Course Syllabus

Course Title: Microcontrollers

Course Code: ATE 311

Course Delivery: 3-periods (Lab Work) + 1-period (Class Activities)

Course Catalogue Description:
This course provides knowledge of the basic principles of microcontrollers by showing students how they can design their own customized, intelligent inventions with Parallax, Inc.'s BASIC Stamp microcontroller module. The hands-on activities in this course incorporate a variety of fun and interesting experiments designed to appeal to a student's imagination by using motion, light, sound, and tactile feedback to introduce new concepts. The activities and project in this course facilitate hands-on presentation of design practices used by engineers and technicians in the creation of modern machines and appliances, using inexpensive parts.

Course Objectives:
Upon the successful completion of this course, students should be able to:
- Define a microcontroller, describe its applications and features.
- Use Parallax Board of Education (BoE) and PBASIC software to build simple microcontroller applications.
- Use a BASIC Stamp to control LED circuits.
- Build and test a pushbutton circuit and use the BASIC Stamp to read and state one or more pushbuttons.
- Describe the purpose of a 'servo' and use a servo for micro controlled motion.
- State the purpose of a 7-segment display, and explain how to read a pin map.
- State the function of a potentiometer and a capacitor.
- Use RC circuits for simple timing applications.

Course Modules:

Topic	# of Weeks
Module 1: Introduction to Microcontrollers	2
Module 2: Programming, Controlling and Monitoring	3
Module 3: Process Control	2
Module 4: Digital Display	3
Module 5: Motion Control	2
Module 6:RC Circuit	3
Module 7: Project	2