



**NORTH CAROLINA COMMUNITY COLLEGE SYSTEM**  
*H. Martin Lancaster, President*

**February 13, 2002**

**RESPONSE DEADLINE: February 25, 2002**

**MEMORANDUM**

**TO:** Selected Community College Presidents  
Selected Chief Academic Officers

**FROM:** Ray Harrington, Program Coordinator  
Criminal Justice, Program Services

**SUBJECT:** Curriculum Standard Revision Request  
Air Conditioning, Heating, and Refrigeration (A35100)

The System Office has received a request to add ELC 112 (DC/AC Electricity) to the core of the Air Conditioning, Heating, and Refrigeration (A35100) Curriculum Standard. The addition of ELC 112 to the standard will enhance the program's flexibility and be of greater value to the student. Currently, the Air Conditioning, Heating, and Refrigeration Technology Curriculum identifies ELC 111 (Introduction to Electricity) as an option under the "Electricity" subject area. ELC 112 expands the coverage of all the material covered in ELC 111 and provides more opportunities for the student to enhance their troubleshooting skills. In addition, ELC 112 explores various types of power encountered by the Air Conditioning, Heating, and Refrigeration service technician and therefore is more educationally relevant.

Please review the proposed revision and complete the Curriculum Standard Revision Form with the proper signatures and return by **Monday, February 25, 2002**.

All forms should be completed and mailed back to Ray Harrington. **NO FAXES PLEASE**. If you have questions, please call Ray Harrington at 919-733-7051, extension 428, or an e-mail message to harringtonr@ncccs.cc.nc.us.

DAP/RWH  
Enclosures  
c: Mike Pittman  
Eldon Meacham

S04-004  
Paper Copy

Curriculum Program Title	<b>Air Conditioning, Heating, and Refrigeration Technology</b>	Code	<b>A35100</b>
Concentration	<b>(not applicable)</b>		

**Curriculum Description**

The Air Conditioning, Heating, and Refrigeration Technology curriculum provides the basic knowledge to develop skills necessary to work with residential and light commercial systems.

Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety. The diploma program covers air conditioning, furnaces, heat pumps, tools and instruments. In addition, the AAS degree covers residential building codes, residential system sizing, and advanced comfort systems.

Diploma graduates should be able to assist in the start up, preventive maintenance, service, repair, and/or installation of residential and light commercial systems. AAS degree graduates should be able to demonstrate an understanding of system selection and balance and advanced systems.

**Curriculum Requirements\***

- I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.
- II. **Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in a degree or diploma program up to a maximum of 8 semester hours and in a certificate program up to a maximum of 2 semester hours. *(see back of page for Major Hours requirements)*
- III. **Other Required Hours.** A college may require other subjects or courses to complete graduation requirements. These requirements may include electives, orientation, study skills courses, or other graduation requirements.

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
<b>Total Semester Hours Credit in Program</b>	<b>64-76</b>	<b>36-48</b>	<b>12-18</b>

## **Major Hours**

- A. Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.
- B. Concentration** (*if applicable*). A concentration of study must include a minimum of 12 semester hour credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.
- C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicum and internships, may be included in associate in applied science degree and diploma curriculum programs up to a maximum of 8 semester hours credit and in certificate programs up to a maximum of 2 semester hours credit.

### **Air Conditioning, Heating, and Refrigeration Technology A35100**

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
<b>Minimum Major Hours Required</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>
<b>A. CORE</b> <i>Courses required for the diploma are designated with *</i> <b>Required Courses:</b> <ul style="list-style-type: none"> <li>* AHR 110 Intro to Refrigeration 5 SHC</li> <li>* AHR 112 Heating Technology 4 SHC</li> <li>* AHR 113 Comfort Cooling 4 SHC</li> <li>* AHR 114 Heat Pump Technology 4 SHC</li> <li>AHR 212 Advanced Comfort Systems 4 SHC</li> </ul> <b>Required Subject Areas:</b> <b>Building Code. Select one:</b> <ul style="list-style-type: none"> <li>AHR 210 Residential Building Code 2 SHC</li> <li>AHR 220 Commercial Building Code 2 SHC</li> </ul> <b>*Electricity. Select one:</b> <ul style="list-style-type: none"> <li>AHR 111 HVACR Electricity 3 SHC</li> <li>ELC 111 Introduction to Electricity 3 SHC</li> </ul> <b>System Design. Select one:</b> <ul style="list-style-type: none"> <li>AHR 211 Residential System Design 3 SHC</li> <li>AHR 225 Commercial System Design 3 SHC</li> </ul>	<b>29 SHC</b>	<b>20 SHC</b>	
<b>B. CONCENTRATION</b> ( <i>Not applicable</i> )			
<b>C. OTHER MAJOR HOURS</b> <i>To be selected from the following prefixes:</i>  AHR, and no more than 21 SHC selected from BPR, BUS, CIS, COE, CSC, ELC, HYD, ISC, MAT, PHY, WLD and WOL			

Curriculum Program Title	<b>Air Conditioning, Heating, and Refrigeration Technology</b>	Code	<b>A35100</b>
Concentration	(not applicable)		

***Curriculum Description***

The Air Conditioning, Heating, and Refrigeration Technology curriculum provides the basic knowledge to develop skills necessary to work with residential and light commercial systems.

Topics include mechanical refrigeration, heating and cooling theory, electricity, controls, and safety. The diploma program covers air conditioning, furnaces, heat pumps, tools and instruments. In addition, the AAS degree covers residential building codes, residential system sizing, and advanced comfort systems.

Diploma graduates should be able to assist in the start up, preventive maintenance, service, repair, and/or installation of residential and light commercial systems. AAS degree graduates should be able to demonstrate an understanding of system selection and balance and advanced systems.

***Curriculum Requirements\****

- I. **General Education.** Degree programs must contain a minimum of 15 semester hours including at least one course from each of the following areas: humanities/fine arts, social/behavioral sciences, and natural sciences/mathematics. Degree programs must contain a minimum of 6 semester hours of communications. Diploma programs must contain a minimum of 6 semester hours of general education; 3 semester hours must be in communications. General education is optional in certificate programs.
- II. **Major Hours.** AAS, diploma, and certificate programs must include courses which offer specific job knowledge and skills. Work experience, including cooperative education, practicums, and internships, may be included in a degree or diploma program up to a maximum of 8 semester hours and in a certificate program up to a maximum of 2 semester hours. *(see back of page for Major Hours requirements)*
- III. **Other Required Hours.** A college may require other subjects or courses to complete graduation requirements. These requirements may include electives, orientation, study skills courses, or other graduation requirements.

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
Minimum General Education Hours	15	6	0
Minimum Major Hours	49	30	12
Other Required Hours	0-7	0-4	0-1
<b>Total Semester Hours Credit in Program</b>	<b>64-76</b>	<b>36-48</b>	<b>12-18</b>

***Major Hours***

- A. Core.** The subject/course core is comprised of subject areas and/or specific courses which are required for each curriculum program. A diploma program offered under an approved AAS program standard or a certificate which is the highest credential level awarded under an approved AAS program standard must include a minimum of 12 semester hours credit derived from the subject/course core of the AAS program.
- B. Concentration (if applicable).** A concentration of study must include a minimum of 12 semester hours credit from required subjects and/or courses. The majority of the course credit hours are unique to the concentration. The required subjects and/or courses that make up the concentration of study are in addition to the required subject/course core.
- C. Other Major Hours.** Other major hours must be selected from prefixes listed on the curriculum standard. A maximum of 9 semester hours credit may be selected from any prefix listed, with the exception of prefixes listed in the core or concentration. Work experience, including cooperative education, practicum and internships, may be included in associate in applied science degree and diploma curriculum programs up to a maximum of 8 semester hours credit and in certificate programs up to a maximum of 2 semester hours credit.

**Air Conditioning, Heating, and Refrigeration Technology A35100**

	<b>AAS</b>	<b>Diploma</b>	<b>Certificate</b>
<b>Minimum Major Hours Required</b>	<b>49 SHC</b>	<b>30 SHC</b>	<b>12 SHC</b>
<b>A. CORE</b> <i>Courses required for the diploma are designated with *</i> <b>Required Courses:</b> * AHR 110 Intro to Refrigeration 5 SHC * AHR 112 Heating Technology 4 SHC * AHR 113 Comfort Cooling 4 SHC * AHR 114 Heat Pump Technology 4 SHC AHR 212 Advanced Comfort Systems 4 SHC  <b>Required Subject Areas:</b> <b>Building Code. Select one:</b> AHR 210 Residential Building Code 2 SHC AHR 220 Commercial Building Code 2 SHC  <b>*Electricity. Select one:</b> AHR 111 HVACR Electricity 3 SHC ELC 111 Introduction to Electricity 3 SHC <b>ELC 112 DA/AC Electricity 5 SHC</b>  <b>System Design. Select one:</b> AHR 211 Residential System Design 3 SHC AHR 225 Commercial System Design 3 SHC	<b>29-31 SHC</b>	<b>20 SHC</b>	
<b>B. CONCENTRATION</b> (Not applicable)			
<b>C. OTHER MAJOR HOURS</b> <i>To be selected from the following prefixes:</i> AHR, and no more than 21 SHC selected from BPR, BUS, CIS, COE, CSC, ELC, HYD, ISC, MAT, PHY, WLD and WOL			

## Curriculum Standard Revision Form

### Air Conditioning, Heating, and Refrigeration Technology (A35100)

\_\_\_\_\_ We have reviewed the proposed change to the Curriculum Standard for the Culinary program and **recommend** the adoption of this change.

\_\_\_\_\_ We have reviewed the proposed change to the Curriculum Standard for the Culinary program and **do not recommend** the adoption of this change.

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*College* \_\_\_\_\_

Department Head \_\_\_\_\_

Chief Academic Officer \_\_\_\_\_

Signature of President \_\_\_\_\_

**Please return this form by February 25, 2002 to:**

**Ray Harrington, Program coordinator**

North Carolina Community College System

200 West Jones Street

5020 Mail Service Center

Raleigh, NC 27699-5020