

**Modules:**

physics700 **Elective Advanced Lectures**  
 physics710 **Experimental Physics**  
 physics720 **Applied Physics**

**Course:**

## Advanced Electronics and Signal Processing (E/A)

**Course No.:** physics712

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	3+1	6	ST

**Requirements:****Preparation:**

Electronics laboratory of the B.Sc. in physics programme  
 Recommended: module nuclear and particle physics of the B.Sc. programme

**Form of Testing and Examination:**

Requirements for the examination (written): successful work with the exercises

**Length of Course:**

1 semester

**Aims of the Course:**

Comprehension of the basics of electronics circuits for the processing of (detector) signals, mediation of the basics of experimental techniques regarding electronics and micro electronics as well as signal processing

**Contents of the Course:**

The physics of electronic devices, junctions, transistors (BJT and FET), standard analog and digital circuits, amplifiers, elements of CMOS technologies, signal processing, ADC, DAC, noise sources and noise filtering, coupling of electronics to sensors/detectors, elements of chip design, VLSI electronics, readout techniques for detectors

**Recommended Literature:**

P. Horowitz, W. Hill; The Art of Electronics (Cambridge University Press 2. Aufl. 1989)  
 S. Sze; The Physics of Semiconductor Devices (Wiley & Sons 1981)  
 H. Spieler, Semiconductor detector system (Oxford University Press 2005))  
 J. Krenz; Electronics Concepts (Cambridge University Press 2000)