

SYLLABUS
PART I
EDISON COMMUNITY COLLEGE
HVA 101S BASIC HVAC SYSTEMS WITH COOLING
3 CREDIT HOURS

COURSE DESCRIPTION

Introduction to theory of heating, ventilation, air conditioning and refrigeration systems. Course also includes foundations in the applications of cooling principles in light commercial equipment, refrigerant flow through equipment, applications of equipment to the refrigeration cycle, heat transfer fundamentals, and preparation for the Environmental Protection Agency (EPA) refrigerant handler's certification exam.

COURSE GOALS

The student will:

| Bloom's Level | | Program Outcomes |
|---------------|---|------------------|
| 4 | 1. Analyze the effects of comfort factors. | 5 |
| 3 | 2. Evaluate air samples using psychometrics. | 4 |
| 3 | 3. Create, interpret and use graphical displays and statistical measures to describe and evaluate data. | 5, 7 |
| 2 | 4. Explain the fundamentals of forced air. | 3, 7 |
| 1 | 5. Identify basic system components. | 3 |
| 1 | 6. Identify basic system designs. | 3 |
| 2 | 7. Discuss local and state codes. | 3, 7 |
| 4 | 8. Discriminate between the common instrumentation and test equipment used by the HVAC technician. | 1, 4 |
| 3 | 9. Review and interpret blueprints. | 5 |
| 4 | 10. Record and compare temperature and pressure measurements. | 3 |
| 4 | 11. Analyze and interpolate temperature and pressure relationships. | 5 |
| 2 | 12. Explain heat and heat transfer. | 3, 7 |
| 2 | 13. Explain energy and energy conversion. | 3, 7 |
| 4 | 14. Differentiate sensible, latent, and total heat. | 3, 7 |
| 2 | 15. Discuss the mechanical refrigeration cycle and components. | 3, 7 |
| 3 | 16. Service and repair refrigeration and air conditioning equipment. | 1 |
| 3 | 17. Recover refrigerant from a system. | 1 |
| 5 | 18. Evaluate and recharge a system. | 1 |
| 3 | 19. Pump down a system. | 1 |
| 3 | 20. Repair all leaks in a system. | 1 |
| 3 | 21. Isolate system components. | 1 |
| 1 | 22. Match oil to refrigerants in a system. | 1 |
| 3 | 23. Demonstrate use of a digital charging scale, vacuum pump and micron gauge. | 1 |

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Fundamentals of Heat Transfer
2. Physical Laws
3. EPA Certification