

# EECT 111 - Introduction to Circuits Analysis



Course Title:	Introduction to Circuits Analysis
Course Number:	EECT 111
Section Number:	21C
Term:	Spring 2012
Location:	Fort Wayne North Campus, Technology Center, Room TC1480
Prerequisites:	None - but you should have a working knowledge of Microsoft Excel, Word and Power Point.
School:	Applied Science and Engineering Technology
Program:	Electronics and Computer Technology
Credit Hours:	4
Contact Hours:	5 (Lecture/Lab/Project)

Instructor:	Andrew Bell, Engineering Technology Program Chair
	e-mail: abell118@ivytech.edu
	Phone: 481-2288
	Office: TC1111
Office Hours: Mon 1:00 PM to 5:00 PM, Wed 1:00 PM to 5:00 PM	

Required Text:	<i>Foundations of Electronics (C &amp; D:Conv Flow)(w/CD) 2007 2nd ed., by Meade</i>
Required Text:	<i>Foundations of Electronics (LAB) 2007 5th ed., by Meade</i>

Required Equipment:	Graphing Calculator (TI-89 or equivalent), USB Flash Drive (min 2 GB) to save your work. 4 GB cost \$10 - \$15. Recommended brands; SanDisk, PNY, Kingston, or Memorex (not Lexar)
	You are responsible for maintaining your data. I strongly recommend that you backup your flash drive to your computer's hard drive.

Catalog Description:	Voltage, current, resistance, Ohm's law, Kirchhoff's laws, resistance combinations, and Thevenin's, Norton's, and superposition theorems are studied. DC and AC circuits are studied and utilized with basic AC terminology described. The performance of ideal transformers, capacitors and inductors, and first order RLC circuits are investigated. Fundamental analog electronic circuits are utilized in the lecture and laboratory to enhance the understanding of basic laws and theorems.
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Course Content:	Topical areas of study will include:																							
	<table border="0"> <tr> <td>Circuit grounding</td> <td>Basic electrical/electronic units and terminology</td> </tr> <tr> <td>AC waveforms</td> <td>Calculate and solve electronics circuits problems</td> </tr> <tr> <td>Ohm's law</td> <td>Electronics components identification</td> </tr> <tr> <td>Kirchhoff's laws</td> <td>Schematic symbols and diagrams</td> </tr> <tr> <td>Power rule</td> <td>Real and ideal voltage and current sources</td> </tr> <tr> <td>Series circuits</td> <td>Circuit breadboarding and construction</td> </tr> <tr> <td>Parallel circuits</td> <td>Voltage and current divider rules</td> </tr> <tr> <td>Superposition</td> <td>Maximum transfer loading effects</td> </tr> <tr> <td>Norton's theorem</td> <td>Ideal transformer parameters</td> </tr> <tr> <td>Thevenin's theorem</td> <td>Basic analog electronics circuits</td> </tr> <tr> <td>Series-parallel circuits</td> <td>DC switching RC and RL circuits</td> </tr> <tr> <td>Node voltage calculations</td> <td>Test equipment and instruments</td> </tr> </table>	Circuit grounding	Basic electrical/electronic units and terminology	AC waveforms	Calculate and solve electronics circuits problems	Ohm's law	Electronics components identification	Kirchhoff's laws	Schematic symbols and diagrams	Power rule	Real and ideal voltage and current sources	Series circuits	Circuit breadboarding and construction	Parallel circuits	Voltage and current divider rules	Superposition	Maximum transfer loading effects	Norton's theorem	Ideal transformer parameters	Thevenin's theorem	Basic analog electronics circuits	Series-parallel circuits	DC switching RC and RL circuits	Node voltage calculations
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Major Course Learning Objectives:	Upon successful completion of this course the student will be expected to:
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Andrew Bell  
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 Program Chair  
 Ivy Tech Community College  
 Region 03, Northeast

1.	Recognize and apply basic electrical/electronics units and terminology, including prefix notation, charge, current, voltage, resistance, conductance, energy, power, capacitance and inductance.
2.	Utilize the scientific calculator to solve electronics circuit problems.
3.	Identify and apply electronic devices and their corresponding schematic symbols, including voltage and current sources (AC and DC), resistors, potentiometers, transformers, capacitors, inductors, and, in the laboratory, diodes, light emitting diodes, bipolar junction transistors, and op amps.
4.	Calculate node voltage, convert DC voltage sources to bubble notation, and distinguish between electrical, common, and chassis ground.
5.	Distinguish between real and ideal voltage and current sources and properly model real sources.
6.	Identify and calculate basic parameters and sketch the sine, triangle, and square wave.
7.	State, apply and discuss the historical significance of the laws and rules of electrical/electronic circuit analysis including: Ohm's law, Kirchhoff's Voltage and Current Laws, the power rule, the voltage divider rule, and the current divider rule.
8.	State and apply maximum transfer loading effects in transferring maximum voltage, current, or power.
9.	Calculate ideal transformer parameters of primary and secondary reflected resistances, voltages and currents.
10.	Apply the principles of circuits analysis to series circuits, parallel circuits, series-parallel circuits, and basic analog electronic circuits; principles include the use of resistor reduction, source conversion, superposition, Thevenin's Theorem, and Norton's Theorem.
11.	Use the results of the appropriate first-order differential equation and the initial steady state device models of the capacitor and inductor to analyze DC switching RC and RL circuits.
12.	Practice circuit construction (interpreting schematics) and use the digital multi-meter, the oscilloscope, and RCL meter to perform electronic measurements and recognize meter-loading impacts.
13.	Apply basic laws to electronics circuits.

### Semester Outline:

Wk 1 - 1/12	Read Chapter 1 & 2
Wk 2 - 1/19	Read Chapter 3 & 4
Wk 3 - 1/26	Read Chapters 5 & 6
Wk 4 - 2/2	Read Chapters 7 & 8
Wk 5 - 2/9	Read Chapters 9 & 10
Wk 6 - 2/16	Read Chapters 11 & 12
Wk 7 - 2/23	Read Chapters 13 & 14
Wk 8 - 3/1	Mid Term
3/15	Spring Break (No Classes)
Wk 9 - 3/15	Read Chapters 15 & 16
Wk 10 - 3/22	Read Chapter 17 & 18
Wk 11 - 3/29	Read Chapter 19 & 20
Wk 12 - 4/5	Read Chapter 21 & 22
Wk 13 - 4/12	Read Chapter 23 & 24
Wk 14 - 4/19	Read Chapter 25 & 26
Wk 15 - 4/26	Read Chapter 27 & 28
Wk 16 - 5/3	Final

Chapter Agendas:	An agenda will be given for each week. The agenda will provide reading and homework assignments.
Class Format:	<p>The format of the class includes: Lectures, Labs and Team Projects.</p> <p>Lectures will be derived from the Text Book and additional information that the instructor may feels is pertinent. The weekly PowerPoint slides will be posted on Blackboard.</p> <p>Labs will be conducted at Ivy Tech either in the class room or an appropriate lab. Each student will create and maintain a "Lab Book". The Lab Book will capture all of the lab results, calculations, and observations for all of the labs completed during the semester. Lab Books will be turned-in prior to the end of the class.</p> <p>Team Projects will require some contact with other team members during the class and between classes. Each Team will be responsible to present to the class Team Presentations as defined by the instructor.</p>
Class Participation:	You are expected to participate in every class by: (1) listening carefully, (2) taking notes and tests, (3) answering questions asked by the instructor, (4) asking the instructor questions that may arise during class, (5) respecting the instructor and fellow students by refraining from unnecessary talking and discussions during the lecture/demonstration portion of class, and (6) actively work with your team.
Homework:	Homework is assigned at the end of each chapter agenda. You are expected to complete each homework and turn it in prior to the start of each class.
Tests:	<p>Mid Term Exam: 1st half of class</p> <p>Final Exam: All chapters covered with more emphasis on the last half of the book.</p>
Make-Up Policy:	A missed test or other other graded material may be made-up only at the discretion of the instructor. If you miss a class you will need to contact the instructor via email or phone. There is no make-up for quizzes, labs, homework or exams without the instructor's approval. You are responsible to provide all group project team information to your team prior to any presentation.
Lab:	The lab is owned by the college. You are guests in this lab. As such I expect that you will conduct yourself accordingly. Drinks with a sealed cap are allowed (i.e. water or soda bottles). Drinks with an open top are not allowed (i.e. coffee cups or soda cans). Non-messy food items are allowed. If you have a spill or make a mess you are expected to clean it up. You must <b>log-on</b> using your campus connect username and password. Please notify the instructor of any problems.
Grading Policy:	<p>Homework: 10%</p> <p>Quizzes: 15%</p> <p>Participation/Presentation: 15%</p> <p>Labs: 15%</p> <p>Mid-Term Exam: 20%</p> <p>Final Exam: 25%</p>

Grading Scale:	A: 90.0 - 100%
	B: 80.0 - 89.9%
	C: 70.0 - 79.9%
	D: 60.0 - 69.9%
	F: less than 60.0%
	I: An Incomplete course grade is only given for medical reasons with a doctor's note.
Attendance Policy:	You are expected to attend every class. Attendance is taken and recorded. Multiple absences and/or tardiness will result in a reduction in the class participation portion of your grade. If you miss a class, you are responsible to: (1) get a copy of the agenda(s) and lecture notes from a fellow student {I do not repeat lectures } and (2) be prepared for the next class session including; taking a test or submitting the final project. If you must miss a test, notify the instructor as soon as you become aware of this fact.
Last Date to Drop Without a Grade:	Sunday, April 8, 2012 If you are not able to withdraw using campus connect then you must go to the Registrars' office to withdraw.
Comments:	You must keep up with the pace of the class. It is very difficult to catch up, if you allow yourself to fall behind.
	Feel free to ask questions during and after each class.
	Please see me during my office hours if you find yourself struggling with this course.
Academic Honesty Statement:	The College is committed to academic integrity in all its practices. The faculty value intellectual integrity and a high standard of academic conduct. Activities that violate academic integrity undermine the quality and diminish the value of educational achievement.  Cheating on papers, tests or other academic works is a violation of College rules. No student shall engage in behavior that, in the judgment of the instructor of the class, may be construed as cheating. This may include, but is not limited to, plagiarism or other forms of academic dishonesty such as the acquisition without permission of tests or other academic materials and/or distribution of these materials and other academic work. This includes students who aid and abet as well as those who attempt such behavior.
Copyright Statement:	Students shall adhere to the laws governing the use of copyrighted materials. They must insure that their activities comply with fair use and in no way infringe on the copyright or other proprietary rights of others and that the materials used and developed at Ivy Tech Community College contain nothing unlawful, unethical, or libelous and do not constitute any violation of any right of privacy.

<p>ADA Statement:</p>	<p>Ivy Tech Community College seeks to provide reasonable accommodations for qualified individuals with documented disabilities. If you need an accommodation because of a documented disability, please contact the Office of Disability Support Services.</p> <p>If you will require assistance during an emergency evacuation, notify your instructor immediately. Look for evacuation procedures posted in your classroom.</p>
<p>Disability Support Services:</p>	<p>DSS Assistant, Harshman Hall Room 1532, phone 480-2067          Todd Nichols, Harshman Hall Room 1655, phone 481-2210          Hours: Monday - Thursday 8:00 AM - 7:00 PM and Friday 8:00 AM - 5:00 PM</p>
<p>Ivy Tech Growing Greener:</p>	<p>Ivy Tech Community College–Northeast is committed to the development and implementation of a comprehensive sustainability plan. We’re emphasizing our responsibility to go green. To that end, we are asking students, faculty, and staff to actively participate in energy conservation measures and proper recycling on campus. The recycling bins located in classrooms and offices are for paper and paper products only. Ivy Tech participates in single-stream recycling for other items. All aluminum, glass, and plastic beverage containers can co-mingle in the same recycling bins located in the hallways. Please remember to empty the liquid from your containers before depositing them in the bins. Any materials that cannot be recycled should be placed in garbage cans. It is also important to turn off lights and computers when leaving a room. Together, we can make an impact on conserving our limited resources. Remember to reduce, reuse, and recycle!</p>
<p>ATMAE - Requirements:</p>	<p>Students wishing to graduate from a School of Applied Science and Engineering or the School of Technology, from Ivy Tech Community College Northeast must complete at least 12 semester hours of Management and/or Technical training. This requirement is concurrent with the college requirement that each student must complete 15 semester hours at this institution</p> <p>Students transferring to Ivy Tech Community College Northeast and entering into the School of Applied Science and Engineering or the School of Technology must also meet the 12 semester hours of Management and/or Technical training. Credits considered for transfer may be from another Ivy Tech ATMAE accredited campus or obtained from an ATMAE accredited institution.</p>
<p>How to Access the Ivy Tech Community College Virtual Library:</p>	<p>The Ivy Tech Virtual Library is available to students’ on- and off-campus, offering full text journals and books and other resources essential for course assignments. Go to <a href="http://www.ivytech.edu/student-services/library.html">http://www.ivytech.edu/student-services/library.html</a> and choose the link for your campus.</p>
<p>Right of Revision Statement:</p>	<p>This is a tentative course syllabus. The Instructor reserves the right to make changes to the syllabus at any time. You are responsible to know and comply with all of the information contained in this syllabus and, if necessary, any revisions announced or handed out in class.</p>