

**Nashville State Community College
Science, Technology, Engineering, and Math
Electrical Engineering Technology**

Master Course Syllabus

EETC 1314 AC Circuits

(This master course syllabus template is a general guide for providing an overview of each course offered at Nashville State. Each instructor will further clarify specific criteria for grading, classroom procedures, attendance, exams and dates, etc. on his/her individual course syllabus. Prompts for individual adaptations are italicized and in parentheses; faculty should remove or replace these prompts when creating master syllabi and their own individual syllabi if they have not been removed previously.)

Course Information:

Course Title: EETC 1314 AC Circuits

Credits: 3

Class Hours: 3

Course Description:

An introductory course in AC circuits. Topics include voltage, current, resistance, and power in AC circuits, series, parallel, and more complex circuits using Kirchhoff's laws and selected network theorems, capacitance and inductance, resonance, transformers and polyphase concepts. Lab exercises include building, measurement, and analysis of AC circuits containing resistance, inductance, and capacitance.

Prerequisite: EETC 1313

Instructor Information:

Name:

Email:

Office Phone:

Office Location:

Office Hours:

Required Textbook(s) & Other Materials:0

Textbook(s): Volume II AC is available free on-line at: [Lessons in Electric Circuits](#)

ISBN:

Reference Materials:

Supplies:

Once enrolled, all students should verify that they have the correct textbook and materials information by consulting the D2L/NS Online shell for the course. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center at 615-353-3721, 615-353-3741, or accesscenter@nsc.edu.

Course Outcomes:

Upon successful completion of this course, students should be able to:

- *Demonstrate an understanding of relationships between voltage, current, resistance, and power in AC circuits.*
- *Analyze AC circuits using phasor algebra theorems.*
- *Demonstrate the proper use of electrical test equipment.*

Course Competencies:

The following are detailed course competencies intended to support the course outcomes:

- apply Ohm's law to solving basic circuit questions
- apply KCL, KVL, Thevenin in solving circuits problems.
- understand the distinction between DC & AC circuits, and how the circuit theory applies to them.
- transfer the knowledge and the understanding to practical applications.
- Construct simple electrical circuits with resistors, capacitors, and inductors
- Properly measure voltage across and current through components
- Measure amplitude and frequency and period with an oscilloscope
- define and illustrate the fundamental AC parameters of cycle, period, frequency, instantaneous value, effective and average values.
- illustrate the phase relationships between waves of the same frequency using time domain.
- define and apply correctly the relationships between peak, peak to peak, average and effective (RMS) values of voltages or current.
- define and use properly the fundamental relationships between voltage and current in individual units of R, L or C, when used with AC.
- define reactance and impedance and use properly the mathematical equations defining the same.
- convert voltages and currents from polar to rectangular form and vice versa.
- calculate the impedance and/or admittance of basic series, parallel and series-parallel circuit involving R, L, and C using A , X_L , X_C and notation.
- demonstrate the ability to convert a wye network to its equivalent delta and vice versa.
- determine the Maximum Power Theorem and be able to apply it.
- define true, apparent and reactive power and show how they are related in the power triangle.
- define resonance and state the general differences between series and parallel resonance.
- define quality, bandwidth, and cut-off frequencies in resonant circuits.
- determine band pass and band stop characteristics of elementary tuned filters.
- express voltage and current relationships in both delta and wye 3-phase balanced systems.
- describe the iron-core transformer and be able to express the voltage, current, power and turns ratio.

- use the turns ratio to determine/select the reflected impedance.

The following are general education competencies intended to support the course outcomes:

Topics to Be Covered:

Week	Date	Location of Information Online text or Handout	Topics	Reading Assignments
	TBA	Volume I Chapter 13	Capacitors	Volume I Chapter 13 (ALL)
	TBA	Volume I Chapter 16	RC time constants	Volume I Chapter 16, sections on Capacitors
	TBA	Volume I Chapter 14	Magnetism and Electromagnetism	Volume I Chapter 14
	TBA	Volume I Chapter 15	Inductors	Volume I Chapter 15 (ALL)
	TBA	Volume I Chapter 16	RL time constants	Volume I Chapter 16, sections on Inductors
	TBA	Volume II Chapter 1 & 2	Basic AC theory and complex numbers	Volume II Chapter 1 & 2
	TBA	Volume II Chapter 3	Inductive Circuits	Volume II Chapter 3
	TBA	Volume II Chapter 4	Capacitive Circuits	Volume II Chapter 4
	TBA	Volume II Chapter 5 & 11 Handouts / Power Point Presentations	R, L and C Circuits Network Theorems and Power Factor	Volume II Chapter 5 & 11
	TBA	Volume II Chapter 9 & 10	Transformers and Polyphase AC Circuits	Volume II Chapter 9 & 10 (ALL)
	TBA	All	<u>Mandatory Final Exam 2 Hours</u> Open Book, open notes, open lab work, open computer, NO OPEN NEIGHBOR!	All

Labs:

- The Oscilloscope
- Capacitors
- A.C. waveforms and phase Angles
- R. L. C. (AC) Series Circuits

- R. L. C. (AC) parallel Circuits
- Resonance
- AC Power

Course Assessments:

The following performance assessments will be used to demonstrate students' understanding, knowledge, and skills:

Knowledge assessments will be given on the lecture and reading material. A written technical report is required on a course related topic. The report is presented in class using Power Point. The presentation is evaluated on a 100 point rubric that is standard for the Electrical Engineering Technology program. Mastery of the material is also evaluated by the successful completion of hands-on labs.

Grading Policy:

Area	Percent
Report	10
Labs	40
Quizzes	20
Final	30
Total	100

Late Work Policy & Make-up Procedures for Missed Assignments and Work:

All work must be completed and turned in by the due date. No work will be accepted after the last class meeting.

Attendance Policy

Students are expected to attend all scheduled classes and laboratories. Absences in a course may affect a student's final grade. The student is responsible for all assigned work in the course regardless of excused or unexcused absences. Tardiness may also affect a student's final grade.

In online courses, attendance is signaled by logging on to the D2L/NS Online shell, participating as prompted (e.g., responding to an instructor's email, posting to a discussion board) and/or completing and submitting assignments. Campus closures do not affect attendance and assignment completion in online courses.

(Each instructor will provide policy, especially how attendance influences student assessment and grading.)

Grading Scale:

Letter Grade	Percentage Range
A	90 – 100
B	80 – 89
C	70 – 79
D	60 – 69

Letter Grade	Percentage Range
F	Less than 60

FA

According to NSCC policy, if a student fails a course, but has not officially withdrawn from the course, and her/his last date of attendance is before the last date to withdraw (*use date appropriate to your section*), the student will receive a grade of FA (i.e., "Failure for Attendance Reasons").

FN

An FN is awarded to students who never attended class.

Technology Statement

Nashville State's classes are considered to be web-enhanced. Faculty have an expectation that students will use a computer and the Internet to complete assignments, engage in online discussions, and access various course materials through D2L/NS Online course shells. Computers are available for student use at each campus during campus open hours.

D2L/NS Online and myNSCC

It is students' responsibility to check D2L/NS Online course shells for all enrolled courses and myNSCC, including student email, on a regular basis. These are the official communication channels between the college and students, who are responsible for the information communicated through those channels. D2L/NS Online contains specific course information and myNSCC contains information important for other purposes.

ADA Compliance Statement

Nashville State complies with the Americans with Disabilities Act (ADA). If you require accommodations for any courses in which you are enrolled, contact the Access Center at 615.353.3741 or 615.353.3721, or e-mail accesscenter@nsc.edu. If you are registered with the Access Center and require an alternate format for the textbook and other course materials, please contact the Access Center.

Classroom Misconduct

Nashville State Community College has a zero-tolerance policy for disruptive conduct in the classroom. Students whose behavior disrupts the classroom will be subject to disciplinary measures. Please review the [Nashville State Student Code of Conduct policy](#). Please be aware that children are not allowed in class or to be left unattended on campus.

Academic Misconduct

Any form of academic dishonesty, cheating, plagiarizing, or other academic misconduct is prohibited. Students are responsible for understanding and abiding by the [Academic Misconduct Policy](#) in the Nashville State Student Code of Conduct. In addition to other possible disciplinary measures that may be applied through regular college procedures as a result of academic dishonesty, the instructor has the authority to assign an "F" or a "zero" for the exercise, paper, or examination, or to assign an "F" for the course. Students may appeal through the appropriate college grade appeal procedures.

Academic Early Alert System

Nashville State Community College uses an Early Alert System to let students know of a faculty member's concern in one or more of these academic areas: lack of attendance, lack of classroom participation, late or missing assignments, and/or poor performance on assignments/tests. *Please note that Early Alerts do not affect a student's academic standing. If you receive an Early Alert email, please see your instructor and your academic advisor as soon as possible.

RAVE Emergency Alert System

Emergency events can happen at any time and Nashville State Community College wants to be able to notify students if and when they occur. For this reason, all students have been enrolled in the free RAVE alert system. If you have not already done so, please log in at <https://www.getrave.com/login/nsc> to confirm and update your contact information and notification preferences. It is critical that your information be correct so that you will receive any emergency notifications. Your RAVE Username is your NSCC email address. If you've never received an email from RAVE with your password, or if you need to reset your password, select "Forgot your password?" and a new password will be emailed to you. Should the RAVE system indicate "user not found", select Register and create your own RAVE account.

Inclement Weather & Campus Closings

Nashville State will use the RAVE alert system to send a text message to students, staff, and faculty about adjusted hours of operation and/or closings at individual campuses. All students should check the Nashville State web site home page at www.nsc.edu for announcements on campus closures, which may vary from campus to campus. Campus closures will also be announced on local television stations. Students should use their own best judgment in determining whether to report to campus during inclement weather when classes are not cancelled.

Even when campuses are closed, students are still responsible for completing all assigned work. When classes are cancelled, faculty will post online assignments and any additional instructions in the D2L/NS Online course shell. Check D2L/NS Online for a message from your instructor regarding your online assignment requirements. Faculty have discretion over adjusting deadlines or due date for assignments, but students are responsible for completing all assigned work by the due date established by the instructor.

Class Cancellation Policy

If the class is cancelled, the instructor will notify all students by posting in the D2L/NS Online course, e-mailing through D2L/NS Online, and/or by posting a sign on the classroom door. In the event of class cancellation, students must access D2L/NS Online to complete classwork and the assignment that will be posted in the course D2L site.