**MT3.832 Energy and Sustainability**

Linn-Benton Community College – Spring 2020

3 Credit Hours

**Instructor: Ken Dickson-Self** **Office hours:** Online meetings available

Office: IA-112A **Phone:** 541-917-4942 (forwards to mobile)

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## REQUIRED TEXTS AND TOOLS

1. No required text. All class materials provided through [Moodle](https://moodle.linnbenton.edu/login/index.php).

**METHOD OF INSTRUCTION:** Online via Moodle, forum discussions, video presentations

**COURSE DESCRIPTION:**

Students will learn the fundamental concepts and skills related to energy efficiency and sustainability in industrial plants and commercial office buildings. Discussion of alternative energy courses including wind, solar, bio-mass and small scale nuclear is included in this course. Student learn to conduct a level 1 energy audit using testing tools like IR thermographic devices. The interaction of the laws of thermodynamics, environmental economics, and technical operations are analyzed.

**COURSE OUTCOMES:**

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

* Conduct a Level 1 energy audit
* Determine return on investment for a level 1 audit
* Create an energy efficiency and sustainability plan

**GRADING**

Final Grade Calculation:

|  |  |  |
| --- | --- | --- |
| **Letter Grade** | **Percentage** | **Performance** |
| A | 90-100% | Excellent Work |
| B | 80-89% | Good Work |
| C | 70-79% | Average Work |
| D | 60-69% | Poor Work |
| F | 0-59% | Failing Work |

Final Grade: Determined by the following breakdown:

Energy Audit 30%

Online discussions and assignments 40%

Efficiency & Sustainability Plan 30%

100%

Assignments, Late Work and Attendance: All assignments will be **typed** and turned-in via Moodle. Late assignments lose 10% of possible points for every *portion* of a day they are late.

**ENERGY AUDIT**

As technicians, we often know our facility better than anyone else, so it makes sense for us to perform internal audits. For this assignment, you’ll conduct a walk-through, Level 1 energy audit of either your home or workplace. Once you have completed your audit, you will type a short report with your finds and suggested improvements.

**ONLINE DISCUSSIONS AND ASSIGNMENTS**

I will be posting articles and questions in the Moodle forums. Most weeks, you will be asked to read the article and respond to the question(s), then you will also respond to your peers’ responses. Every week you will have to respond to the given question(s) before seeing anyone else’s comments. Once you’ve answered the question(s), you must then respond to at least one other person’s answer. It’s okay to agree or disagree, but give your reasoning. This is your opportunity to practice professional communication. These online conversations account for a large part of your grade. You will not succeed in this class by “trolling” or being rude in the forums. Thank you for being respectful and professional.

You may be given an assignment to complete, rather than a discussion in some weeks.

**EFFICIENCY AND SUSTAINABILITY PLAN**

For effective change around the ways we use energy, you will create a plan to combine energy efficiency and sustainable practices. This plan may build off of the suggested improvements you made during your audit, or you may delve deeper into a specific topic. Special attention will be given to efficiency gains, environmental impact, return on investment, and payback period.

**LBCC EMAIL AND COURSE COMMUNICATIONS**

You are responsible for all communications sent to your LBCC email account. You are required to use your LBCC-provided email account for all email communications at the College. You may access your LBCC student email account through [Student Email](http://linnbenton.edu/lbcc-email).

**DISABILITY AND ACCESS STATEMENT**

Students who may need accommodations due to documented disabilities, who have medical information which the instructor should know, or who need special arrangements in an emergency should speak with their instructor during the first week of class. If you believe you may need accommodations but are not yet registered with the Center for Accessibility Resources (CFAR), please visit the CFAR Website for steps on how to apply for services or call 541-917-4789.

**ACADEMIC HONESTY**  
Students are expected to follow [LBCC policies](http://www.linnbenton.edu/current-students/administration-information/policies/students-rights-responsibilities-and-conduct) regarding academic integrity as articulated in the Students’ Rights Responsibilities and Conduct Policy. Students found to be involved in academic dishonesty will receive an F (failing grade) in this course.

**STATEMENT OF INCLUSION**

To promote academic excellence and learning environments that encourage multiple perspectives and the free exchange of ideas, all courses at LBCC will provide students the opportunity to interact with values, opinions, and/or beliefs different than their own in safe, positive and nurturing learning environments. LBCC is committed to producing culturally literate individuals capable of interacting, collaborating and problem-solving in an ever-changing community and diverse workforce.

**TITLE IX REPORTING POLICY**

If you or another student are the victim of any form of sexual misconduct (including dating/domestic violence, stalking, sexual harassment), or any form of gender discrimination, LBCC can assist you. You can report a violation of our sexual misconduct policy directly to our Title IX Coordinator. You may also report the issue to a faculty member, who is required to notify the Coordinator, or you may make an appointment to speak confidentially to our Advising and Career Center by calling 541-917-4780.

**CHANGES TO THE SYLLABUS**

I reserve the right to change the contents of this syllabus due to unforeseen circumstances. You will be given notice of relevant changes in class or through LBCC e-mail.

**POSITIVE PARTICIPATION:**

Positive participation includes being on time, demonstrating a self-starting attitude, regular attendance, respecting the rights of others to learn, behaving like decent people, and contributing to an effective learning situation in the classroom.

**SCHEDULE – These are a list of topics, but the order is very likely to change**

|  |  |  |
| --- | --- | --- |
| **Week** | **Topic of the week** | **Work Due** |
| 1 | Syllabus, Intro to energy use | Forum 1 |
| 2 | Environmental economics | Forum 2 |
| 3 | Energy audits | Forum 3 |
| 4 | Audits, Personal and Commercial | Forum 4 |
| 5 | Wind and solar power | Forum 5 |
| 6 | Biomass, biodiesel, geothermal | Audit Assignment |
| 7 | Nuclear, tidal, hydrogen | Forum 6 |
| 8 | Vehicle efficiency | Forum 7 |
| 9 | Critical thinking, cradle-to-cradle | Forum 8 |
| 10 | Final project | Energy and Sustainability Plan |