

**SYLLABUS**

# **Intelligent Technology - Cyborgs & Humanoid Robots 15 credits P7010A**

**Framtidens intelligenta teknik - Cyborgs & humanoida robotar**

**Course syllabus admitted: Spring 2018 Sp 3 - Spring 2019 Sp 4**

**DECISION DATE  
2017-06-01**

# Intelligent Technology - Cyborgs & Humanoid Robots 15 credits P7010A

## Framtidens intelligenta teknik - Cyborgs & humanoida robotar

### Second cycle, P7010A

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	U G#	Teoretisk neurovetenskap	Other Subjects within Technology

## Entry requirements

Minimum of 90 ECTS including one of the courses P0008A Intelligent Technology of the Future - Cognitive Science or P0012A Intelligent Technology - Computation & the Brain. Alternatively, corresponding knowledge acquired by other university studies.

## Selection

The selection is based on 30-285 credits

## Examiner

Peter Bengtsson

## Course Aim

After finalizing the course the student shall be able to: describe and explain the basic prerequisites for developing cyborgs and humanoid robots from a cognitive science perspective. Further, the student shall be able to implement and simulate aspects of the area in a computer. The course is for engineers, behavioural scientists, natural scientists and others who want to learn about a highly topical and exciting field of research, applying to advanced intelligent machines.

## Contents

In the course we study cyborgs, a cybernetic organism which adds to or enhances its abilities by using technology. According to some definitions of the term a human fitted with a heart pacemaker or an insulin pump (if the person has diabetes) might be considered a cyborg. We also study humanoid robots, which are autonomous and able to adapt to changes in its environment or itself and continue to reach its goal. Humanoid robots have their overall appearance based on that of the human body.

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

Internet course, comprising individual studies, assignments and laboratory sections.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Assignments, laboratory sections and internet seminars. Grade scale: U G

## Remarks

Students must register for the courses themselves, or contact ETKS educational administration [eduetks@ltu.se](mailto:eduetks@ltu.se), not later than three days after the quarter commences. Failure to do so can result in the place being lost. This rule also applies to students with a guaranteed place.

Taught in Swedish and English.

Associated courses in the series Intelligent Technology are:  
P0008A Intelligent Technology of the future – Cognitive Science;  
P0012A Intelligent Technology – Computation & the Brain;  
P0065A Intelligent Technology – Computational Neuroscience I;  
P7045A Intelligent Technology – Neuroscience & Mathematics;  
P7010A Intelligent Technology – Cyborgs & Humanoid Robots;  
P0034A Intelligent Technology – Computational Neuroscience;  
P7023A Intelligent Technology – Scientific Work.

## Literature. Valid from Autumn 2014 Sp 1

Haykin, S. (2009). Neural Networks and Learning Machines. 3rd Edition. Additional literature will be added according to the teacher's instructions.

## Course offered by

Department of Business Administration, Technology and Social Sciences

## Items/credits

Number	Type	Credits	Grade
0002	Introduction	0.5	U G#
0003	Assignment report, laboratory work, internet seminars	14.5	U G#

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Last revised

by Director of Undergraduate Studies Daniel Örtqvist, Department of Business Administration, Technology and Social Sciences 2017-06-01

## Syllabus established

by Department of Human Work Sciences 2008-01-29