



# HÖGSKOLAN I GÄVLE

## Digital Control Theory 7.5 cr

*Styrteknik med digitalteknik A 7,5 hp*

Set by Faculty of Engineering and Sustainable Development

### Version

| Set at  | Valid from |
|---------|------------|
| 3/15/10 | VT2010     |
| 9/12/12 | HT2012     |
| 3/11/16 | HT2016     |

|                            |                    |
|----------------------------|--------------------|
| <b>Level</b>               | G1N                |
| <b>Education level</b>     | First cycle        |
| <b>Course identifier</b>   | EE467A             |
| <b>Credits</b>             | 7.5 cr             |
| <b>Main field of study</b> | Electronics        |
| <b>Subject group</b>       | Electronics        |
| <b>Disciplinary domain</b> | Technology 100.0 % |

**Learning outcomes** The aim of the course is to provide basic knowledge about components, equipment and methods used in digital technology and in control of industrial processes, and to provide laboratory skills and preparation for a digital project work.  
On completion of the course, the student should:  
Understand and be able to analyse fundamental digital circuits  
Describe and use the theories and methods included in the course in a correct way  
Be able to utilise the knowledge acquired in the course in order for similar technical theories, circuits and measurement-technical situations to be covered in a correct way  
Use standard literature in the area (including data sheets and similar information)  
Use laboratory equipment and programmable systems in so far as applicable

**Course content** Combinatorics  
Sequence networks  
Circuit types  
Overview and basic concepts in control and regulation  
Components in control systems

Functional description  
 Programmable control systems  
 Practical control engineering  
 Interface orientation  
 Pulse circuit orientation  
 Process supervision orientation  
 Sorting and handling of electronics for recycling  
 Consideration of environment and energy aspects in the design of control systems

**Teaching** The teaching is carried out as lectures/exercises and laboratory sessions. The laboratory sessions are normally carried out in pairs. Strong emphasis is placed on preparation, implementation and presentation of the laboratory assignments. The teaching is not compulsory, except for the laboratory sessions and possible compulsory assignments.

**Prerequisites** General entry requirements + Mathematics 3c or Mathematics D, Physics 2

**Examination** Written examination, laboratory sessions and project work

**Grade** A, B, C, D, E, Fx, F

**Limitations** Written examination at the end of the course. For each course occasion, there is one regular examination and one re-examination.  
 Furthermore, completed laboratory course is required. The laboratory reports are submitted no later than a week after the regular laboratory session, unless another date has been stated. Students who submit the presentation later must wait for grading until the next course date. Failed presentation must be revised according to given comments.

**Sustainable environment** A minor part of the course content deals with sustainable development.

**Module**

|      |                     |        |           |
|------|---------------------|--------|-----------|
| 0060 | Written examination | 4.5 cr | Grade: AF |
| 0070 | Laboratory Sessions | 1.5 cr | Grade: UG |
| 0080 | Project             | 1.5 cr | Grade: UG |