

## Task no 3 in the Mechatronics course

### General

You are going to work with and report your results for *at least three examples of mechatronic products*. The practical work is recommended to be done together, for security reasons you should not be alone in the lab. The report though, shall be individually made. You can choose a) the roboreptile toy b) a CD/DVD-disk unit 3) a hard disk 4) a complete CD/DVD-player 5) a video projector. The themes of task no 3 are *materials, production technology, sensors, motor systems and laws and standards*.

### Work material

- a. You will have access to two roboreptiles, the big one to play with and the smaller one for dissection. If possible, restore the dissected one to working mode after the investigation! For more info on Dino and his little brother, look at [www.roboreptileonline.com](http://www.roboreptileonline.com) !
- b. In the same way, there are three CD/DVD-disk units available to take apart for analysis.
- c. There are two CD/DVD-players available to study, not to take apart for analysis.
- d. There are hard disks available to take apart for analysis.
- e. There is one video projector available for analysis.

### Where

- The room where you can do the manual work is IEA:s lab nr one. You'll get in there with code which you will get from Henriette for the door lock. In lab one you will find tools and your work material. Our lab boss at IEA is Getachew Darge. He greets you welcome to the lab and will be glad to help you, preferably between 9 and 10 or between 2 and 3 pm. You will probably find him around, maybe in his office, lab 5 in the same corridor. If he is occupied for the moment, please respect that and arrange a meeting later.
- It can also be arranged to get access to a microscope at IEA or at Elmät (Dept of Electric Measurement, E-building) for a smaller group for the analysis of the sensors. Contact Getachew or Hans!

### Organisation

- Who is doing what and when in the lab is up to the class. But the period when you can make the practical investigations is long. You are free to organise the work yourselves as long as everyone who wants to participate in the practical work gets the chance to do it

## How

- With respect for each other
- With fun, seriousness and innovative imagination
- Keep the lab intact, please
- Feel free to ask your teachers! Their mail addresses are listed in the course programme on the home page

## When

- The period when you can work with the task includes two weeks in study period 1 and one week in study period two and also the exam period between them. You shall write an individual report on at least three of the mechatronic systems according to the five aspects below and send it electronically to Henriette before Monday the 22nd of March!

## Materials

- For your chosen examples, identify all the materials and as many of their characteristics of them as accurately as you can.
- List as many alternative materials you can and the pros and cons with the change of characteristics!

## Production

- For your chosen examples, identify the production methods for the various parts as accurately as you can.
- List as many alternative production methods you can think of and the pros and cons with them!

## Sensors

- For your chosen examples, identify the sensors in the mechatronic systems as accurately as you can.

## Motor systems

- For your chosen examples, identify the motors and their control systems in the mechatronic systems as accurately as you can.

## Laws and standards

- For your chosen examples, identify how laws and standards have been taken into account in the designs as accurately as you can.

Enjoy,

Henriette