

**J. Sargeant Reynolds Community College**  
**Course Content Summary**

**Course Prefix and Number: ETR 221**

**Credits: 4**

**Course Title:** Electronic Controls I

**Course Description (including lecture hours, lab hours, total contacts)**

Discusses characteristics and performance of linear control systems with one or more feedback loops. Includes functions and properties of various components encountered in control systems including servo-amplifiers and error detectors, machine synchronization for automatic operations. Part I of II. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

**General Course Purpose**

This was a required course in the Electronics Technology AAS degree program. That program has been discontinued and will be undergoing its teach out phase in 2009 and following.

**Course Prerequisites/Corequisites** (*Entry-level competencies **required** for enrollment*)

ETR 203 or equivalent

**Course Objectives**

Upon successful completion of the course, the student will be able to:

- a. identify relay logic circuits in decision making.
- b. identify transistor as switches, decision makers, counters and for memory.
- c. work with solid state thyristor devices.
- d. implement digital control of automatic industrial systems.
- e. identify operational amplifiers.
- f. identify feedback systems and servomechanisms.
- g. identify final correcting devices and amplifiers.
- h. identify input transducers-measuring devices.
- i. implement closed loop industrial control systems.

**Major Topics to be Included**

- a. Principles of closed loop feedback control
- b. Regulated power supplies
- c. Circuit and device theory
- d. Troubleshooting
- e. Digital electronics applications for open loop control of industrial automation systems
- f. Characteristics of specific solid state devices and transducers
- g. Feedback systems, servomechanisms, and industrial process control
- h. ON-OFF, proportional, integral, and derivative control systems

**Effective Date of Course Content Summary: May 2009**