

Discipline	Analysis and Synthesis of Electronic Circuits code: 5254 Semester – /summer/		
Specialty	Electronics		
ECTS credits: 7	Form of assessment: Exam		
Lecturer	Associate Professor, PhD Ekaterina Dimitrova Room: 501E Phone: +359 52 383 340 E-mail: ekaterinad@tu-varna.bg		
Department	Department of Electronics and Microelectronics		
Faculty	Faculty of Computer Sciences and Automation		
Learning objectives			
<p>The subject "Analysis and Synthesis of Electronic Circuits" purpose is to give the students the initial knowledge in the theoretical investigation of Analogue Electronic Circuits in its three main parts- modeling, analysis including Sensitivity analysis and synthesis. Principals of modeling, nonlinear and linear models of Bipolar Junction Transistors, FET Transistors and Operational Amplifiers, Models of Active Two-Ports are included in the first part. Nodal analysis and Methods for Analysis of Electronics Circuits Containing Multi-Ports, Transfer Functions of the Electronic Circuits Expressed by the Elements of the Matrix of Admittances and Sensitivity Analysis of Electronic Circuits are the main topics of the second part of the course. The synthesis of Active filters based on frequency response Butterworth, Chebyshev and Cauer characteristics in a classical way by approximation, realization and optimization is the content of the third part.</p>			
CONTENTS:			
Training Area	Hours lectures	Hours seminar exercises	
Introduction – CAD and software approaches for studying electronic circuits.	2	2	
Structure and functional characteristics of the OrCAD environment.	4	4	
Computer models of active components.	6	6	
Methods for electronic circuit analysis	6	6	
Sensitivity of electronic circuits.	4	4	
Synthesis of electronic circuits.	8	8	
<b>TOTAL:</b> 60 h	<b>30</b>	<b>30</b>	