Microprocessor Lab

Mondays 10:00-12:00, 14:00-16:00

Thursdays 14:00-17:00

Fridays 9:00-12:00

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Rm: 508, x47590

The Course Goals are:

- To explain how do the computers work
- To teach you the inner workings of a computer both on the programming (assembly) and hardware (interfaces) side
- To teach you how to work independently and find yourself all you need for your project. Hence, no book. All the stuff you need are on the Web
- To teach you to design and construct a commercial product
- You will be using a microprocessor which has wide range of applications in automobiles, appliances and other industrial applications
- To give you useful carrier skills
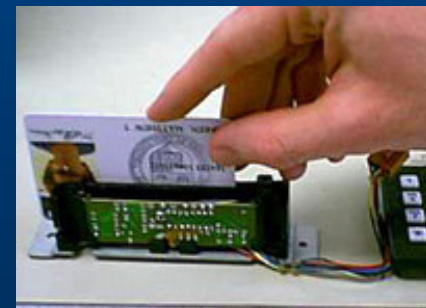
At the end you will learn:

- **Designing basic electronics circuits and interfaces**

- **Will be completely familiar with the detailed cpu information of the ATMEL ATmega103 microprocessor**

- **Programming in AVR assembly**
  - **The basic commands**
  - **How to write an assembly program; subroutines**
  - **The tools to compile and download your programs to the ATmega103 chip**

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At the end you will be able to:

- **Project** : **How to use a microprocessor to create an application and construct something useful :**
  - **Some electronics will be needed**
  - **Interfacing the microprocessor with various devices**
  - **Ideas and motivation are important**

- **Writing a good and clear report on a project you have done**

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Course Duration and Milestones

- **4 weeks of lectures/training (the weeks of 10.10.05, 17.10.05, 24.10.05, 31.10.05) followed by 1.5 weeks for project completion and writing your report. The basic course ends on 05.11 and results to 2.0 units.**

- **The ATmega103 is the new microprocessor used for this course.**

- **You are encouraged to extended the course to a full term project which then will be 3 units.**

FOR MORE INFO...

http://www.hep.ph.ic.ac.uk/~foudas/Micro2001/Micros2001.html
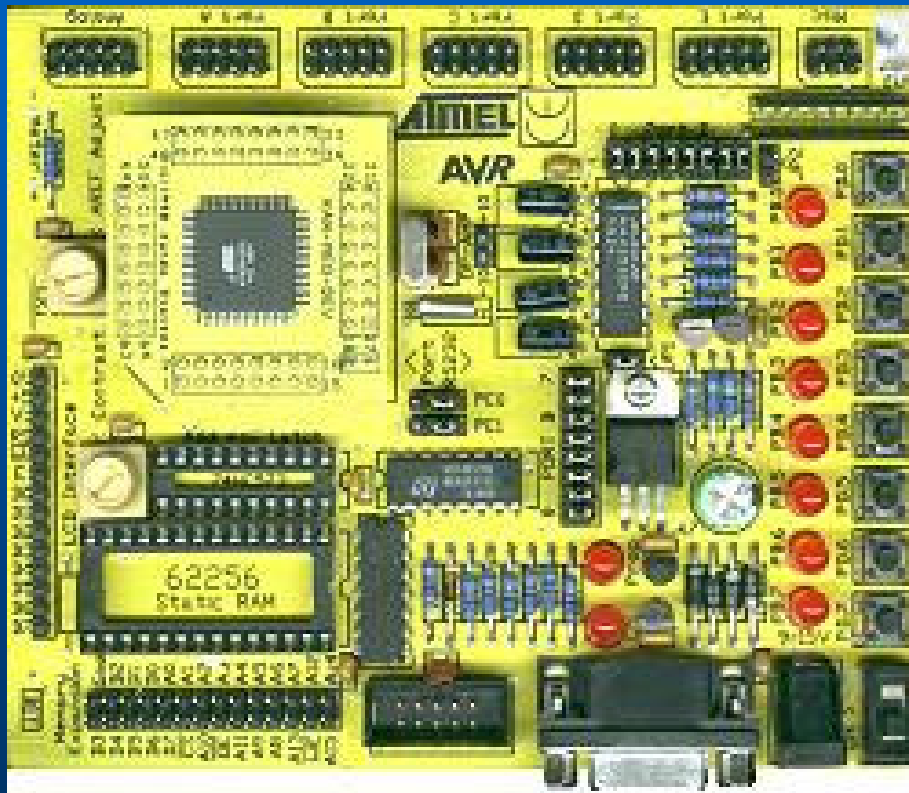
The ATMEL Programming Board
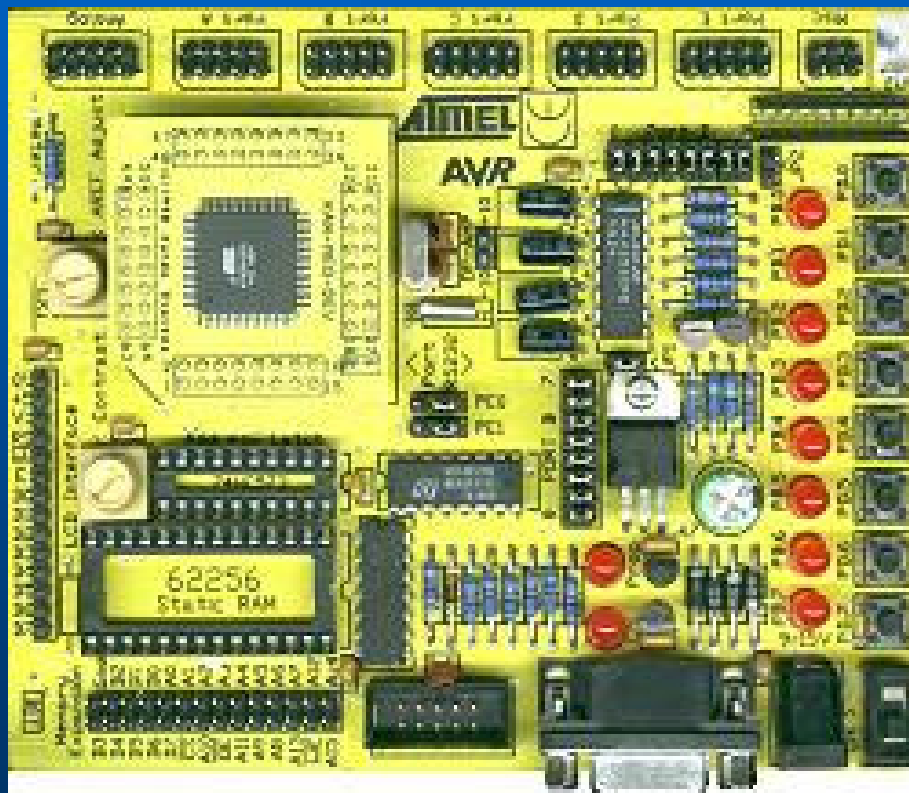
Modern electronics design is software design (Microcontrollers, FPGA, PLD……)

The ATMEL Programming Board

main features of the board are shown in the diagram below.

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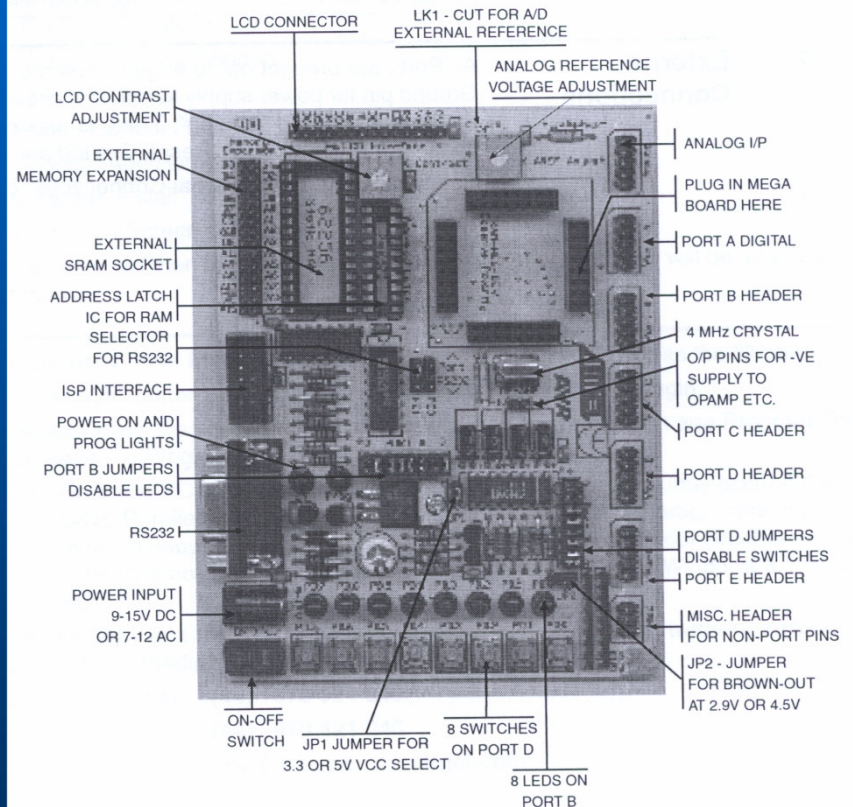
The Project Report Goals

- **To teach you to describe your project in a clear and professional manner**
- **The teach you to focus on the main message you need to pass to the reader**
- **To produce a report in time**
- **To learn to document the good work you have done**

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The Project Report Structure

- **Abstract**
- **Introduction**
- **High Level Design**
- **Software and Hardware Design**
- **Results and Performance**
- **Updates Modifications and Improvements**
- **Conclusions**
- **Appendices**

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Assessment

- If you are doing the 5.5 week/2.0 Unit track then we assess you based on your report and results

- If you are on the term/3 unit track then after 5-6 weeks you have to write a small status report on your work and also meet with me and show me your apparatus.

- Those on a 3 unit track still have to produce a more formal report at the end of the term

Demonstrators:

- **Dr. Mark Raymond**
- **Dr. Costas Foudas**
- **Dr. Michele Petteni**
- **Mr. Ian Munro**
- **Dr. Matthew Noy**
- **Mr. J. Jones**

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Starting with your Win2000 computer

Login : username : a1-a7 or b1-b7
password : a1-a7 or b1-b7

Change the password to something you both can remember (Ctrl+Alt+Del).

Logout by typing: Start→ Shut Down → Log off

Try to login again using you new password

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Getting started

- **Make sure you can open a file and save it using NotePad**

- **Click on : Explorer** and wait till the page comes on your screen.

- **Go to the course page:**

  http://www.hep.ph.ic.ac.uk/~foudas/Micro2001/Micros2001.html **and make sure that you can see it and download the documents.**