# Clackamas Community College

Online Course/Outline Submission System

☑ Show changes since last approval in red | Print | Edit | Delete | Back

ERM-102 Electricity Fundamentals in the Utility Industry

General education certified: ○ Yes ◉ **No**

- ☐ Writing
- ☐ Oral Communication
- ☐ Arts and Letters
- ☐ Science & Computer Science
- ☐ Mathematics
- ☐ Social Science
- ☐ Cultural Literacy
- ☐ Health & Physical Education

☐ Approved Date (mm/dd/yyyy): 03 / 06 / 2015 Submit

**Section #1 General Course Information**

**Department:** Energy & Utility Resource Management

**Submitter**

First Name: Shelly
Last Name: Tracy
Phone: 0945
Email: shellyt

**Course Prefix and Number:** ERM - 102

**# Credits:** 3

**Contact hours**

Lecture (# of hours): 33
Lec/lab (# of hours):
Lab (# of hours):
Total course hours: 33

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

**Course Title:** Electricity Fundamentals in the Utility Industry

**Course Description:**

Focus on generation sources of electricity, transmission, and final delivery to the consumer. Examine basic principles of alternating and direct current as it affects electrical flow. Research and report on strategies/components of the electrical industry.

---

**Type of Course:** Career Technical Preparatory

**Is this class challengeable?**

**Yes**

**Can this course be repeated for credit in a degree?**

**No**

**Is general education certification being sought at this time?**

**No**

**Does this course map to any general education outcome(s)?**

**Yes**

**Check which General Education requirement:**

✓ **Writing**
✓ **Oral Communication**
✓ **Arts and Letters**
✓ **Science & Computer Science**
✓ **Mathematics**
✓ **Social Science**

**Is this course part of an AAS or related certificate of completion?**

**Yes**

**Name of degree(s) and/or certificate(s):** Energy & Utility Resource Management AAS & Certificate

**Are there prerequisites to this course?**

**Yes**

**Pre-reqs:** Pass RD-090 with a C or better or placement in RD-115; pass MTH-060 with a C or better or placement in MTH-065; pass WR-095 with a C or better or placement in WR-121; pass CS-090 with a C or better or placement in CS-120.

**Have you consulted with the appropriate chair if the pre-req is in another program?**

**No**

**Are there corequisites to this course?**

**No**

**Are there any requirements or recommendations for students taken this course?**

**No**

**Are there similar courses existing in other programs or disciplines at CCC?**

**No**

**Will this class use library resources?**

**Yes**

**Have you talked with a librarian regarding that impact?**

**No**

**Is there any other potential impact on another department?**

**No**

**Does this course belong on the Related Instruction list?**

**No**

**GRADING METHOD:**

A-F Only

**Audit: Yes**

**When do you plan to offer this course?**

**✓ Winter**

**Is this course equivalent to another?**

If yes, they must have the same description and outcomes.

**No**

**Will this course appear in the college catalog?**

**Yes**

**Will this course appear in the schedule?**

**Yes**

**Student Learning Outcomes:**

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

1. demonstrate knowledge of different electrical energy sources, generation, distribution, and management methods and their impact on the Northwest's environment, economics, and community;

2. recognize and describe a variety of current and future job and career opportunities to provide, manage, develop, and protect resources in the electricity industry;
3. define electric energy industry-specific and resource management concepts, terminology, and reference resources;
4. inquire and research topics related to the electric industry,
5. disseminate information including dissect information, observations, opinions, and experiences;
6. identify specific areas of individual interest and ability,
7. identify areas for further personal development (knowledge, skill, competencies) to participate in the energy and resource management field;
8. research and report on a topic related to generation, distribution, transmission, and application of electric energy in the Northwest Projects to be presented in a public forum;
9. organize and implement a field activity to explore generation, distribution, transmission, application, and management of electric energy and resources in the Northwest.

**AAOT/ASOT GENERAL EDUCATION OUTCOMES**

**COURSE OUTLINE MAPPING CHART**

**Mark outcomes addressed by the course:**

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

***As a result of completing the AAOT/ASOT general education requirements, students will be able to:***

**WR: Writing Outcomes**

**P** 1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.

**P** 2. Locate, evaluate, and ethically utilize information to communicate effectively.

**P** 3. Demonstrate appropriate reasoning in response to complex issues.

**SP: Speech/Oral Communication Outcomes**

**P** 1. Engage in ethical communication processes that accomplish goals.

**P** 2. Respond to the needs of diverse audiences and contexts.

**P** 3. Build and manage relationships.

**MA: Mathematics Outcomes:**

1. Use appropriate mathematics to solve problems.

**P** 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

**AL: Arts and Letters Outcomes**

1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.

**P** 2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

**SS: Social Science Outcomes**

1. Apply analytical skills to social phenomena in order to understand human behavior.

**P** 2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

**SC: Science or Computer Science Outcomes**

**P** 1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.

**P** 2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.

**P**

3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

---

**Outcomes Assessment Strategies:**

✓ **General Examination**
✓ **Writing Assignments**
✓ **Presentations**
✓ **Industry Standards**
✓ **Thesis/Research Project**

:

**Major Topic Outline:**

Accomplish through critical thinking, reasoning, and deduction:
1. Overview of Course: Introduction to Concepts and Issues.
2. Energy Horizon History of Power in Northwest.
3. Basic Energy and Electricity Science.
4. Electric Energy: Power as “Useful Work”.
5. Generation, Distribution & Transmission.
6. Management Methods.
7. Resources & Technology.
8. Infrastructure, Life Cycle Assessment/Life Cycle Costs.
9. Challenges and Opportunities.
10. Leading Edge and Future Technologies.
11. Enhanced Traditional and Renewable.
12. Management Issues including:
a. Regulatory.
b. Deregulation.
c. Utility Organization Structures.
d. Social Impacts.
e. Safety.
f. Economic.
g. Environment.
h. Power Quality (Reliability).
i. Incentives for Change.

**Does the content of this class relate to job skills in any of the following areas:**

| | |
|---|---|
| 1. Increased energy efficiency | **Yes** |
| 2. Produce renewable energy | **Yes** |
| 3. Prevent environmental degradation | **Yes** |
| 4. Clean up natural environment | **Yes** |
| 5. Supports green services | **Yes** |

Percent of course: 60%

**First term to be offered:**

**Next available term after approval**
:

---