COURSE OUTLINE

ELR311

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Course Code: Title	ELR311: RESEARCH REPORT
Program Number: Name	4029: ELECTRICAL TY-PROCES
Department:	ELECT./INSTRUMENTATION PS
Semester/Term:	18W
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 and reporting on project as agreed upon by the Faculty advisor.
Total Credits:	3
Hours/Week:	3
Total Hours:	45
Prerequisites:	ELR232, ELR320, MTH577
Vocational Learning Outcomes (VLO's): **Please refer to program web page for a complete listing of program outcomes where applicable.**	**4029 - ELECTRICAL TY-PROCES** #1. Analyze, interpret, and produce electrical and electronics drawings, technical reports including other related documents and graphics. #2. Analyze and solve complex technical problems related to electrical systems by applying mathematics and science principles. #3. Design, use, verify, and maintain instrumentation equipment and systems. #4. Design, assemble, test, modify, maintain and commission electrical equipment and systems to fulfill requirements and specifications under the supervision of a qualified person. #6. Design, assemble, analyze, and troubleshoot electrical and electronic circuits, components, equipment and systems under the supervision of a qualified person. #7. Design, install, analyze, assemble and troubleshoot control systems under the supervision of a qualified person. #8. Use computer skills and tools to solve a range of electrical related problems. #9. Create, conduct and recommend modifications to quality assurance procedures under the supervision of a qualified person. #10. Prepare reports and maintain records and documentation systems. #11. Design, install, test, commission and troubleshoot telecommunication systems under the supervision of a qualified person. #12. Apply and monitor health and safety standards and best practices to workplaces. #13. Perform and monitor tasks in accordance with relevant legislation, policies, procedures, standards, regulations, and ethical principles.

	#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. #16. Select and recommend electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person. #17. Apply project management principles to contribute to the planning, implementation, and evaluation of projects.
Essential Employability Skills (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. #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication. #4. Apply a systematic approach to solve problems. #5. Use a variety of thinking skills to anticipate and solve problems. #6. Locate, select, organize, and document information using appropriate technology and information systems. #8. Show respect for the diverse opinions, values, belief systems, and contributions of others. #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals. #10. Manage the use of time and other resources to complete projects. #11. Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	
Other Course Evaluation & Assessment Requirements:	Grade Definition Grade Point Equivalent A+ 90 - 100% 4.00 A 80 - 89% B 70 - 79% 3.00 C 60 - 69% 2.00 D 50 - 59% 1.00 F (Fail) 49% and below 0.00 CR (Credit) Credit for diploma requirements has been awarded. S Satisfactory achievement in field /clinical placement or non-graded subject area. U Unsatisfactory achievement in field/clinical placement or non-graded subject area. 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.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Daily Log Book and meetings	10%
Final Project Report	40%
Hardware and software construction-development	20%
Project Demonstration	20%
Project Plan Report	10%

Course Outcomes and Learning Objectives:

Course Outcome 1.

Research and prepare a technical report.

Learning Objectives 1.

Utilize common resources (libraries, internet...) to research technical topics/design information.
Write a technical report to a specified format within specified deadlines.
Appropriately document sources of information to APA (or other suitable) publication standards.
Provide sufficient documentation to allow an Electrical Technician or Technologist to easily repeat the project.

Course Outcome 2.

Demonstrate proficiency in project management

Learning Objectives 2.

Select, price, order and expedite delivery of material/equipment.
Organize and schedule construction and commissioning of a project.
Participate in project (progress) meetings.

Course Outcome 3.

Construct and Demonstrate a technical project.

Learning Objectives 3.

Prepare functional specifications for proposed project.
Prepare drawings as required to construct project.
Interpret manufacturers` drawings and specifications.
Utilize necessary tools/equipment/materials required to construct project.
Complete work according to a given schedule.
Troubleshoot and revise initial design (commissioning) to produce a working project.
Produce sufficient documentation to allow repetition of results.

Date: Monday, December 18, 2017

Please refer to the course outline addendum on the Learning Management System for further information.