

**JAMESTOWN COMMUNITY COLLEGE**  
**State University of New York**

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**INSTITUTIONAL COURSE SYLLABUS**

**Course Title:** Analysis/Linear Elec Circuits

**Course Abbreviation and Number:** ENR 2740

**Credit Hours:** 3

**Course Type:** Lecture

**Course Description:** Students will gain expertise in the techniques of elementary circuit analysis. DC resistive circuits are first analyzed using Ohms and Kirchhoffs laws, voltage and current division, resistance and source combinations, and superposition. Basic techniques are expanded to include dependent sources, mesh analysis, nodal analysis, Thevenins and Nortons theorems, and the maximum power transfer theorem. Sinusoidal, exponential, and damped sinusoidal forcing functions are then introduced along with inductance and capacitance. LaPlace transforms are used to obtain complete solutions for first and second order RL, RC, and RLC circuits.

Prerequisite/Corequisite: MAT 1720.

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**Student Learning Outcomes:**

Students who demonstrate understanding can:

1. Describe the application of linear electrical circuits across engineering disciplines and within sub-disciplines of electrical engineering.
  2. Perform an analytical analysis of complex DC and AC linear circuits.
  3. Proficient use of AC steady state analysis to find currents and voltages within circuits driven by sinusoidal sources.
  4. Apply Laplace transforms correctly and appropriately to analyze linear circuits.
  5. Relate pole and zero locations to characteristics of time-domain functions.
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**Topical Covered:**

- Ohm's and Kirchhoff's law
  - Voltage and current division
  - Dependent sources
  - Superposition and source conversions
  - Thevenin's theorem
  - Norton's theorem
  - Maximum power transfer theorem
  - Inductance and capacitance
  - First order networks
  - Second order networks
  - Sinusoidal functions
  - Time domain / frequency domain conversions
  - AC power and power factor correction
  - Complex frequency
  - Introduction to Fourier analysis
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**Information for Students**

- Expectations of Students
  - [Civility Statement](#)
  - [Student Responsibility Statement](#)
  - [Academic Integrity Statement](#)

- [Accessibility Services](#)

Students who require accommodations to complete the requirements and expectations of this course because of a disability must make their accommodation requests to the Accessibility Services Coordinator.

- [Get Help: JCC & Community Resources](#)
- [Emergency Closing Procedures](#)

- Course grade is determined by the instructor based on a combination of factors, including but not limited to, homework, quizzes, exams, projects, and participation. Final course grade can be translated into a grade point value according to the following:

A=4.0	B+=3.5	B=3	C+=2.5	C=2	D+=1.5	D=1	F=0
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- Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, VA appointments) are welcome and encouraged to communicate these to the instructor.
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**Effective Date:** Fall 2023