

## OFFICIAL UNDERGRADUATE COURSE OUTLINE FORM

**Note:** The University reserves the right to amend course outlines as needed without notice.

|  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
|--|-----------|--|----|--|----|--|--|--|--|--|--|--------------------|-----------|---|--|
| <b>Course Code and Number:</b> ELTR 100  |           | <b>Number of Credits:</b> 3 <a href="#">Course credit policy (105)</a>   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Course Full Title:</b> Electrical Network Analysis: Direct Current  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Course Short Title:</b> Elec. Network Analysis: DC  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Faculty:</b> Faculty of Applied and Technical Studies   |           | <b>Department (or program if no department):</b> Electronics   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Calendar Description:</b><br>Covers fundamentals of electricity and electronics related to direct current electricity. Concepts and principles related to the understanding of passive and active components, devices, and circuits are covered. Students will learn to build, analyze, and troubleshoot circuits using typical technician work bench equipment such as multimeters and power supply units. |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Prerequisites (or NONE):</b>  |           | Admission to the Electronics Technician certificate.   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Corequisites (if applicable, or NONE):</b>  |           | NONE   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Pre/corequisites (if applicable, or NONE):</b>  |           | NONE   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Antirequisite Courses</b> <i>(Cannot be taken for additional credit.)</i><br>Former course code/number:<br>Cross-listed with:<br>Equivalent course(s):<br><i>(If offered in the previous five years, antirequisite course(s) will be included in the calendar description as a note that students with credit for the antirequisite course(s) cannot take this course for further credit.)</i>              |           | <b>Course Details</b><br>Special Topics course: <b>No</b><br><i>(If yes, the course will be offered under different letter designations representing different topics.)</i><br>Directed Study course: <b>No</b><br><i>(See <a href="#">policy 207</a> for more information.)</i><br>Grading System: <b>Letter grades</b><br>Delivery Mode: <b>May be offered in multiple delivery modes</b><br>Expected frequency: <b>Fall only</b><br>Maximum enrolment (for information only): <b>36</b> |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Typical Structure of Instructional Hours</b> <table border="1"> <tr> <td>Lecture/seminar</td> <td>35</td> </tr> <tr> <td>Supervised laboratory hours (design lab)</td> <td>15</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td><b>Total hours</b></td> <td><b>50</b></td> </tr> </table>  |           | Lecture/seminar  | 35 | Supervised laboratory hours (design lab) | 15 |  |  |  |  |  |  | <b>Total hours</b> | <b>50</b> | <b>Prior Learning Assessment and Recognition (PLAR)</b><br>PLAR is available for this course. |  |
| Lecture/seminar  | 35        |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| Supervised laboratory hours (design lab)   | 15        |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
|  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
|  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
|  |           |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Total hours</b>   | <b>50</b> |  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Scheduled Laboratory Hours</b><br>Labs to be scheduled independent of lecture hours: <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes  |           | <b>Transfer Credit</b> <i>(See <a href="#">bctransferguide.ca</a>.)</i><br>Transfer credit already exists: <b>No</b><br>Submit outline for (re)articulation: <b>No</b><br><i>(If yes, fill in <a href="#">transfer credit form</a>.)</i>   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Department approval</b>   |           | <b>Date of meeting:</b> November 9, 2021   |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Faculty Council approval</b>  |           | <b>Date of meeting:</b> November 18, 2021  |    |  |    |  |  |  |  |  |  |                    |           |   |  |
| <b>Undergraduate Education Committee (UEC) approval</b>  |           | <b>Date of meeting:</b> January 28, 2022   |    |  |    |  |  |  |  |  |  |                    |           |   |  |

**Learning Outcomes** *(These should contribute to students' ability to meet program outcomes and thus Institutional Learning Outcomes.)*

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

1. Analyze the characteristics of and relationship between basic electrical quantities (resistance, current, voltage, charge, power).
2. Explain the differences and relationships between different circuit types (series, parallel, series-parallel).
3. Safely and competently operate power supply.
4. Safely and competently operate measurement equipment.
5. Employ common network theorems and analysis techniques for circuit analysis (superposition, maximum power transfer, Kirchhoff's Laws, Thevenin's theorem, Norton's theorem, mesh current analysis, nodal analysis).
6. Design, analyze, and test basic linear networks.
7. Explain how alternating voltage is generated.

**Recommended Evaluation Methods and Weighting** *(Evaluation should align to learning outcomes.)*

|             |     |                |     |   |
|-------------|-----|----------------|-----|---|
| Final exam: | 40% | Quizzes/tests: | 30% | % |
|             | %   | Lab work:      | 30% | % |

**Details:**

**NOTE:** The following sections may vary by instructor. Please see course syllabus available from the instructor.

**Texts and Resource Materials** *(Include online resources and Indigenous knowledge sources. [Open Educational Resources](#) (OER) should be included whenever possible. If more space is required, use the [Supplemental Texts and Resource Materials form](#).)*

| Type        | Author or description | Title and publication/access details | Year |
|-------------|-----------------------|--------------------------------------|------|
| 1. Textbook | Russell L. Meade      | Foundations of Electronics           | 2017 |
| 2.          |                       |                                      |      |
| 3.          |                       |                                      |      |
| 4.          |                       |                                      |      |
| 5.          |                       |                                      |      |

**Required Additional Supplies and Materials** *(Software, hardware, tools, specialized clothing, etc.)*

Breadboard, safety glasses, needle-nose pliers, ESD wristband.

**Course Content and Topics**

- Basic concepts of electricity
- Electrical quantities, electrical components
- Ohm's Law, Kirchhoff's Laws, series circuits, parallel circuits, series-parallel circuits
- Network theorems, networks analysis techniques (Thevenin's Theorem, Norton's Theorem, mesh analysis, maximum power theorem, nodal analysis)
- Measuring instruments
- Inductor, capacitor and RLC circuits analysis