

# ESE 271: Electrical Circuit Analysis

Spring 2012

**Web site:** [www.ece.sunysb.edu/~oe/leon.html](http://www.ece.sunysb.edu/~oe/leon.html)  
*visit website regularly for updates and announcements*

**Text Books:** D.E. Johnson, J.R. Johnson, J.L. Hilburn, P.D. Scott  
“Electric Circuit Analysis”,  
third addition (1999), Wiley, ISBN 978-0-471-36571-6

**Instructor:** Leon Shterengas (631-632-9376, [leon@ece.sunysb.edu](mailto:leon@ece.sunysb.edu));  
*Office hours: TU,TH 10-12am, Light Engineering Bldg. 143*

**Teacher assistants:**  
see website for updates

**Grading:** **Homeworks - 40%, Exams - 60%**  
*Any questions regarding the grading must be resolved  
within one week after grade was given.*

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## Course Description:

Resistors, capacitors, inductors. Kirchhoff's and Ohm's law. Nodal and mesh analysis. Equivalent circuits. Steady-state AC circuits. Phasors. Transient analysis. Fourier and Laplace transforms. Fundamentals of AC power, coupled inductors (transformers), and two-port networks.

The course is designed to provide the necessary theoretical background for electronic lecture and lab courses like ESE 211, 218, 311, 314, 324, 372, etc.

Class notes, homework assignments and problem solutions can be downloaded from [www.ece.sunysb.edu/~oe/leon.html](http://www.ece.sunysb.edu/~oe/leon.html).

Homeworks are due in the beginning of the corresponding lecture.

<b>Lectures:</b>	<b>M/W</b>	<b>2.20pm - 3.40pm</b>	<b>P118</b>	
<b>Recitations:</b>	<b>02</b>	<b>M</b>	<b>10.40am - 11.35am</b>	<b>SBS S228</b>
	<b>03</b>	<b>M</b>	<b>11.45am - 12.40pm</b>	<b>SBS N310</b>
	<b>01</b>	<b>W</b>	<b>10.40am - 11.35am</b>	<b>Light Eng 154</b>

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## Spring 2012: Tentative Schedule

Week 01	Jan. 23	L01. Introduction. Charge. Current. Voltage. Energy. Power.	
	Jan. 25	L02. Passive and active elements. Kirchhoff's laws.	
Week 02	Jan. 30	L03. Resistor. Ohm's law.	
	Feb. 01	L04. Thevenin and Norton equivalents.	
Week 03	Feb. 06	L05. Dependent sources and Op. Amps.	HW1 due
	Feb. 08	L06. Nodal analysis.	
Week 04	Feb. 13	L07. Mesh analysis.	
	Feb. 15	L08. Circuits with Op. Amps.	HW2 due
Week 05	Feb. 20	<b>Midterm exam 1.</b>	
	Feb. 22	L09. Capacitors.	
Week 06	Feb. 27	L10. Inductors.	
	Feb. 29	L11. RC and RL circuits. Time constants.	
Week 07	Mar. 05	L12. RLC circuit under harmonic excitation. Phasors.	HW3 due
	Mar. 07	L13. Ohm's law for phasors. Phasor diagrams.	
Week 08	Mar. 12	L14. AC steady state analysis.	
	Mar. 14	L15. AC steady state analysis.	HW4 due
Week 09	Mar. 19	L16. Frequency response of the first order RC and RL circuits.	
	Mar. 21	L17. AC power. RMS. Maximum power delivery.	
Week 10	Mar. 26	L18. Mutual inductance. Transformer.	HW5 due
	Mar. 28	<b>Midterm exam 2.</b>	
Week 11	Apr. 02	Spring break	
	Apr. 04	Spring break	
Week 12	Apr. 09	L19. Laplace transform.	
	Apr. 11	L20. Laplace transform.	
Week 13	Apr. 16	L21. Circuits in s-domain.	
	Apr. 18	L22. Transfer function.	
Week 14	Apr. 23	L23. Step and impulse responses.	HW6 due
	Apr. 25	L24. Frequency response function. Bode plots.	
Week 15	Apr. 30	L25. Resonance.	
	May. 02	L26. Filters.	HW7 due
Finals	May. 08-15	<b>Final exam</b>	