# MICROCONTROLLER PROJECT LABORATORY

EDUCATIONAL STUDIES PROGRAM – HIGH SCHOOL STUDIES PROGRAM – SUMMER 2001
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

## SYLLABUS

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**1 Class Details:**

Time: 6:00 p.m. – 7:30 p.m.
Meetings: Tuesdays and Thursdays, July 10 - August 9
Location: MIT Building 38, Room 500

**2 Staff**

Instructor: Doug Ricket
dricket@mit.edu
617-876-4941

Assistant Teachers:
Robin Thompson
Jean Almonord
Josh Ouellette
Sam Davies
Richard Hansen
Dan Roth
Stan Bileschi
Ehren Foss

**3 Class Goals**

- Learn basic concepts of electronics
- Experiment with highly motivating applications of microcontroller electronics
- Learn to use the microcontroller kit for personal experimentation

**4 Requirements**

No electronics experience is necessary to take this class.
The key requirements are:

- An interest in learning electronics
- Perseverance to build the projects.

Since we will work in a laboratory environment, mature behavior is a requirement at all times. Reckless behavior can endanger expensive and sometimes irreplaceable equipment, the ability of ESP and MIT to offer educational enrichment programs, and most importantly the safety of other students.

## 5 Lab kit

The lab kit for this class includes the following parts:

- Solderless Breadboard
- Serial-Programmable Microcontroller
- Digital Multimeter
- Keypad
- LCD Display
- Analog to Digital Converter
- Power Supply
- PC Serial Interface
- Speaker
- Microphone
- Wire Stripper, Chip Puller, Pliers
- Digital and Analog Integrated Circuits
- Resistors, Capacitors, Transistors, Diodes, LEDs, Wire

Additional parts will be used for specific experiments.

**A $30 lab fee is required on the first day of class to receive a lab kit.**

## 6 Class work

The focus of this class is on the laboratory projects, emphasizing learning by doing. Each project will have a written component to be completed during the work and turned in at the end.

Students are encouraged to get help from the assistant teachers and other students, as long as they each complete the laboratory projects and do not misrepresent another's work as their own.

Additional lab hours before class (5:00 – 6:00 p.m.) may be arranged. (E-mail dricket@mit.edu)

## 7 Acknowledgements

Sincere thanks go to the **Edgerton Center** at MIT for funding this class, allowing us to use the lab kits at a fraction of their cost.

The **Educational Studies Program** also supports the class financially and provides the organizational framework for it to exist.

The **EECS** undergraduate teaching laboratory provides class space, equipment, parts, and knowledgeable staff.

Professor **Steven Leeb**'s class in the spring of 2001 inspired me play with microcontrollers and teach this class.

Finally, thanks to the volunteer teachers, who give up their time to help share the wonder of electronics.