Syllabus for Engr204 - Circuits

Instructor:
Dr. Rainer Heller
Office: SAM210
Email: rainer.heller@seattlecolleges.edu
Website: www.seattlecentral.edu/faculty/rheller

Text

Prerequisites
Physics 222 and Math 152, both with 2.0 or better.

Meeting Times
Daily 9:40 – 11:10am, SAM301

Content
Covers basic circuit and systems concepts. Resistors, sources, capacitors, inductors and operational amplifiers. Includes solution of first and second order linear differential equations associated with basic circuit forms. We should cover the first eight chapters of the textbook.

Course Outcomes
1. Solve electric circuits using Kirchhoff’s Laws and Ohm’s Law.
2. Solve electric circuits using node and mesh analysis.
3. Simplify and solve circuits using Thevenin and Norton equivalents, superposition, and source transformation principles.
4. Describe and predict current and voltage relationships for a capacitor and inductor.
5. Write an appropriate differential equation for switched resistance-inductance-capacitance (RLC) circuits and describe their exact solution.
6. Analyze and design simple circuits employing op-amps.
7. Describe and analyze steady-state sinusoidal circuit responses with appropriate phasor relationships.

Note: This syllabus is subject to change. Please check online for the most recent version.
Assessment
Exams: 75%
Labs: 15%
Homework: 10%

Exams
There will 4 exams. Dates will be given as we progress through the quarter. There won't be any makeup exams. The lowest exam score will be dropped. All exams count equally.

Homework and Labs
A set of problems from the text will be assigned on a weekly basis. These assignments are chosen to highlight the important concepts and problem solving techniques found in the chapter.

There will four to six lab activities that will give you some hands-on experience with the class material. Labs and homework will be group assignments. You can form groups of 2-3 students.

Your lab reports and homework sets must be turned in on time. The penalty for turning an assignment in late will 10% deduction per day, at the digression of the instructor.

Homework solutions can be found on the website. Start working on your homework assignments as soon as we have covered the material in class. This will allow you to ask questions and work on difficult problems with others. I strongly recommend that you discuss problems with your classmates, however, your final work has to be your own, not a copy of somebody else’s work.

Note that late homework may not be accepted. If it is, there will be a deduction. If you have trouble finishing your work on time please let me know ahead of time, not after the due date.

Special Assistance
Students with documented disabilities who need course accommodations, have emergency medical information, or require special arrangements for building evacuation should contact the instructor within the first two weeks of class.

Title IX
Seattle Central College seeks to provide an environment that is free of bias, discrimination, and harassment. If you have been the victim of sexual harassment/misconduct/assault we encourage you to report this. For more information about your options at Seattle Central, please go to:
http://seattlecolleges.edu/HR/about.aspx

Note: This syllabus is subject to change. Please check online for the most recent version.
<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Reading: Chapters 1 (Circuit variables) &amp; 2 (Circuits elements).</td>
</tr>
</tbody>
</table>
| 2    | Reading: Chapter 3 (Simple resistive circuits)  
Lab 1 (Introduction to Circuit Analysis) |
| 3    | Reading: Chapter 4 (Techniques of circuit analysis)  
Lab 2 (Nodal Analysis and Thevenin Equivalents) |
| 4    | Reading: End of Chapter 4 (Techniques of circuit analysis), chapter 5 (Operational Amplifier)  
Lab 3 (Operational Amplifiers) |
| 5    | Reading: End of chapter 5 (Operational Amplifier), chapter 6 (Inductance, Capacitance and Mutual Inductance) |
| 6    | Reading: End of chapter 6 (Inductance, Capacitance and Mutual Inductance), chapter 7 (Response of first order RL and RC circuits).  
Lab 4 (First Order Circuits) |
| 7    | Reading: Chapter 7 (Response of first order RL and RC circuits), chapter 8 (Natural and Step Responses of RLC circuits)  
Lab 5: Second Order Circuits |
| 8    | Chapter 8 (Natural and Step Responses of RLC circuits) |

And let’s not forget ... ... to have fun 😊

Note: This syllabus is subject to change. Please check online for the most recent version.