

# Heating, Refrigeration and Air Conditioning

Program **HRAC.CERT**  
CIP 150501



## Certificate of Proficiency

Heating, Refrigeration and Air Conditioning is a joint program between Mercer County Community College and the Mercer County Technical Schools. It is designed to prepare students for employment in commercial establishments and industry, in such positions as refrigeration mechanic, commercial air conditioning mechanic, furnace installer and repairer, oil burner installation and service technician, gas heating system servicer, and mobile air conditioning system mechanic.

Admission to the certificate program requires a high school diploma or its equivalent with one year of algebra or applied mathematics. Students must demonstrate mathematics proficiency at the MAT 037 level to qualify for the certificate.

The program is part-time only and most courses are offered only during the evening.

### PROGRAM OUTCOMES

- Explain the basic theories and fundamental principles of heat transfer;
- Service, troubleshoot, and repair domestic and commercial refrigeration and air conditioning systems and components;
- Use electrical and mechanical test equipment and metering devices;
- Utilize a working knowledge of control circuitry, instrumentation and ladder diagram/schematic interpretation;
- Determine heating and air conditioning size requirements for a building of specific volume, orientation on lot, and geographic location.

### Certificate Curriculum

Code	Course (lecture/lab hours)	Credits
EET 130	Fundamentals of Electronics (2/2)	3
ENT 116	Engineering Graphics (1/2)	2
HRA 101	Principles of Refrigeration/ Air Conditioning I (1/2)	2
HRA 102	Principles of Refrigeration/ Air Conditioning II (1/2)	2
MAT —	Mathematics elective <sup>1</sup>	3-4
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HRA 103	Refrigeration/Air Conditioning Electrical Controls (2/4)	4
HRA 104	Domestic Heating and Air Conditioning Systems (2/4)	4
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EET 140	Electronic Construction (1/3)	2
ENG 101	English Composition I (3/0)	3
HRA 202	Light Commercial Systems I (1/2)	2
HRA 205	Heavy Commercial Systems (1/4)	4
ERG —	Energy elective <sup>2</sup>	3
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		34-35

<sup>1</sup> Select in consultation with an academic advisor.

<sup>2</sup> Select from ERG 111, 112, 113.

NOTE: Students must earn a minimum grade of C in all HRA courses to graduate.