WIST-103 – AC Fundamentals

Technology

Effective Term & Year: Fall 2022
Course Outline Review Date: 2026-03-01

Program Area: Information Technology

Description:

This course provides the foundation required for the understanding of all electronic circuits with Alternating Current (AC) sources. The characteristics of various AC waveforms are discussed and measured. The concepts and calculations of reactive values are emphasized. The student will study the response to AC of various circuit configurations and apply this knowledge to the analysis of Resistor Capacitor (RC), RL, and RLC circuits. Various practical applications of circuit configurations are explored. Theory is reinforced with hands-on practice and exposure to troubleshooting techniques.

Program Information:

This course is required to complete the Wireless Systems Technician program.

Delivery Methods: Hybrid – On-campus (Face-to-Face) and Online

Credit Type: College of the Rockies Credits

Credits: 4

Instructional Activity and Hours:

Activity	Hours
Classroom, Directed Studies or Online Instruction	75
Seminar/Tutorials	
Laboratory/Studio	75

Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	150

Course Requisites:

- Earned a minimum grade of C- (55%) in each of the following:
  - WIST102 – DC Fundamentals (4)

Flexible Assessment: Yes

In some cases students may be able to apply for recognition of prior learning outside the classroom. This flexible assessment process provides equivalent course credit. It is a rigorous process that may include external evaluation, worksite assessment, demonstration, standardized test, self-assessment, interview, products/portfolio, and challenge exam, or other measures as appropriate. Tuition fees apply. Contact an education advisor for more information.

Course Transfer Credit:

For information about receiving transfer credit for courses taken at other BC institutions, please see http://www.bctransferguide.ca. All requests for course transfer credit from institutions in BC or elsewhere should go to the College of the Rockies Enrollment Services office.

Textbook Resources:

Textbook selection varies by instructor and may change from year to year. At the Course Outline Effective Date the following textbooks were in use:

Floyd, Thomas and Buchla, David. *Electronic Fundamentals: A System Approach*.

Buchla, David. *Experiments in DC/AC Fundamentals*.

Wireless Systems Technician program Level 1 Package

Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.

Learning Outcomes:

Upon the successful completion of this course, students will be able to

- describe the differences of voltage, current, energy and power in AC versus DC;
- explain sinusoidal and non-sinusoidal waveform characteristics and values;
- apply basic circuit laws to analyze resistive circuits with AC inputs;
- measure the various characteristic values of AC circuits with test equipment;
- use phasor diagrams to analyze AC circuits;
- measure the response of various RC, RL, and RLC circuits;
- analyze the response of various RC RL, and RLC circuits;
- describe the resonant characteristics of RLC circuits and their applications;
- construct and measure basic filter configurations;
- measure and analyze the pulse response of reactive circuits;
- measure and analyze basic transformer circuits; and
- troubleshoot faults in AC circuits.

Course Topics:

- AC Circuits
- Sinusoidal and Non-Sinusoidal Wave Forms
- AC Inputs
- RC, RL and RLC Circuits
- Basic Filter Configurations
- Reactive Circuits

See instructor's syllabus for the detailed outline of weekly readings, activities and assignments.

Evaluation and Assessments

Assessment Type: On-Campus (face-to-face) and Online, or Hybrid

Assessment Type	% of Total Grade
Lab Test 1	5%
Lab Test 2	5%
Lab Test 3	5%
Lab Test 4	10%
Lab Test 5	15%
Theory Tests (x4 @10% each)	40%
Final Exam	20%

Total 100%

Grade Scheme

A+	A	A-	B+	B	B-	C+	C	C-	D	F
>=90	89-85	84-80	79-76	75-72	71-68	67-64	63-60	59-55	54-50	<50

Pass requirements: None

Evaluation Notes: A grade of “D” grants credit, but may not be sufficient as a prerequisite for sequential courses.

Evaluation Notes Comments:

Please see the instructor’s syllabus for specific classroom policies related to this course, such as details of evaluation, penalties for late assignments and use of electronic aids.

Exam Attendance:

Students must attend all scheduled exams at the appointed time and place. Instructors may approve an alternate exam to accommodate an illness or personal crisis. Department heads will consider other written requests. Any student who misses a scheduled exam without prior approval will receive a “0” on the exam.

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)
- Policy 2.5.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Equivalent Course(s) and Course Code Changes

Prior Course Code: AUST 103

Course Changes:

The College of the Rockies updates course outlines regularly to meet changing educational,

employment and marketing needs. The instructor will notify students in writing of any updates to this outline during the semester. The instructor reserves the right to revise, add or delete material while meeting the learning outcomes of this course outline.