Microchip University Program

The Microchip University Program assists professors in their efforts to incorporate Microchip products such as PICmicro® microcontrollers, analog semiconductors, serial EEPROMs, and the patented KEELQ® security devices in their courses.

Microchip’s PICmicro microcontrollers recently became the #1 8-bit microcontroller, based on worldwide unit shipments**. Developing curriculum on the PICmicro microcontroller architecture and using Microchip products in the classroom helps ensure your students are well prepared for their engineering careers.

Adding topics on the Microchip products to your current course plan is a simple process—one designed to benefit students and instructors alike. Offering courses or content on the PICmicro microcontroller architecture draws students to schools and universities—it is a widely accepted and leading edge architecture. This interaction can help students quickly grasp industry techniques and methods used to address a fast changing and highly competitive workplace, further reinforcing their own academic and professional growth.


Curriculum Support

Whole Course Solution

Microchip actively works with university professors and other experts in the field to support the development of whole course solutions. These solutions combine the necessary tools for teaching a PICmicro microcontroller course such as textbooks, lab boards, lab exercises, and more.

Professor John Peatman of the Georgia Institute of Technology in Embedded Design with the PIC18F452 Microcontroller (ISBN 0130462136) offers a one semester university course at the senior level. The book’s focus is to develop three capabilities in the design process: to understand and use components, to exploit powerful algorithmic processes, and to break down the complexity of an instrument or device so as to understand its specifications. The first printing of the book includes the QwikFlash development board, which, when populated, is used as an example for interfacing the PIC18F452 microcontroller to various external components.

Myke Predko in Programming and Customizing PICmicro® Microcontrollers (ISBN 0071361723) provides a flexible plan that addresses typical coursework covered in four years of college education. The book includes a CD-ROM and a printed circuit board along with projects and experiments.

The Microchip University Program Provides:

• Curriculum support
• Course creation reference material
• Publication and technical support
• Diverse products for classroom use
• University discounts on Microchip development systems
• Support of special university development and design projects
• University Program web site: www.microchip.com/university/
List of Texts, Class Material, and Publications

Books based on the PICmicro microcontroller architecture have been written in English, Chinese, Spanish, and Portuguese, just to name a few languages. Visit www.microchip.com to review and download data sheets, application ideas, and literature including key items such as:

- Development Systems Ordering Guide
- MPLAB IDE User’s Guide
- Microchip Product Line Card

For more information on available printed reference material or special purchases of larger quantities of literature at low cost university bookstore pricing, simply send a request on your school’s letterhead to:

University Program Manager
Microchip Technology Inc.
2355 West Chandler Boulevard
Chandler, Arizona 85224-6199

Or send an email request to: university@microchip.com.

Publication and Technical Support

Publication Support

Interested in writing a textbook or technical paper? Microchip is pleased to support your efforts in promoting our products in textbooks, student papers, or school projects. Send an email request to university@microchip.com for guidelines for proper usage of Microchip trademarks and graphic elements.

Technical Support

As a Microchip University Program member, you can benefit from the Microchip global network of experienced field application engineers and technical support personnel to provide technical product information and system assistance to further streamline design, prototype, and production activities. Access technical information, application notes, and promotional news at www.microchip.com.
Diverse Products for Classroom Use

As a leading provider of 8-bit microcontrollers, Microchip gives your students the flexibility they need in their designs: a seamless migration path between microcontroller product families, comprehensive development tools that easily allow simple product enhancements or modifications, and an easy-to-use, easy-to-learn instruction set.

Microchip also offers a new 16-bit digital signal controller and analog and interface devices for embedded control designs.

**Microchip Products Are Especially Relevant for Academic Use:**

- Diverse product line
- Full range of development tools
- Endless application ideas
- Quality technical support
- Easy to learn and easy to use products—excellent architecture for beginners, intermediate, and advanced students
- Leading provider of microcontroller and analog semiconductors

**PICmicro Microcontrollers featuring nanoWatt Technology**

NanoWatt Technology: Microchip’s low power technology solution for power managed PICmicro microcontrollers, provides industry-leading low power, operating voltage range, and flexible power managed technology from DC up to 40MHz. Available on PIC16F and PIC18F Flash microcontroller families, NanoWatt Technology refers to Microchip’s PMOS Electrically Erasable Cell (PEEC) process technology for its Flash memory, new circuit design techniques, enhanced manufacturing techniques, and optimal field support.

**dsPIC™ Digital Signal Controller**

The dsPIC family of digital signal controllers features a fully implemented digital signal processor (DSP) engine, 30 MIPS non-pipelined performance, C-compiler friendly design, and a familiar microcontroller architecture and design environment. The dsPIC30F family of 16-bit Flash microcontrollers targets motor control and power conversion, sensor control, automotive, speech and audio, and general-purpose applications.

**Secure Data Products**

Microchip’s KEELQ® family of code-hopping devices provides security for remote keyless entry (RKE) and authentication applications. Devices using the KEELQ code-hopping algorithm combine high security and a small package outline along with low cost—an ideal solution for unidirectional RKE systems.

**Analog and Interface Products**

Microchip offers a family of analog and interface products that complement our broad microcontroller product lines.

**Power Management**

- Regulators, charge pumps, supervisors, and MOSFET drivers.

**Thermal Management**

- Temperature sensors and fan controllers.

**Linear**

- Op amps and comparators.

**Mixed Signal**

- A/D converters, digital-to-analog converters, and digital potentiometers.

**Interface Devices**

- CAN communication devices, infrared communication devices, LIN bus transceivers, and serial peripherals.

**Memory Products**

Microchip offers one of the broadest selections of memory devices for embedded control applications that range across a variety of densities, operating voltages, bus interface protocols, operating temperature ranges and space saving packages.
University Discounts on Microchip Development Tools

Microchip’s high performance development systems provide the core of the University Program. The easy-to-use development tools assist teachers and professors in their efforts to utilize Microchip products in the classroom and create courses based on the PICmicro microcontroller architecture.

Microchip offers a discount of 25 percent off the list price on Microchip development tools to qualified universities when purchased through a Microchip distributor (discount is not offered directly to students). Visit www.microchip.com to find a distributor in your area.

MPLAB® IDE Integrated Development Environment is a free Windows® application supporting multiple debugging tools in a single development platform. The MPLAB IDE supports editing source files, compiling, downloading to a PICmicro emulator and simulator tools, and debugging using source files, absolute listing file, or machine code.

MPLAB ICE 2000 In-Circuit Emulator is intended to provide the product development engineer with a complete microcontroller design tool for high end PICmicro microcontrollers. Software control of the emulator is provided by the MPLAB IDE, which allows editing, building, downloading, and source debugging from a single environment.

MPLAB ICE 4000 In-Circuit Emulator is a premium emulator system providing the features of MPLAB ICE 2000, but with increased emulation memory and high speed performance.

PICkit™ 1 FLASH Starter Kit is a quick, easy, and low cost way to develop applications from concept to prototype using 8- and 14-pin PICmicro microcontrollers. A complete system, it includes tutorial software and code for various applications along with the MPLAB IDE software.

MPLAB ICD 2 In-Circuit Debugger, a low cost development tool, connects a PC and the designer’s target board for direct in-circuit debugging of the PICmicro target microcontroller. This tool allows you to execute programs in real time or single step, establish watch variables, set break points, complete memory read/writes, and more. The MPLAB ICD 2 also serves as a development programmer for the target PICmicro microcontroller.

PICSTART® PLUS, a low cost flexible design tool for PICmicro microcontrollers, runs under MPLAB IDE and comes complete with assembler, simulator, programmer, and product samples.


FilterLab® Active Filter Software Tool simplifies filter design. Available at no cost, the software provides full schematic diagrams of the filter circuit with component values and frequency response display.

MPLAB® C18 C Compiler for the PIC18XXX family provides powerful integration capabilities, superior code optimization, and ease of use.
Learning about PICmicro microcontrollers is not a static process. Professors and their students have produced innovative solutions and applications using PICmicro microcontrollers. To find out more about these and other interesting projects, visit the Microchip University Corner, www.microchip.com/university/.

**Satellite Programs**

PICmicro microcontrollers are also used at various universities for their satellite programs. Highlighted programs include:

- ASUSat Program, Arizona State University
- U of A CubeSat, University of Arizona
- The Portland Oregon Aerospace Society, Portland State University

**Robotics Competitions**

Some schools involved in robotics events using PICmicro microcontrollers include:

- RoboCup Competition - Cornell University, New York
- Trinity College Fire-Fighting Home Robot Contest - Trinity College, Connecticut
- Learning Channel Robotics Competition - Ryerson University, Ontario, Canada
- High school teams competing in the FIRST (For Innovation and Recognition of Science and Technology) Robotics Competition design and build a robot with the help of industry, academia, and the community. Microchip is an organizing sponsor of the Arizona Regional FIRST Robotics Competition. For more information visit www.usfirst.org.

**Virtual Reality Application Center**

Iowa State University is using Microchip devices in an interactive device that is planned to attach to every seat in the Virtual Reality auditorium, providing simultaneous interaction between the audience and the virtual reality application running on the screen.

**Solar Race Cars**

Microchip supports many of the solar race car teams for the America Solar Challenge for the Formula Sun racing events. Some of the teams using Microchip devices include:

- Ecole de Technologie Superieure, "Eclipse V", (France)
- Iowa State University, “PrISUm Spectrum”
- Queen’s University, (Ontario, Canada)
- University of Arizona, “Turbulence”

**For More Information**

For more information on the Microchip University Program visit:

www.microchip.com/university/