

EE427 Advanced Microcontrollers



7th semester
2012 - 2013



Outline...

- What is this course about?
- What is this course for?
- What you learn?
- Learning Objective
- Course outline



What is this course for?

- Various applications which we are using in our day to day life includes the role of microprocessors.
- The electronic 'gadgets' such as mobile phones, laptops, tablets, global positioning systems, wireless modems and personal audio systems, exist as a result of advances in technology.
- Learning how such systems work is essential for electrical engineers.



What is this course about?

- To meet demanding mixed-signal design requirements, advanced analog technologies, peripherals and features into a single-chip is necessary.
- To increase system performance, high performance microcontrollers are essential
- Digital signal processors and digital signal controllers



What you learn?

- Digital signal controllers
- High Performance digital signal controller form Microchip
- dsPIC30F family



Learning Objective

- Understand dsPIC30F family architecture and features
- Introduce you to the use of dsPIC in control applications and dsp algorithms
- Program in C and assembly language
- Be able to work with, program, and design basic systems using dsPIC



Course Outline

- Digital Signal Controllers
- dsPIC Family Architecture, Memory model, Addressing modes, DSP Engine, Instruction set, Interrupts
- On-chip peripherals, I/O ports, Timers, A/D converters, UART Module, I2C Module, CAN Module
- Motor control applications, Implementation of DSP algorithms, FIR and IIR filters



Text and Reference

- There is no required text for this class
- **The dsPIC Reference Manual**
 - dsPIC30F Family Reference Manual, Microchip, 2006
 - dsPIC30F Programmers Reference manual, Microchip, 2006
 - www.microchip.com
- **Lecture handouts** will be made available on the web