



WIST-104 – Electronic Circuits

Technology

Effective Term & Year: Fall 2022

Course Outline Review Date: 2027-03-01

Program Area: Information Technology

Description:

This course provides the theoretical and practical knowledge necessary for the student to install, maintain, and troubleshoot circuits which employ integrated semiconductor devices. The electronic devices covered are: diodes, rectifiers, bipolar junction transistors, field effect transistors, solid state switching devices, photosensitive devices, operational amplifiers, timers and voltage regulators. Practical circuits which employ these devices are also studied. Theory is reinforced with hands on practical skills in this course.

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	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:
 - **WIST103** – AC 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 Systems Approach*.

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

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 basic structure of semiconductors and how they conduct current;
- analyze practical applications of integrated semiconductor components/devices;
- describe the characteristics and biasing of a diode; describe the basic operation of five special purpose diodes and describe their applications;
- analyze the operation of a half-wave rectifier and full-wave rectifier; describe the operation of power supplies;
- describe the basic structure and operation of a bipolar junction transistor;
- explain the operation of a BJT class A amplifier and a differential amplifier;
- troubleshoot amplifier circuits; analyze summing amplifiers, averaging amplifiers and scaling amplifiers;
- analyze a class B amplifier and two types of FET amplifier configurations;
- analyze a transistor switching circuit; draw a schematic diagram from a working circuit;
- describe the basic structure and operation of JFETS and MOSFETS;
- describe the theory and analyze the operation of several types of oscillators;
- describe the effects of negative feedback on the basic op-amp configuration;
- explain the basic operation of a comparator circuit;
- describe the operation of series and shunt regulators;
- effectively use technical service manuals; and
- solder and un-solder thru-hole components on printed circuit boards

Course Topics:

- Semiconductor Devices
- Diodes
- Rectifiers
- Bipolar Junction Transistors
- Field Effect Transistors
- Solid State Switching Devices
- Photosensitive Devices
- Integrated Semiconductor Devices
- Operational Amplifiers, Timers and Voltage Regulators
- Soldering Techniques

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	10%
Lab Test 2	10%
Lab Test 3	20%

Theory Tests (x3 @ 10% each)	30%
Final Exam	30%
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 104

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.