**MT3.847: HVAC System Controls**

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**

1. Modern Refrigeration and Air Conditioning, 20th Edition Textbook
2. Access to [Moodle](https://moodle.linnbenton.edu/login/index.php)

**COURSE DESCRIPTION**

This will introduce the student to HVAC ducting systems and the operation of digital (DDC) controls. Students will learn about using the DDC system as an aid in troubleshooting, promoting energy efficiency, and indoor air quality in building systems and clean-room operations.

**COURSE OUTCOMES**

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

1. Use the DDC system to promote energy efficiency, and indoor air quality.
2. Troubleshoot DDC systems.
3. Maintain DDC systems promote safe operations of DDC systems.

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

**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:

Chapter Review Questions 40%

Discussion forums 20%

DDC Trainer lab (or select topic essay) 40%

 100%

**CHAPTER REVIEW QUESTIONS**

Read Chapters 16, 17, 27, 28, 29, 30, 33, 35, and 45 in Modern Refrigeration and Air Conditioning (20th Ed.) and answer all Review Questions at the end of the chapters.

I have a copy of the book available that you can borrow for up to three days at a time (so that other students can also borrow it, if necessary). Submit answers through Moodle.

**DISCUSSION FORUMS**

I will be posting articles, videos, and questions in the forums. Every week, 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.

**DDC TRAINER LAB (OR ESSAY)**

This course uses an HVAC controls trainer, which you may check-out in order to complete the labs. This training device is big (about the size of a large suitcase), expensive, and delicate. In order to complete the labs, you must meet me at school (or other place in Albany of your choosing) to take possession of the trainer. You will then wire the trainer via ethernet cable to your own Windows laptop. You must sign for the trainer and return it in working condition to avoid being charged for the device. You will also receive a lab notebook. The notebook will take you through the tasks of setting up the trainer to operate. I have four trainers, and they would each be sanitized before and after each use. The trainer could be checked-out for up to two weeks, and you can plan to spend 4-6 hours working to complete the lab.

If you don’t have a Windows laptop or do not desire to jump through the COVID-19 hoops to pick up a trainer, you can write an essay on a related topic. The essay will be 8-10 pages long and include at least four resources. You must contact the instructor BEFORE beginning the essay to get approval of your topic idea. Essays submitted without approval will not receive credit. Whether lab or essay, you can start these assignments early!

**ASSIGNMENTS, LATE WORK AND ATTENDANCE**

Chapter review question responses will be **typed** and turned-in via Moodle. Late assignments lose 10% of possible points for every *portion* of a day they are late.

**LBCC EMAIL AND COURSE COMMUNICATIONS**

Email is the primary method of communication for this class. 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](https://www.linnbenton.edu/current-students/student-support/center-for-accessibility-resources/) 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/faculty-and-staff/administrative-information/policies/board-policies-and-administrative-rules/7000-series-student-services/) 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.

**SCHEDULE – These are just possible topics and the order will likely change**

|  |  |  |
| --- | --- | --- |
| **Week** | **Topic of the week** | **Work Due** |
| 1 | Syllabus, Intro to digital controls | Forum 1 |
| 2 | Electrical systems | Forum 2 |
| 3 | Relays | Forum 3 |
| 4 | Motor problems | Forum 4 |
| 5 | Equivalent temperatures | Forum 5 |
| 6 | Review questions due | Chapter Review Questions |
| 7 | Psychrometrics | Forum 6 |
| 8 | Air quality | Forum 7 |
| 9 | Air distribution | Forum 8 |
| 10 | Lab or essay due | DDC Lab or Essay |