

Appalachian State University
Department of Technology

Course Syllabus -- TEC 2718-101

Course Number and Title: TEC 2718, Residential Mechanical Systems, Fall, 2000

Course Description: This course teaches the design and installation of plumbing, electrical, and heating and cooling systems. Students learn to size systems and represent them in construction drawings. They also find out about relevant codes. The course features hands-on labs on how to install and test plumbing and electrical systems.

Credits: 3

Meeting Times and Place: Class: TR 12:30-2:45, Room 167 and Lab. Kerr-Scott Building.

Instructor: Jeff Tiller, PE

Office Hours: posted on office door

Phone Number: 262-3110 (campus)/ 264-9542 (home)

Course Goals: As a result of successfully completing this course, students will be able to:

1. Understand and draw a plumbing riser and fixture diagram
2. Size piping for a drain/ waste/ vent (DWV) system and a supply piping system
3. Solder copper pipe and install PVC piping for DWV systems
4. Pressure test a supply and DWV system
5. Install plumbing fixtures
6. Locate receptacles and lighting for a residential electrical system according to code
7. Design electrical circuits, including receptacle circuits, Ground Fault Interrupt circuits, Service Entrance Panel circuits, and switched lighting circuits
8. Install both receptacle and lighting circuits
9. Understand the variety of heating and cooling systems and their efficiency ratings
10. Compare the cost of heating and cooling in the same units
11. Describe the parts of a heating and cooling system and explain how a heat pump works in heating and cooling mode

Course Syllabus -- TEC 2718-101 (continued)

Topical Content Outline:

1. Basic plumbing materials and procedures
2. Designing drain/ waste/ vent systems
3. DWV systems and the plumbing code
4. Cold and hot water supply systems
5. Simple electric circuits
6. Safety in electrical wiring
7. 3-way and 4-way switched circuits
8. Locating electrical receptacles and switches according to code
9. Finding the total connected power of a home
10. Service entrance panels
11. Comparison of different heating, ventilation and air conditioning (HVAC) systems
12. Efficiency and cost of HVAC systems
13. Components and operation of HVAC systems
14. Rules for optimal design and installation of HVAC systems

Methods of Teaching: Lectures, discussions, in-class problem solving, hands-on labs

Textbooks: **Basic Plumbing with Illustrations** by Howard C. Massey, Craftsman Book Company.

Requirements:

- ◆ Attend class -- 3 unexcused absences reduce participation score 20%
- ◆ Complete class readings
- ◆ Submit frequent homework assignments
- ◆ Complete lab project
- ◆ Demonstrate hands-on skills
- ◆ Perform well on 3 tests and final exam

Basis of class grade:

Classroom participation/ lab work -- (based on attendance and active participation in labs)	15 points
Homework --	15 to 25 points
Tests --	30 to 40 points
<u>Final Exam – Comprehensive</u>	<u>20 to 30 points</u>
TOTAL BASIS -- 100 points	
(extra credit available on some tests)	