

Bergen Community College
Division of Mathematics, Science and Technology
Department of Industrial Design Technology

Course Syllabus
ELC – 201 AC – Circuit Analysis

Semester and year:
Course Number:
Meeting Times and Locations:

Instructor:
Office Location:
Phone:
Office Hours:
Email Address:

The exact sequence and topics covered may be adapted to meet the requirements at hand; the right is reserved to make such adaptations. Test dates and other announcements will be made in class, and it is the responsibility of the student to keep informed.

COURSE TITLE: ELC 201 AC – Circuit Analysis

PREREQUISITE: DC – Circuit Analysis (ELC 101)

COURSE DESCRIPTION: AC – Circuit Analysis This course is a continuation of the dc circuits course, in that it builds on the knowledge acquired there and develops it into an introduction to ac circuits. AC circuit analysis begins with a brief description of ac wave forms, similarities and differences relative to dc, and some of the types of parts used with ac circuits. It goes on to explore more about sinusoidal ac waveforms, characteristics of step transient changes in dc, and pulse waveforms. Circuit responses of RC, RL, and RLC circuits are introduced. Network theorems for ac circuits are covered. Also included are resonance, filters, and pulse response of reactive circuits, and others as time permits.

Credits: 4 includes lab.

COURSE OBJECTIVES:

1. To provide the student with the ac circuit knowledge and skills necessary for future course work in electronics. Assessment is through in-class practice exercises, class discussions, quizzes and tests, and homework.
2. To provide the student with laboratory experiences to help develop ac measurement and analysis skills necessary for future course work. Assessment is through laboratory reports, and demonstrating lab technique such as taking a particular instrument reading, hooking up a particular circuit, or performing a circuit simulation on the computer.

TEXTBOOK: Principles of Electric Circuits (Conventional Current Version),
9th Edition 2010, Thomas L. Floyd, Prentice Hall

THINGS TO HAVE HANDY FOR CLASS:

In addition to the usual class tools, some additional tools will be helpful for this class (particularly for the lab experiments and/or simulations). These are similar to what you may have used in the prerequisite course.

The usual class tools include: textbook, regular notebook (3- ring, spiral or bound are ok), some writing paper (for things done in class and to be handed in), a calculator, and writing tools (pen/pencil/other).

Other tools you will need are: some graph paper (quadrille or other graph paper is ok for most of what we will do) or another means of making a graph from time to time, a straight edge (a ruler should be fine, either 6" or 12", or something in between), and one or two writing tools (such as colored pencils, except red are used for other purposes) that will make it easier to keep track of things as you take notes.

If you don't wish to use colored pencils, other writing tools and/or techniques can be used to make some things distinct from the regular things you are writing or drawing. Some have used the combination of a pencil and a pen. Others have used an array of dashed lines and dotted lines of various types to meet this goal; the dotted and dashed lines take a little longer to draw clearly though, so the pencil and pen, or the colored pencils tend to be easier for most people to work with. Ask me if you have any questions, and I will show you some examples. Anything that will make it easier to keep track of things when we start looking at multiple things in the same circuit or other diagram, will suit this purpose.

COURSE CONTENT:

Textbook Chapters

<u>Chapter</u>	<u>Topic</u>
11	Voltage
12	Capacitors
13	Inductors
14	Transformers
15	RC Circuits
16	RL Circuits
17	RLC Circuits and Resonance
18	Passive Filters
19	Circuit Theorems in AC Analysis
20	Time Response of Reactive Circuits

In class exercises, simulations, and hands on laboratory experiences are aimed at complementing the material in the text, and providing additional clarity and insight.

COURSE CALENDAR:

CLASS MEETING	TOPIC	CHAPTER
1	Basic Concepts for A.C.	11
2	Capacitors	12
3	Inductors	13
4	Exam and Transformers	14
5	RC and RL Circuits	15, 16
6	RL Circuits - Series	17
7	Exam and Parallel RLC Circuits	17
8	Series-Parallel RLC Circuits	17
9	Series-Parallel RLC Circuits (continued)	17
10	Exam	
11	Passive Filters	18
12	Circuit Theorems for A.C.	19
13	Exam	
14	Time Response	20
15	Exam	

CLASS PARTICIPATION AND ATTENDANCE:

As part of preparing for learning, and demonstrating your achievement of learning in this course, doing laboratory experiment assignments, laboratory report assignments, and participation in in-class practice exercises and class discussions, are required.

Therefore, attendance is required. It is understood, that there will be times, due to work, family obligations, serious illness or injury, and the like, that someone may miss a class or two, or a few minutes here and there. It is the student's responsibility to get notes, assignments, etc., in order to catch up with what was covered in class. If you miss part or all of a class for some good reason, you have to leave early, be late or absent, try to get as much of the material before the next class. If you have a classmate who takes good notes and is willing to share them with you in an emergency, this can come in handy. If you are still missing things ask me, I will give you the highlights, readings and other assignment information. While this won't make up for the class work you missed completely, it will help you to not be as far off pace when you get to class. It will also help you to be ready for the next test. In order to prepare for, achieve, and demonstrate this achievement, attendance is required.

FINAL GRADE EVALUATION PLAN:

Your overall performance, in all the areas of this course, is part of this course. If you do your work as described here, in all the areas of the course, the following applies. This means you take the tests, do the labs, participate in the class work and you get your grade based on the weighting given below.

What this also means is that it is not acceptable to skip one of the elements of the class and expect to pass. For example it is not acceptable to just come in for the tests and not participate in class activities. Likewise, it is not acceptable to just write the lab reports without participating with your lab group in doing the experiment. If you do your work the following applies:

Tests: Tests will be of equal weight. The last test will be cumulative, but will have the same weight as the others. No makeup tests will be given. Any test(s) missed will count for a zero on that test.

Quizzes may be given from time to time. These count toward your class work grade (they count less than a test). Their primary function is to give you some practice from time to time, and let you know a little about how you're doing at learning the material, without having the full weight of a full test. (There are no makeup quizzes either.) Quizzes will usually be unannounced (except for the first one).

Laboratory work will be due as stated in class. **Laboratory Reports** will be due at different times for different experiments. For some of the shorter experiments, the report will be due in class the same day as the experiment is performed. For others you will have longer (usually these will be due the next time class meets, or else one week after the experiment is started).

Laboratory Experiments will sometimes involve your doing/demonstrating something, and showing the instructor. For example, your group may be asked to show a particular reading and how you take it, or you as an individual in that group may be asked to show how to hook up something in particular. Generally these labs are fun exercises, but do take care to learn what you need to know to be able to demonstrate these types of things.

Homework is due at the beginning of class on the day stated in class. Handing it in at the end of class or after we have started to go over it, doesn't count as being on time. Unfortunately cutting class to hand it in at the next class doesn't count either.

Tests	80%
Laboratory Performance (experiments and lab reports)	10%
Other Class Work and Homework	10%

All BCC students enrolled in credit courses are entitled to a WebAdvisor account. With WebAdvisor, you may register online, pay your bill, check your schedule, room assignments, and find out what courses you need to take. To find out more about WebAdvisor or to sign up online, visit <http://go.bergen.edu>. While there, please make sure to give us your preferred email address. You'll find directions how to do this at <http://go.bergen.edu/email>