

Title <b>Analog circuits</b>	Code <b>1018011210108400052</b>
Field <b>Electronics and Telecommunications</b>	Year / Semester <b>1 / 2</b>
Specialty -	Course <b>core</b>
Hours Lectures: <b>4</b> Classes: <b>2</b> Laboratory: -    Projects / seminars: -	Number of credits <b>8</b>
	Language <b>polish</b>

**Lecturer:**

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**Status of the course in the study program:**

- Obligatory course in the study program of Faculty the of Electronics and Telecommunication

**Assumptions and objectives of the course:**

-Students should well understand the electromagnetic phenomena occurring in network elements and circuits transmitting signals and energy. Obtain knowledge of circuits analysis methods in steady (DC and AC) and transient states useful in investigation and projecting electronic and telecommunication systems.

**Contents of the course (course description):**

- Basic laws in circuit theory: voltage and current Kirchhoff's laws, Tellegen theorem. A real electric circuits and its mathematical model. Linear and nonlinear passive and active network elements and devices in analog circuits. Basic principles, theorems and methods in the resistor-network analysis. Sinusoidal steady-state analysis, complex number representation, phasor diagrams. Resonance circuits and coupled networks. Fourier analysis techniques. Transients analysis in time-domain and frequency-domain (Laplace transform). Two-port parameters Z,Y,H,A etc. and S. Transfer function H(s), amplitude and phase characteristics. Basic concepts in stability analysis of the first order circuits: trajectory, equilibrium and impasse points. Elements of the lossless one-port and two-port synthesis.

**Introductory courses and the required pre-knowledge:**

- Mathematics - fundamentals of differential and integral calculus of real and complex variables, algebra of matrices, complex algebra. Physics - the basics of electromagnetic field .

**Courses form and teaching methods:**

- Lectures supported by computer programs and video demonstrations, classes.

**Form and terms of complete the course - requirements and assessment methods:**

-Written and oral examination, problem solving sessions.

**Basic Bibliography:**

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**Additional Bibliography:**

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