# COURSE OUTLINE: ELR311 - RESEARCH REPORT

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Approved: Martha Irwin - Dean

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| **Course Code: Title** | ELR311: RESEARCH REPORT |
| **Program Number: Name** | 4029: ELECTRICAL TY-PROCES |
| **Department:** | ELECT./INSTRUMENTATION PS |
| **Academic Year:** | 2025-2026 |
| **Course Description:** | The Research Report is intended to demonstrate that the student can function at the Engineering Technology level. The course involves research, design, implementation, management and reporting on a project as agreed upon by the faculty advisor. |
| **Total Credits:** | 3 |
| **Hours/Week:** | 3 |
| **Total Hours:** | 42 |
| **Prerequisites:** | ELR232, ELR320, MTH577 |
| **Corequisites:** | There are no co-requisites for this course. |
| **Vocational Learning Outcomes (VLO's) addressed in this course:**<br><br>**Please refer to program web page for a complete listing of program outcomes where applicable.** | **4029 - ELECTRICAL TY-PROCES**<br>VLO 1 Analyze, interpret, and produce electrical and electronics drawings, technical reports including other related documents and graphics.<br>VLO 2 Analyze and solve complex technical problems related to electrical systems by applying mathematics and science principles.<br>VLO 3 Design, use, verify, and maintain instrumentation equipment and systems.<br>VLO 4 Design, assemble, test, modify, maintain and commission electrical equipment and systems to fulfill requirements and specifications under the supervision of a qualified person.<br>VLO 6 Design, assemble, analyze, and troubleshoot electrical and electronic circuits, components, equipment and systems under the supervision of a qualified person.<br>VLO 7 Design, install, analyze, assemble and troubleshoot control systems under the supervision of a qualified person.<br>VLO 8 Use computer skills and tools to solve a range of electrical related problems.<br>VLO 9 Create, conduct and recommend modifications to quality assurance procedures under the supervision of a qualified person.<br>VLO 10 Prepare reports and maintain records and documentation systems.<br>VLO 11 Design, install, test, commission and troubleshoot telecommunication systems under the supervision of a qualified person.<br>VLO 12 Apply and monitor health and safety standards and best practices to workplaces.<br>VLO 13 Perform and monitor tasks in accordance with relevant legislation, policies, procedures, standards, regulations, and ethical principles.<br>VLO 14 Configure installation and apply electrical cabling requirements and system |

| | | grounding and bonding requirements for a variety of applications under the supervision of a qualified person. |
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| | VLO 16 | Select and recommend electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person. |
| | VLO 17 | Apply project management principles to contribute to the planning, implementation, and evaluation of projects. |
| **Essential Employability Skills (EES) addressed in this course:** | EES 1 | Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience. |
| | EES 2 | Respond to written, spoken, or visual messages in a manner that ensures effective communication. |
| | EES 3 | Execute mathematical operations accurately. |
| | EES 4 | Apply a systematic approach to solve problems. |
| | EES 5 | Use a variety of thinking skills to anticipate and solve problems. |
| | EES 6 | Locate, select, organize, and document information using appropriate technology and information systems. |
| | EES 7 | Analyze, evaluate, and apply relevant information from a variety of sources. |
| | EES 8 | Show respect for the diverse opinions, values, belief systems, and contributions of others. |
| | EES 9 | Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. |
| | EES 10 | Manage the use of time and other resources to complete projects. |
| | EES 11 | Take responsibility for ones own actions, decisions, and consequences. |
| **Course Evaluation:** | Passing Grade: 50%, D<br><br>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation. | |
| **Other Course Evaluation & Assessment Requirements:** | Students must participate and contribute to their project while working in a team environment to pass the course.<br><br>Students must achieve a minimum of 50% in the Individual Contribution to Project and Team Success evaluation criteria to be considered to have actively participated and acceptably contributed to a project.<br><br>Grade<br>Definition Grade Point Equivalent<br>A+ 90 - 100% 4.00<br>A 80 - 89%<br>B 70 - 79% 3.00<br>C 60 - 69% 2.00<br>D 50 - 59% 1.00<br>F (Fail)49% and below 0.00<br><br>CR (Credit) Credit for diploma requirements has been awarded.<br>S Satisfactory achievement in field /clinical placement or non-graded subject area.<br>U Unsatisfactory achievement in field/clinical placement or non-graded subject area. | |

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X A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.
NR Grade not reported to Registrar`s office.
W Student has withdrawn from the course without academic penalty.

**Course Outcomes and Learning Objectives:**

| Course Outcome 1 | Learning Objectives for Course Outcome 1 |
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| 1. Research and prepare technical reports. | 1.1 Utilize common resources (libraries, internet, etc.) to research technical topics/design information.<br>1.2 Write a project proposal for the conduct of a technical/research project identifying tasks and responsibilities.<br>1.3 Prepare, organize, and deliver a technical presentation of a proposed project to the faculty advisor and class.<br>1.4 Write a technical report to a specified format within specified deadlines.<br>1.5 Appropriately document sources of information to APA (or other suitable) publication standards.<br>1.6 Communicate information effectively by producing and maintaining current, clear, and accurate documentation of the project using logbooks, reports, drawings, and other related documentation, and produce a technical report on the project so that it may be repeated by an electrical technician or technologist. |

| Course Outcome 2 | Learning Objectives for Course Outcome 2 |
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| 2. Demonstrate proficiency in project management and participate in project activities. | 2.1 Select, price, order and expedite delivery of material/equipment.<br>2.2 Organize and schedule construction and commissioning of a project.<br>2.3 Maintain a project logbook documenting project task progression and commissioning/testing processes and results.<br>2.4 Participate in accomplishing project goals and interact effectively in a team environment.<br>2.5 Demonstrate reliability and assume responsibility for one`s own tasks in a team environment.<br>2.6 Participate effectively in project progress meetings and write project logbook entries. |

| Course Outcome 3 | Learning Objectives for Course Outcome 3 |
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| 3. Construct and demonstrate a technical project. | 3.1 Prepare functional specifications for proposed project.<br>3.2 Prepare drawings as required to construct project.<br>3.3 Interpret manufacturer drawings and specifications.<br>3.4 Identify, interpret, and apply applicable safety policies and regulations such as lab safety policies, WHMIS, etc.<br>3.5 Select and utilize appropriate personal protective equipment (PPE) as required for project activities.<br>3.6 Utilize necessary tools/equipment/materials required to construct project.<br>3.7 Complete work according to a given schedule.<br>3.8 Troubleshoot and revise initial design (commissioning) as required to produce a working project. |

| Evaluation Process and Grading System: | Evaluation Type | Evaluation Weight |
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| | Individual Contribution to Project and Team Success | 20% |
| | Project Demonstration | 30% |
| | Project Final Report | 35% |
| | Project Proposal and Presentation | 15% |

| **Date:** | August 1, 2025 |
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| **Addendum:** | Please refer to the course outline addendum on the Learning Management System for further information. |