

# Electrical and Electronic Systems

Winter Term 2022; CRNs 34771, 34799

CST/HVE 116

Lab meets MTWH; 7AM - 10:50AM; Room AT-H 106

Instructor: Barry Payton; Email: [paytonb@linnbenton.edu](mailto:paytonb@linnbenton.edu) ; Phone 541-917-4943

Office hours: 11am - 12pm, TWH, or by appointment

Join Zoom Meeting: <https://linnbenton.zoom.us/j/97213995449>

*“There is no Glory in practice; but without practice there is no Glory”*

## **\*CLASSROOM REQUIREMENTS FOR ALL STUDENTS AND FACULTY DUE TO COVID-19:**

**Linn-Benton Community College has established rules and policies to make the return to the classroom as safe as possible. It is required for everyone to follow all of the campus rules and policies. To participate in this class, LBCC requires all students to comply with the following:**

### **MASKS REQUIRED AT ALL TIMES IN THE CLASSROOMS AND LABS**

- **Wear a mask or face covering indoors at all times. Your mask or face covering must be properly worn (fully covering nose and mouth and tight-fitting). Mesh masks, face shields, or face covering that incorporates a valve designed to facilitate easy exhalation are not acceptable. If you have a medical condition or a disability that prevents you from wearing a mask or cloth face covering, you must obtain an accommodation from CFAR (Center for Accessibility Resources) to be exempt from this requirement.**

**[\\*Link to LBCC COVID-19 Information Page here\\*](#)**

**Heavy Equipment/Diesel Department Policy: Failure to wear face coverings in the classrooms, shop, and labs that cover mouth and nose at all times can result in you being removed from the Class or Lab for that day, after the 2nd warning. Continued failure to wear face coverings after being removed from the class for a day may result in removal from all Lab Classes for the remainder of term.**

### **The Textbooks:**

- CDX Automotive bundle, consisting of: Fundamentals of Medium/Heavy Duty Commercial Vehicle Systems, ISBN: 978-1-284-04116-3; Fundamentals of Medium/Heavy Duty Diesel Engines: 978-1-284-06705-7; and internet access pass (two year)
- Pocket Ref, ISBN: 978-1-885071-62-0

**Course Outcomes:** In this class you will explore the theory, diagnosis, service, and repair for the electrical and electronic

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systems found in modern heavy equipment. All the learning activities of the class are designed to improve your ability to practice and perform these **Course Outcomes**:

1. Follow safe shop practices. **Safety is first, last, and always.**
2. Identify the electrical safety hazards found in mobile equipment.
3. Read electrical schematics and symbols.
4. Troubleshoot electrical power systems (starting and charging systems).
5. Troubleshoot lighting, control, and accessory circuits.
6. Interpret electrical schematics and diagrams.

**Course Schedule:** Reading assignments; homework assignments; quizzes and tests and will be due according to the course assignment schedule. The instructor reserves the right to change the schedule as needed to match the class progress in the subject matter. **The E&E CDX Assignment Schedule is found in your CDX Calendar**

## Class Expectations:

1. **Be prepared to be spoken to frankly.**
2. Be on time to class.
3. Be prepared for class: assignments completed, reading completed, bring your Personal Protective Equipment (PPE), Snap-On DMM, tool bag and issued contents, and laptop/tablet.
4. Participate in classroom and lab discussions.
5. Complete all assignments; and turn in to the Assignment Inray on time.
6. Actively demonstrate and practice appropriate professional, and respectful behavior.
7. Mute cell phones and all other electronics: all devices are to be off and out of sight; unless being actively used as directed by the instructor.
8. Be academically honest and have integrity.

## Required uniform, supplies, and Personal Protective Equipment (PPE):

1. Laptop or tablet PC (Cell phone alone is not adequate!) equipped with the technical capabilities to access the CDX online materials; and with a screen size large enough to adequately view the animations and videos in the materials.
2. Electronic calculator, standalone. **Cell phones are not allowed during quizzes and tests.**
3. Clipboard; sized to hold 8.5" w x 11" h papers (one issued)
4. Pocket flashlight
5. Safety glasses: Must meet ANSI Z87.1 standards as a minimum requirement (one pair was issued)
6. Ear protection: Ear plugs or ear muffs are not required; but highly recommended
7. Closed toed leather work shoes
8. Two (2) Snap-On uniform shirts, or the student's sponsoring company's uniform shirt

## Recommended Uniform Additions (Not required, but strongly recommended)

1. Closed toed leather work shoes with protective toe. Composite toe is preferred over steel toe as it is non-conductive to electricity.
2. Coveralls in good repair (two pair will be issued)

**Proper Wear of the Uniform:** Properly wearing the uniform is required in the classroom and shop areas while participating in the program. Shirt and trousers shall be clean at the start of class. The uniform shirt shall be tucked into the trousers. The uniform shirt shall be properly buttoned. The uniform shirt shall be worn in the classroom. Coveralls are not a replacement

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for the uniform shirt in the classroom. Coveralls shall be worn in the shop areas and during lab exercises. Hats with bills shall be worn with the bill facing forward. For more information on proper uniform care, wear, and expectations; see the “John Mann Professionalism Videos [Part I](#) and [Part II](#)”; and see the “Professional Shop Practices” section below.

**Preparation and Participation:** Come to every class on time; bring a laptop and charger; and have the assigned reading and homework assignments completed. Be ready to actively participate in all class discussions, exercises, and lab activities.

**Cell Phones and Other Electronic Devices:** *Cell phones, tablets, laptops, PCs and other electronic sources of information will be specifically identified for use if and only if; and only when needed for the specific individual evaluation activity.* As a rule, your cell phone must be out of sight at all times during class and turned to “silent”/“mute”/etc. If you must take or make a call, step outside the classroom and return when finished. See Appendix E in the Student Handbook.

**Lectures and Notes:** Take large amounts of handwritten notes during lectures and presentations. Handwritten notes in the student’s personal handwriting are allowed to be used as references for tests and quizzes; unless otherwise stated at the start of the exercise. Completed homework exercises are not considered notes. If the homework assignment content is desired to be used as a future reference, transcribe the desired information into personal, handwritten notes.

**Homework Assignments:** Homework and reading assignments are due and must be turned into the Assignment Inray on or before 7:00am on the date due. **\*\*\* NO LATE WORK WILL BE ACCEPTED \*\*\*** Homework, labs, reading assignments, quizzes, tests, and all other class work will be due according to the assignment schedule as posted in the Class Google Folder. *Students are responsible for requesting any work missed due to tardiness or absence.*

**Quizzes, Tests, and Other Academic Activities:** Use of hand written notes in the student’s personal handwriting are permitted during quizzes and tests. Use a standalone electronic calculator during quizzes and tests. *Cell phones are not allowed during quizzes and tests.* All answers to homework assignments, quizzes, and tests must be legible: if the instructor can’t read the answer, the answer is wrong. The homework, quizzes, tests and other administrative activities reinforce the abilities to follow instructions and improve knowledge retention, among other skills. There will be regular scheduled and random quizzes throughout the class.

**Lab Safety:** Safety glasses will be worn at all times in the active lab environment. Safety glasses must meet ANSI Z87.1 standards as a minimum requirement. No equipment is to be used, or work performed, unless an instructor or instructor assistant is present. Some equipment in the classroom, lab, and shop requires special certification, license(s), training and/or other unique prerequisites before use. Contact lenses are not safe, even under safety glasses, and are not recommended. You must at all times maintain safe work habits and practices while in class and during lab exercises.

**Lab Exercises:** Lab exercises present the opportunity to **REPEATEDLY** exercise the skills and techniques to perform the professional skills presented in class and lab in a controlled environment. Practical application of skills in this controlled setting is designed to reinforce the techniques needed to perform these activities through repetition. A skill that is practiced well is retained well.

**Housekeeping:** Keep the classroom and all work areas clean and organized as possible. At the end of the class and lab session the classroom and lab work areas will be cleaned; tools and shop equipment cleaned and returned to their proper storage locations; and the AT-H building shared common areas will be cleaned and tidied.

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**Attendance:** Attendance in class is recorded each class period. Tardiness is recorded as a component of Attendance. Being late to class; or returning late from class breaks is being Tardy. Being Tardy two times to class; or returning late from class breaks, equals one Absence. (Tardy definition: delayed beyond the expected or proper time : late).

Attendance policy for this class is: If you will be late or absent to a class: send an email to the instructor; and leave a voicemail message on his office phone. Attendance is a component of the Professional Shop Practices portion of the class grade. See also: “**The Heavy Equipment/Diesel Department Absences Policy**” detailed in the section below.

## **The Heavy Equipment/Diesel Department Absences Policy**

**Absences Policy: Four undocumented absences in this 10 week class shall result in a 10% reduction in the term grade for material nonparticipation. Eight undocumented absences in this 10 week class shall result in an automatic course grade of "F" for material nonparticipation. Two “Tardy Events” equal one Absence. (Tardy definition: delayed beyond the expected or proper time : late).**

**Only absences covered through the Center for Accessibility Resources documentation, or DOCUMENTED emergency absences (for yourself only) will be excused. Job conflicts, inclement weather, oversleeping, car trouble, travel delays, traffic jams, traffic citations, child care issues, and other minor life events are not considered emergencies.**

**Absence Documentation must be physically handed to the instructor within five (5) business days (Monday through Friday) of the recorded absence for it to be excused.**

**For further information see also:**

[7000 Series Administrative Rules - Student Affairs](#)

**Professional Shop Practices:** Professional Shop Practices are also known as “Employability Skills”, “Professional Work Habits”, “Soft Skills” and many other names. Professional Shop Practices include, but are not limited to: Proper wearing of the student uniform; attendance; time management; punctuality; teamwork; effective communication; attention to details; determination; good manners and etiquette; the proper use of tools, following procedures and specifications; cleanliness and housekeeping, to include shop stewardship, tool care, storage and security; and many other “soft skills” that employers value. You must be present and in class to earn a Professional Shop Practices grade for that day. Professional Shop Practices comprises 10% of the class grade.

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**SPONSORED STUDENTS MUST COMPLETE THE FOLLOWING ADDITIONAL COURSE OR COURSES TO EARN A PASSING GRADE IN THIS CLASS BY THE START OF 10TH WEEK OF THE TERM. FOLLOW THE APPROPRIATE LINK BELOW FOR THE SPECIFIC ASSIGNMENTS:**

**John Deere C and F Students** must complete and pass assigned JDU C and F courses to earn a passing grade in this course. See [JDU C and F Courses](#) list in student files google drive, or seek out a hard copy from John Alvin. It is the individual student's responsibility to submit proof of completion of required classes.

**John Deere Agricultural Students** must complete and pass assigned JDU AG Courses to earn a passing grade in this course. See [JDU AG Courses](#) list in student files google drive; or seek out a hard copy from John Alvin. It is the individual student's responsibility to submit proof of completion of assigned required classes.

**Pape Kenworth Students** must complete and pass assigned JDU courses to earn a passing grade in this course. See [Kenworth Courses](#) list in student files google drive; or seek out a hard copy from John Alvin. It is the individual student's responsibility to submit proof of completion of assigned required classes.

Here is the link of the folder containing the documents:

<https://drive.google.com/drive/folders/11TWxr7mB0CACYuQrekjD1kbUBqWFDm8y?usp=sharing>

## Grading System Breakdown:

- Homework and Quizzes .....30% of final grade
- Lab Activities / Professional Shop Practices, .....40% of final grade
- Midterm, .....10% of final grade
- Final Exam.....10% of final grade
- Employability Skills/Professional Shop Practices.....10% of final grade
- Absences ..... **4 absences = -10% of final grade**
- Failure to complete assigned JDU courses will result in an "F" Grade. (John Deere CT and AG students only)
- Students sponsored by companies other than John Deere and Kenworth may also be required by their sponsoring company to complete online and/or other required training similar to that of the John Deere CT and AG; and the Kenworth students. These expectations may be required this Winter term 2020.

**Lab activities are graded using the NATEF Style Lab Evaluation Performance Standard:**

**0 - No Exposure:** no information or practice provided during the program; complete training required.

**1 - Exposure only:** General information provided with no practice time; close supervision needed; additional training required.

**2 - Limited practice:** Has practiced job during training program; additional training required to develop skill

**3 - Moderately skilled:** Has performed job independently during the training program; limited additional training may be required.

**4 - Skilled:** Can perform job independently with no additional training.

At the end of the term you will receive one of these letter grades.

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**A = 90 - 100%**

**B = 80 - 89%**

**C = 70 - 79%**

**D = 60 - 69%**

**F = 59% and Below**

**W - Withdraw;** student must select this grade prior to the last day of the seventh week of the term. If you decide you must exercise this option, do not wait until the last minute. Contact Registration to confirm the exact details of this decision. To receive a tuition refund, financial aid, and Veterans programs, other criteria affect the exact date and implications to the student: contact the appropriate department well before this general deadline.

### **Learning Styles and Resources**

During lecture sessions we will use lecture, discussion, multi-media presentations, PowerPoint presentations, videos, photos, and many other means to present materials.

If you are having difficulty with any of the concepts or procedures in this course, or have a preferred learning style, do not hesitate to talk with me. I am available for consultation or tutoring and will work with you to explore the many resources available to make your education more successful.

The Learning Center located on the Albany main campus is an excellent resource for improving your skills as a lifelong learner. It is a location dedicated to study and doing homework. They have dedicated staff available for questions and tutoring, computers, mini courses on study skills, and a more. They will help you with any subject you are taking at LBCC, not just the courses offered in your major field of study..

Computer Labs are available on the Albany; Corvallis, Lebanon, and Sweet Home campus locations. There are two desktop computers setup and connected to a printer in the Diesel building lobby. These two computers are dedicated for student use.

Center for Accessibility Resources: RCH-105: Students who may need accommodations due to documented disabilities, or who have medical information which the instructor should know, or who need special arrangements in an emergency, should speak with the instructor during the first week of class. If you believe you may need accommodations, but are not yet registered with CFAR, please go to <http://linnbenton.edu/cfar> for steps on how to apply for services or call 541-917-4789.

Personal Conduct: Students will behave in a manner that promotes learning and is respectful of all individuals. The shop rules documents and uniform expectations documents are being revised at the time of typing this edition of the syllabus. These new shop rules and uniform expectations will be officially discussed at the time the final draft of the documents is finalized and approved.

**Horseplay is dangerous in a shop setting, and will not be tolerated at any time!**

Frustration and Anger Management: It is only natural to become frustrated when the project you're working on does not cooperate. Learn to "walk away and cool off"; re-think what you're doing; regain composure; and ask for help or advice. Above all else, be professional. Uncontrolled anger can lead to unsafe work habits, which are not tolerated.

Under the Influence of Intoxicants: Due to the inherent danger of the shop areas, any student suspected of being under the influence of intoxicants will be asked to leave the shop area.

### **LBCC Comprehensive Statement of Nondiscrimination**

The link to the page is found here: <http://www.linnbenton.edu/current-students/administration-information/policies/equal->

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[opportunity/statement-of-nondiscrimination](#)

## Request for Special Needs or Accommodations

Direct questions about or requests for special needs or accommodations to the LBCC Disability Coordinator, RCH-105, 6500 Pacific Blvd. SW, Albany, Oregon 97321, Phone [541-917-4789](tel:541-917-4789) or via Oregon Telecommunications Relay TTD at [1-800-735-2900](tel:1-800-735-2900) or [1-800-735-1232](tel:1-800-735-1232). Make sign language interpreting or real-time transcribing requests 2-4 weeks in advance. Make all other requests at least 72 hours prior to the event. LBCC will make every effort to honor requests. LBCC is an equal opportunity educator and employer.

## LBCC Comprehensive Statement of Nondiscrimination

LBCC prohibits unlawful discrimination based on race, color, religion, ethnicity, use of native language, national origin, sex, sexual orientation, gender, gender identity, marital status, disability, veteran status, age, or any other status protected under applicable federal, state, or local laws. For further information see Board Policy P1015 in our [Board Policies and Administrative Rules](#). Title II, IX, & Section 504: Scott Rolen, CC-108, 541-917-4425; Lynne Cox, T-107B, 541-917-4806, LBCC, Albany, Oregon. To report: [linnbenton-advocate.symplicity.com/public\\_report](http://linnbenton-advocate.symplicity.com/public_report)

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I \_\_\_\_\_ have read the syllabus for “Electrical & Electronic Systems”, CST 116 for Construction & Forestry or HVE 116 for Heavy Equipment/Diesel. I understand the course syllabus contents and agree to comply with its details and instructions.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Student X-Number

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