

**NORTHEAST COMMUNITY COLLEGE  
COURSE SYLLABUS**

**HVAC 1220  
HVAC CONTROLS LAB**

**SPRING 2015**

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HVAC CONTROLS LAB  
COURSE SYLLABUS**

**I. CATALOG DESCRIPTION:**

**COURSE NUMBER:** HVAC 1220

**COURSE TITLE:** HVAC Controls Lab

**PRE-REQUISITES:** HVAC 1020

**CO-REQUISITES:** HVAC 1210

**DESCRIPTION:** Practical applications of motors and motor starting controls, repair of different HVAC controls and troubleshooting and reading of wiring diagrams to solve system problems. (22.5/112.5/0/0)

**CREDIT/CONTACT HOUR DESIGNATION:**

Credits: 4   Lecture: 22.5   Lab: 112.5   Clinical: 0   Coop: 0

**TERM:** Fall 2014

**II. COURSE OBJECTIVES:**

Course will:

1. Identify different types of motors.
2. Identify different HVAC controls.

**III. STUDENT LEARNING OUTCOMES:**

The student will be able to:

1. Tear apart motors and identify specific parts.
2. Check motors for proper running operation.
3. Distinguish between a run capacitor and start capacitor.
4. Troubleshoot capacitors.
5. Ohm out motors to see if they are good.
6. Check capacitors to see if they are good.
7. Know how to properly install a motor with a capacitor(s).
8. Troubleshoot relays, contactors, and transformers.
9. Wire relays, contactors, and transformers to loads.
10. Wire up different circuits.
11. Troubleshoot circuits from different wiring diagrams.
12. Draw different wiring diagram circuits.

#### **IV. CONTENT/TOPICAL OUTLINE:**

- A. Chapter 9: Basic Electric Motors
- B. Chapter 10: Components for Electric Motors
- C. Chapter 11: Contactors, Relays and Overloads
- D. Chapter 12: Thermostats, Pressure Switches, and Other Electric Control Devices
- E. Chapter 13: Electronic Control Devices
- F. Chapter 15: Troubleshooting Electric Control Devices
- G. Chapter 16: Residential Air Conditioning Control Systems

Note: This outline may change according to class progress.

#### **V. INSTRUCTIONAL MATERIALS:**

##### **A. Required Text:**

- 1. Electricity for Refrigeration, Heating and Air Conditioning  
Author: Russell E. Smith
- 2. HVACE Electrical Systems, 2<sup>nd</sup> Ed  
Author: Multistate Academic and Vocational Curriculum Consortium (MAVCC)

##### **B. Required Workbook:**

- 1. Study Guide/Lab Manual for textbook, Practical Competencies  
Author: Cecil Johnson

##### **C. Required Materials:**

- 1. Blue/Black pen
- 2. Pencils
- 3. Notebook
- 4. Calculator
- 5. Colored pencils

#### **VI. METHOD OF PRESENTATION:**

##### **A. Methods of presentation typically include a combination of the following:**

- 1. Informal lectures (casual communication of knowledge).
- 2. Handouts of selected printed material covered in class.
- 3. Audiovisual aids (transparencies and videos)
- 4. Independent study (reading of handouts, text, and preparing for test).
- 5. Group projects.

##### **B. Instructor Absence:**

- 1. If instructor is absent, see other instructor for details (Paul). Listen to radio for weather related school announcements.

## VII. METHOD OF EVALUATION:

A. Methods of evaluation typically include a combination of the following:

1. Completed assignments
2. Quizzes
3. Tests

B. Grading Scale:

95 - 100	A+
90 - 94	A
85 - 89	B+
80 - 84	B
75 - 79	C+
70 - 74	C
65 - 69	D+
60 - 64	D
0 - 59	F

## VIII. COURSE REQUIREMENTS:

A. Attendance

1. Students are expected to attend class. Quizzes will be given and cannot be made up unless approval from instructor. If you cannot attend class, see or call instructor (phone number 402-844-7231). Your grade will start dropping by a letter grade for each day after three days.

B. Student Conduct

1. Students are expected to complete your own work. Students will also be expected to conform to the Student Code of Conduct that was handed out.

C. Lab Attendance and Conduct

1. Lab time is for completing lab assignments. Students are expected to attend all labs and work on assignments during lab time. Playing games and not attending the full lab time are inappropriate.

D. Assignment Completion

1. All assignments are to be completed by the assigned date. Late assignments will only be accepted with approval from the instructor. Late assignments will not be accepted if more than one week.

## IX. SUPPORT SERVICES:

A. **Library Service:**

The Northeast Community College Library Resource Center provides students with tools to conduct scholarly research and increase knowledge. Through the library's subscription databases, students have access to millions of current and credible resources not available through Google, Yahoo, and other search engines. Links to

online databases and the library's online catalog can be found at <http://www.northeast.edu/Library-Resources/>. Students who would like assistance in utilizing the library's resources are encouraged to contact the library for further information and personal service at 402-844-7131 or email [marylouise@northeast.edu](mailto:marylouise@northeast.edu).

#### B. **Disabilities:**

Students with a documented disability may be eligible for certain accommodations that support their success in the classroom. Please contact Mary Balaski, Disability Services Coordinator, for further information. Her office is located in CWC- 1263; also, she may be reached at 402-844-7343 or [mary@northeast.edu](mailto:mary@northeast.edu).

#### C. **Applied Technology Division Safety Statement**

Through the course of the semester you will be working with and around equipment that can be dangerous. The inherent dangers include both kinetic and potential energy; examples include, but are not limited to, high voltages, rotating equipment, high pressure hydraulics, compressed air, items that are heavy and/or hot, and the risk of fall or shock. Every effort has been made to minimize these risks and you will receive instruction and training as a part of this course (and related courses) in the proper safety procedures and equipment operation protocols. If you have a health condition or physical limitation that may affect you or another student's safety, you are to consult with the instructor prior to beginning to work with the equipment or undertaking a task involving the equipment. It is the student's responsibility to be able to follow all safety procedures and equipment operation protocols. Failure to abide by safety practices, procedures, or equipment protocols could result in serious injury or death. Failure to follow these safety practices / procedures or equipment protocols will not be tolerated and the student could face student disciplinary action including reduction of grade and possible removal from the course. Removal from the course could also result in loss of credit for the course and affect a student's financial aid.

#### X. **INSTRUCTOR NAME AND CONTACT INFORMATION:**

**Instructor:** John Nelson  
**Office:** Weller 128  
**Phone:** 402-844-7231  
**Email:** [johnn@northeast.edu](mailto:johnn@northeast.edu)  
**Office Hours:** Posted



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