



Faculty of Health, Science and Technology  
Electrical Engineering

# Syllabus

## Digital Electronics

<b>Course Code:</b>	ELGA02
<b>Course Title:</b>	Digital Electronics <i>Digitalteknik</i>
<b>Credits:</b>	7.5
<b>Degree Level:</b>	Undergraduate level
<b>Progressive Specialisation:</b>	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

**Major Field of Study:**  
ETA (Electrical Engineering)

### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2018-08-29, and is valid from the Spring semester 2019 at Karlstad University.

### Prerequisites

Circuit Analysis 7.5 ECTS cr, or Wave Physics and Electrical Engineering 7.5 ECTS cr, or equivalent

### Learning Outcomes

Upon completion of the course, students should be able to:

- give an account of the structure and electrical properties of the most common digital circuit families,
- use methods of analysis and synthesis for combinatorial nets and sequential nets,
- interface digital circuits to surrounding electronic systems.

### Content

Instruction is in the form of lectures, problem solving sessions and mandatory laboratory exercises.

Areas treated are:

- digital circuit families and their characteristics,
- combinatorial nets and special combinatorial circuits. Karnaugh diagram. Latches and flip-flops,
- synchronous and asynchronous sequential nets. Iterative sequential nets. Special sequential circuits,
- semiconductor memories. Programmable logic devices (PLD),
- analogue/digital and digital/analogue converters. Sample-and-hold circuits.

### Reading List

See separate document.

### Examination

Assessment is based on written exams, mandatory laboratory assignments, laboratory reports and hand-in assignments.

**Grades**

One of the grades U (Fail), 3 (Pass), 4 (Pass with Some Distinction), or 5 (Pass with Distinction) is awarded in the examination of the course.

**Quality Assurance**

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

**Course Certificate**

A course certificate will be provided upon request.

**Additional information**

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.