

**LANEY COLLEGE**  
**Environmental Control Technology**  
Fall Semester

**Course:** Fundamentals of Direct Digital Controls

**Course Number/code:** ECT 021 L40502

**Time:** Mondays and Wednesdays 5:30 PM – 7:00 PM

**Instructor:** Chuck Frost

**Office:** B151

**Office Hours:** Wednesdays 5:00 – 5:30PM

**Phone:** (510) 464-3292

**Units:** 2 units.

**Course Description:** This course will cover the introduction of direct digital control systems and building automation systems. Topics include some basic electricity and electronics and overview of the various approaches to system architecture, hardware, software, and system components.

**Student Outcomes:**

1. Explain the fundamentals of building control systems.
2. Describe proper methods for interfacing digital controls with conventional control devices and their integration.
3. Explain the different strategies and terminologies for controls applications and control systems.
4. Demonstrate proper and safe maintenance and troubleshooting procedures working with controls.

**Recommended preparation:** E/ET 202, English, Math and Computer Literacy

**Text:** Ronnie J. Auvil HVAC Control Systems American Technical Publishers, Inc First Edition 2003

**Supplies Needed:** Pencils, colored felt tip pens, graph paper with 1/8" squares, circle template, line paper, safety glasses, medium flat blade and Phillips screwdrivers, combination wire cutter, stripper and crimper, one roll of electrical tape, wire connectors, multi-meter and tool box or pouch.

**Topics:** Chapters 1 thru 15

1. HVAC Fundamentals
2. Commercial HVAC Fundamentals
3. HVAC System Energy Sources
4. Control Principles
5. Control Systems
6. Pneumatic Control Systems
7. Electrical Control Systems

8. Electronic Control Systems
9. Building Automation Systems and Controllers

**Evaluation:** The following classroom work and projects will be evaluated and graded.

1. Lab Projects	300	
2. Quizzes	300	
3. Class participation		200
4. Med-Term Exam	100	
5. Final Exam	100	

**Total: 1000 points**

**Safety Test:** Students taking this course are required to take the safety test the first day of instruction.

**Attendance:** Students may be dropped from the course if the number of absences exceeds two days worth of class meetings. However, extenuating circumstances may warrant consideration.

**Note:** During class please shut off all cell phones, also no eating or drinking. You will be given two breaks of ten minutes each between classes.