

AC Fundamentals - Electrician

ELTA-120

Spring 2021 Section 50744 2 Credits 01/11/2021 to 03/15/2021 Modified 01/08/2021

Description

A practical approach to calculations of alternating current circuit quantities that an electrician may be required to use in the electrical trade. Impedance and power relationships will be explored for both single and three-phase circuits. (F, Sp)

Requisites

Prerequisite Courses: Minimum 2.0 in (ELTE 110 or ELTE 108) and (minimum 2.5 in (ELTA 106 or MATH 114 or Math Level 5)

Placement Scores: Reading Level 4 and Writing Level 2

Contact Hours

Lecture	16	Lab	32	Other	0	Total Hrs	48
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Student Learning Outcomes

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

- Solve series, parallel and combination dc circuit problems for current, voltage, resistance and power.
- Solve parallel RL, RC and RLC problems for current, voltage, impedance, and power relationships (apparent, real and reactive).
- Use right angle trigonometry to determine phase angle and power factor.
- Calculate the size a capacitor to correct the power factor for a given load.
- Identify and/or calculate line and phase voltages and currents for wye and delta three phase power systems.
- Solve power relationships for three phase loads. Given 2 of the following, determine the other quantities: apparent power (VA), real power (W), reactive power (VAR), phase angle and power factor.

Materials

Other Materials/Resources

Additional handouts provided by section instructor

Tools, Equipment or Apparel (Required of the Student)

Safety glasses

Scientific calculator

Protractor

Delmar's Standard Textbook of Electricity

Author: Stephen Herman

Publisher: Cengage/Delmar Publishers

Edition: 7th (or older)

The current version of the textbook is the 7th edition and is the one sold by the bookstores. You can save money by purchasing the 6th or 5th edition. ISBN's for the books are provided below:

- **7th Edition:**
 - ISBN-10: 1-337-90034-6
 - ISBN-13: 978-1-337-90034-8
- **6th Edition:**
 - ISBN-10: 1-285-85270-2
 - ISBN-13: 978-1-285-85270-6
- **5th Edition:**
 - ISBN-10: 1111539154
 - ISBN-13: 9781111539153

Lab Manual Experiments in Electricity for Use with Lab-Volt

Author: Stephen Herman

Publisher: Cengage/Delmar Publishers

Edition: Most recent (5th) Edition is preferred

- ISBN10: 1111539170
- ISBN13: 9781111539177

This Lab Manual is required for both ELTA 120 and ELTA 155. It is not optional.

✓ Evaluation

Student Electronic Access to Grades

D2L is the College's Course Management System which includes a gradebook function allowing students access to their grades in order to receive timely and meaningful feedback on their progress in the course at any time. These grades will align with the Evaluation Criteria listed in this syllabus. D2L is accessed through the MyLCC page.

Whenever practicable, results for graded items should be posted electronically within 48 hours after the instructor has completed the grading process for the items, and final grades for the course should be entered no later than the specified grading day.

Criteria

Type	Weight	Topic	Notes
Assignments	20%		Homework
Final Exam	30%		
Projects	20%		Lab reports
Quizzes	30%		

Breakdown

College Standard	
College Grading Standards	Recommended Guidelines for Student Grades

4.0 --- Excellent	4.0 --- 91 – 100%
3.5 --- -----	3.5 --- 86 – 90%
3.0 --- Good	3.0 --- 81 – 85%
2.5 --- -----	2.5 --- 76 – 80%
2.0 --- Satisfactory	2.0 --- 71 – 75%
1.5 --- -----	1.5 --- 66 – 70%
1.0 --- Poor	1.0 --- 60 – 65%
0.0 --- -----	0.0 --- 0 – 59%

* Course Policies

Class Attendance/Participation

Other

Extra Credit

Extra credit may be available in this course. This information is provided by the section instructor.

Institutional Policies

Academic Success Coaches

At Lansing Community College, student success is our top priority. Our Academic Success Coaches mentor students to help them meet their educational, personal and career goals. LCC faculty or staff may refer you to an Academic Success Coach if they recognize that mentoring or assistance may be helpful to you. Please monitor your LCC email for referral notifications. Your participation in academic success coaching is voluntary.

In addition, we encourage you to contact an Academic Success Coach on your own if you need help, guidance or assistance to reach your goals. To contact an Academic Success Coach, call (517) 483-1422, email lcc-successteam@star.lcc.edu (<mailto:lcc-successteam@star.lcc.edu>), or visit the [Academic Success Coaching Team website \(https://www.lcc.edu/admissions-financial-aid/get-started/success-coaches.html/\)](https://www.lcc.edu/admissions-financial-aid/get-started/success-coaches.html/) for more information.

Disability Statement

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Center for Student Access, Gannon Building, Star Zone - Center for Student Support, via the [Center for Student Access website \(https://lcc.edu/services/access/\)](https://lcc.edu/services/access/), or by calling (517) 483-5323 as soon as possible to better ensure that such accommodations are implemented in a timely fashion.

Enrollment Verification

Class attendance and participation are essential to student success. Instructors will update class rosters by the 8th day after the start date of sections less than 8 weeks long, and by the 15th day after the start date of sections 8 weeks or longer to accurately reflect student enrollment in each course. Students who have not attended by these dates may be administratively dropped and responsible for any required tuition and fee charges.

Nondiscrimination Statement

Lansing Community College is committed to providing equal employment opportunities and equal education for all persons regardless of race, color, sex, age, religion, national origin, creed, ancestry, height, weight, sexual orientation, gender identity, gender expression, disability, familial status, marital status, military status, veteran's status, or other status as protected by law, or genetic information that is unrelated to the person's ability to perform the duties of a particular job or position or that is unrelated to the person's ability to participate in educational programs, courses services or activities offered by the college.

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies: Equal Opportunity Officer, Washington Court Place, 309 N. Washington Square Lansing, MI 48933, 517-483-1730; Employee Coordinator 504/ADA, Administration Building, 610 N. Capitol Ave. Lansing, MI 48933, 517-483-1875; Student Coordinator 504/ADA, Gannon Building, 411 N. Grand Ave. Lansing, MI 48933, 517-483-1885; Sarah Velez, Human Resource Manager/Title IX Coordinator, Administration Building, 610 N. Capitol Ave. Lansing, MI 48933, 517-483-1874; Christine Thompson, Student Title IX Coordinator, Gannon Building, 411 N. Grand Ave. Lansing, MI 48933, 517-483-1261.

Student Code of Conduct and General Rules and Guidelines

LCC supports a positive learning environment that provides opportunities for student success. The College recognizes the value and importance of a safe and orderly learning environment that encourages honesty, integrity, and ethical conduct. The [Student Code of Conduct and General Rules and Guidelines \(https://lcc.edu/academics/documents/pdf-policies/catalog-student-rules-and-guidelines.pdf\)](https://lcc.edu/academics/documents/pdf-policies/catalog-student-rules-and-guidelines.pdf) ensure the protection of student rights and the health and safety of the College community, as well as aid in the efficient operation of College programs. In addition, the College has established procedures for addressing reports of alleged violations.

It is the responsibility of the student to be familiar with, and abide by, the Student Code of Conduct, as well as the General Rules and Guidelines. Furthermore, the instructor may establish reasonable guidelines within the classroom environment. Violations of the Student Code of Conduct and General Rules and Guidelines may be reported to the [Office of Student Compliance \(mailto:lcc-osc@lcc.edu\)](mailto:lcc-osc@lcc.edu).

Transfer Potential

For transfer information, please consult the LCC [Transfer webpage \(https://lcc.edu/academics/transfer/\)](https://lcc.edu/academics/transfer/). In addition, the [Michigan Transfer Network website \(https://www.mitransfer.org/\)](https://www.mitransfer.org/) allows students the ability to search courses and discover how those courses transfer to colleges and universities statewide.

The Michigan Transfer Agreement (MTA) simplifies the transfer of students from one Michigan institution to another. For the most current information, see the LCC [General Education webpage \(https://www.lcc.edu/academics/catalog/general-education/index.html\)](https://www.lcc.edu/academics/catalog/general-education/index.html).

For additional transfer information contact the Academic Advising Center in the Gannon Building - Star Zone, (517) 483-1904.

Compliance with COVID-19 Safety Precautions

All students, employees and visitors have a part to play in keeping the LCC community safe. Everyone entering campus is required to adhere to the safety measures as outlined on the [Spring Refresh 2021 webpage \(https://www.lcc.edu/coronavirus/index.html\)](https://www.lcc.edu/coronavirus/index.html). Reports of noncompliance will be submitted to the Student Compliance Office for appropriate action. Students with questions or concerns should email student.concerns@star.lcc.edu.

Media Release Statement

Photographs, pictures, slides, movies, video, or other media coverage of students may be taken for College-related business, in connection with their enrollment or participation in LCC activities without compensation from LCC, its Trustees, officers, directors, employees, students and agents of each of them, and photographs, pictures, slides, movies, video, or other media coverage of students may be used for any legal purposes.

Additional Items

Course Practices

ASSIGNMENTS/QUIZZES/TESTS:

Students are expected to submit all assignments and take all quizzes according to the Schedule (or make other arrangements well in advance of the Scheduled due date). Failure to do so may result in academic penalty or withdrawal from the class. Missing a scheduled activity for any reason, including illness or late registration, in no way relieves the student of the responsibility for completing all work in the course to the satisfaction of the instructor according to the approved Schedule. The student is responsible for taking tests at the approved time and place and for submitting assignments on time. Students must notify the instructor of any reasons for missing a due date and submit a new schedule of due dates for instructor's approval. If a student misses any due dates for activities, it is the student's responsibility to contact the instructor.

ATTENDANCE:

Students in On-Campus sections should attend class regularly. For On-Line students, though there are no scheduled class sessions, students are expected to check e-mail, Angel course sites, bulletin boards and/or other web sites on a regular basis, as indicated by the instructor. All students should be able to access the internet and e-mail at least 3 times a week, and preferably daily. If the student must be off-line or miss class for more than a week, he or she should contact the instructor. Even when the instructor is notified of time away from Internet access, this in no way relieves the student of the responsibility for completing all work in the course to the satisfaction of the instructor. When the student cannot respond to e-mail or otherwise attend class or participate in class exercises due to illness or extenuating reasons which the student feels appropriate, the student has the responsibility to notify the instructor. This can be done by sending e-mail or calling the department office. **If continued attendance is not possible**, it is the student's responsibility to drop the course within the dates and conditions defined in the schedule book in order to receive a withdrawal "W" rather than a "0" grade.