1 Name, Scope and Level of the Course

The course is provided by the University of Skövde and is named Control Theory A1N. It comprises 6 credits and is on advanced level. The level of progression of the course is A1N.

2 Objectives

After completed course the student should be able to:

Knowledge and understanding
- define basic regulatory concepts.

Skills and Abilities
- model physical systems mathematically using the Z-transform,
- design a digital control system based on requirements for dynamic performance,
- analyze a dynamic system with respect to stability, robustness and stationary properties,
- evaluate regulators and dynamic systems through analysis of transient and frequency responses,
- evaluate dynamic systems through laboratory work to simulate control systems by computer.

Evaluation ability and approach
- show understanding for the limitations as simple models are used to describe complex dynamic systems.

3 Course Content

This course focuses on digital control theory and contains mathematical methods for modelling of linear dynamic system and control method for design and analysis of control systems. The Z-transform is used in the analysis to evaluate the design in both time and frequency domain. Computer tools will be used to simulate the control systems.

4 Forms of Teaching

The teaching is conducted in Swedish. Some teaching in English may occur.

5 Examination

The course is graded A (Excellent), B (Very good), C (Good), D (Satisfactory), E (Sufficient) or F (Fail).

Registration of examination results:

<table>
<thead>
<tr>
<th>Name of examination</th>
<th>Credits</th>
<th>Grading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboration</td>
<td>1 credits</td>
<td>G/U</td>
</tr>
<tr>
<td>Supervised written examination¹</td>
<td>5 credits</td>
<td>A/B/C/D/E/F</td>
</tr>
</tbody>
</table>

¹ Determines the final grade of the course.

Students with a permanent disability who have been approved for special educational support may be offered adapted or alternative examinations.

6 Admission Requirements

The prerequisites for this course are a Bachelor degree of at least 180 higher education credits (equivalent to 180 ECTS) within the fields of integrated product de-
velopment or production engineering or automation engineering or mechanical engineering or information technology or similar.

A further requirement is proof of skills in English equivalent of studies at upper secondary level in Sweden, known as English course 6 / English course B. This is normally demonstrated by means of an internationally recognized test, e.g. IELTS or TOEFL or the equivalent.

7 Subject, Main Field of Study and Disciplinary Domain
The course forms a part of the academic subject area of Virtual Product Realization. The course is a part of the main field of study in Virtual Product Realization at the University of Skövde. The disciplinary domain of the course is Technology.

Every course at the University of Skövde belongs to a subject. The division of subjects is used for follow-up and quality assurance. A main field of study is an area in which a degree can be awarded. Disciplinary domain is a division which is used by the government for the allocation of resources for studies at basic level and advanced level.

8 Approval of Course and Course Syllabus
The course was approved by the Curriculum Committee for Engineering Science on 5 March 2018. This course syllabus was approved by the Curriculum Committee for Engineering Science on 9 April 2018. It is valid from 1 January 2019.

9 Overlapping with Another Course
This course cannot constitute a part of a degree also containing a course the content of which is totally or partly equivalent to the content of this course.

10 Additional Information
Further information will be available on the university’s website before a course is given.

National and local regulations for higher education are available on the university’s website.

Upon completion of the course there will be a follow-up. The main purpose of this follow-up is to contribute to improvements of the course. The students’ experiences and views constitute one of the criteria for the follow-up and are gathered by means of course evaluations. The students will be informed of the results of the follow-up and any decisions regarding actions that are to be taken.

11 Course Literature and Other Educational Materials