditions:

3.5.1. The alternative delivery courses will be accepted for transfer credit as reviewed and accepted by the accredited Educational Institution programs.

3.5.2. The Degree Program shall display the same kind of course material for evaluation of alternative courses as set forth in this document for a traditionally offered classroom lecture or laboratory course. Online course materials, including examples of student work, may be presented for review in online format as long as they are readily accessible to the Visiting Team and are accurately identified with course number and semester (or quarter).

3.5.3. Programs that offer the same course via two or more forms of delivery (e.g., live classroom and online) shall demonstrate that courses with the same course number have consistent content and Course Learning Outcomes.

### **3.6. MULTIPLE CAMPUS DEGREE PROGRAM DELIVERY**

It is possible for split or dual institutional campuses to be accredited as a single Degree

Program as long as the following conditions exist:

- 3.6.1. There is a single Institution authorized to grant the degree. The Institution is to provide evidence through student diplomas and transcripts from all campuses.
- 3.6.2. The Degree Program is led by a single qualified administrator from the home campus.
- 3.6.3. The Degree Program administrator has sufficient authority and experience to be able to provide the required leadership and supervision that allows the development of a strong academic Degree Program.
- 3.6.4. There are adequate faculty and staff to successfully facilitate the Degree Program at different geographic campus locations.
- 3.6.5. Degree Program curriculum, Student Learning Outcomes, and the degree requirements are the same on all campuses.
- 3.6.6. If multiple Educational Units are involved to support the Degree Program:
  - All Educational Units shall use only one academic quality plan identifying the process used for the continuous improvement of the Degree Program.
  - The goals and objectives of the Educational Units need to be aligned to facilitate the success of the Degree Program and its continual improvement.
- 3.6.7. One Educational Unit shall be identified as the home for the Degree Program. This unit shall be responsible for the successful delivery of the Degree Program and is the geographical base for Degree Program operations.

Dual programs not meeting all of these conditions shall be accredited independently.

### **3.7. DUAL OR SECOND DEGREES**

ACCE accredited Degree Programs that accept credits from other Degree Programs (second degrees, dual credit, and the like) or in any other way modify curriculum shall demonstrate that the modified degree path for those students fulfills the required curriculum standards. The Degree Program shall meet all stated requirements regardless of whether the degree earned is first or second degree. This also applies to existing, accredited Degree Programs that modify the curriculum for specific tracks, areas of specialization, or emphasis. Modified degree paths that do not meet ACCE standards shall be specifically identified within their marketing materials (e.g., website, brochures, etc.) that they are not included in the ACCE accreditation.