

## Design of an RFID chip

The final project will be the design of the digital circuit for an RFID chip. The class is split into teams of 4 to 5 students. The teams will be assisted during the project by the TA and by graduate students in the Andreou Group.

### Timeline:

April 20, 2010: Project assignment (in class)

April 22, 2010: No lecture, team lab work with the help of the TA

April 27, 2010: No lecture, lab work (individual project report due: Part I)

May 2, 2010: No lecture, team lab work with the help of the TA

May 6, 2010: No lecture, class presentations from teams (in class)

May 10, 2010: Individual project report due, Part II.

The 40% grade for the final project will consist of the grades in the individual project reports, Part I (20%), Part II (20%). Note that the laboratory work i.e. student participation in doing the actual project carries (15%) of the final grade.

### Part I:

In this part of the report for the final project, you will do a literature review on RFID technology. You will also as a team to outline the architecture and the specifications for your chip. You must write the report on your own (even though parts of it will contain work that you did together with your team-mates).

1. Introduction to RFID technology, basic concepts and discussion of applications with a focus on medicine and life sciences (2 pages).
2. Critical review of a technical paper on an RFID chip, you can search for technical papers on RFID chips at the IEEE Xplore website in the Journals of Solid-State Circuits, Circuits and Systems or in conference proceedings. Information on how to search the IEEE website can be found on the class website (2 pages). On the class website we have posted a few RFID papers that you can critically review but you DO NOT have to do these. I would rather have you go and find your own papers.
3. An outline of the basic components for your design (remember you will mostly be concerned about the digital portion of the chip). This discussion must include a block diagram, with some description of the basic parts, and an estimate of the area and power dissipation. Assume that your chip will be powered by of a 5 volts power supply. (2 pages)

## **Part II:**

In this second part of the report, you will elaborate on the design of your chip and discuss in more details the basic parts. You should provide simulation results that indicate functional digital circuits and also you can show images of the layout. You must also provide a plan for testing your chip. Finally you must make a specifications table where you list the characteristics of the device and show the area and power dissipation. Assume that your chip will be powered by of a 5 volts power supply (4 pages).

For the project to be judged complete, you must submit reports Part I and Part II, as well as an electronic file that has your chip design (layout). The TA will tile your designs on a final chip to submit for fabrication. Reminder that while the design is a joint outcome of every group, **writing reports Part I and Part II must be done individually.**