Digital Electronics

Digitalelektronik
6 credits

Programme course

TNE109

Valid from:

Determined by	**Main field of study**	
Board of Studies for Electrical Engineering, Physics and Mathematics	Electrical Engineering	
Date determined	**Course level**	**Progressive specialisation**
	First cycle	G1N
Revised by	**Disciplinary domain**	
	Information missing	
Revision date	**Subject group**	
	Electrical Engineering	
Offered first time	**Offered for the last time**	
Spring semester 2026		
Department	**Replaced by**	
Institutionen för teknik och naturvetenskap		

Course offered for

- Master of Science in Electronics and Systems Design

Intended learning outcomes

To give a theoretical and practical base for construction of digital system. After the course the student should be able to:

- Design and analyze sequential circuits
- Design basic blocks of computing and understand building blocks of microprocessors
- Design, simulate, and synthesize digital systems using hardware description languages (HDL) and Electronic Design Automation (EDA) tools
- Design and implement digital systems on field-programmable gate arrays (FPGA)

Course content

Sequential circuits and logic design, Moore and Mealy state machines, arithmetic circuits, memories, microprocessor architecture, Electronic Design Automation (EDA) tools, System Verilog HDL, field-programmable gate arrays (FPGA).

Teaching and working methods

Pedagogy includes lectures, tutorials, and laboratory activities.

Examination

TEN1	Written examination	3 credits	U, 3, 4, 5
LAB1	Laboratory Work	3 credits	U, G

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses

Micro Computer Systems, Introduction to Electronics