



WIST-102 – DC 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, including basic electrical principles and components. The concepts of the basic quantities of charge, voltage, current, resistance, energy and power are developed. The student will use Ohm's law, Kirchhoff's Voltage law and Kirchhoff's Current law to analyze series, parallel and series-parallel Direct Current (DC) circuits. Additional analysis tools such as Thevenin's theorem and maximum power transfer are also covered. DC test equipment will be used for measurements. General troubleshooting strategies and techniques are introduced, with emphasis on methods used to isolate faults in an efficient and logical manner. Students will apply these principles to troubleshoot problems in series, parallel and series-parallel DC circuits. Electromagnetism is also introduced. Theory is reinforced with hands-on practice.

Program Information:

This course is required for the first year of 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	90
Seminar/Tutorials	
Laboratory/Studio	90
Practicum/Field Experience	
Co-op/Work Experience	
Other	
Total	180

Course Requisites:

- Earned a minimum grade of C- (55%) in each of the following:
 - [WIST101](#) – Technical Skills (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*.

Buchlaj, 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

- define charge, voltage, current, resistance, energy and power;
 - interpret component labelling;
 - recognize schematic symbols in a DC circuit;
 - measure voltage, current and resistance using DC test equipment;
 - use metric prefixes to express electronic values;
 - analyze series, parallel and series-parallel DC circuits using Ohm's law, Kirchoff's Voltage law and Kirchoff's Current law;
 - apply Thevenin's theorem, superposition, maximum power transfer theorem and several other theorems to DC circuits;
 - analyze resistor-capacitor (RC) and resistor-inductor (RL) DC circuits;
 - troubleshoot and isolate faults within basic electrical circuits; and
 - explain the basic principles of magnetic fields, electromagnetism and electromagnetic induction.
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Course Topics:

- Voltage, Current, Resistance, Energy, Power
- DC Circuits
- Ohm's Law, Kirchoff's Voltage Law, Kirchoff's Current Law
- Thevenin's Theorem
- Basic Electrical Circuits
- Magnetic Fields, Electromagnetism

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	10%
Lab Test 3	10%
Lab Test 4	10%

Lab Test 5	5%
Theory Test (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 102

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.