

Oklahoma State University Institute of Technology
Face-to-Face Common Syllabus
Spring 2018

ECNT 1233 ELECTRICAL MOTORS AND CONTROLS

An in-depth study of single phase, 3-phase, and DC motors; stop/start stations; forward and reverse; hard and soft start and ladder diagrams are taught.

Course Purpose:

The purpose of the course is to familiarize the student with:

1. How to work safely with electricity.
2. How to read and understand basic motor control schematics.
3. How to read and understand a voltmeter, ohmmeter and ammeter
4. How motor controls are used in practical applications.
5. How to wire and diagnosis electrical motor systems.

Type of course: Theory/Lab

Credit Hours: 3; Total hours of theory per semester: 37; Total hours of lab for the semester: 38;

Class length: Full Semester

Class days and times: MW OR TR 9:30 – 11:55

Prerequisites: ECNT - 1103

Instructor Name: Val Peterson

Instructor Phone: (918) 293-4743

Office: Bldg. 600, Rm. 117

Instructor email: val.peterson@okstate.edu

Contact: My preferred method of contact is email. Please allow 24-48 hours to return your correspondence during the normal work week.

Instructor's Office Hours: 1st half of semester MTWR 7:30 to 9:15 am and 2:30 to 3:00 pm; 2nd half of the semester MTWR 2:30-3:00 pm

School Name: Construction Technologies **Division's Main Phone:** 918-293-4742

REQUIRED TEXT, REFERENCES, AND MATERIALS

Texts: Understanding Basic Motor Controls, Mike Holt, IBSN# 9780986353406;
ECNT 1233 & ETDE 1343 Supplemental Handout, Jimmy Jones

References: NEC 2017, NFPA 70, ISBN # 978-145591277-3 & UGLY'S 2017, IBSN# 9781284119367

Materials: Notebook, Pens, Pencils, & Calculator

Uniform/Tools: Closed toe shoes, Tools as required by ECNT 1253

Estimated Cost for Materials: \$ 50.00

Estimated Cost for Uniform/Tools: N/A (tools are listed and purchased for ECNT 1253)

Optional Resources: NEC Index Tabs, 2017 Edition #NECTAB2017

Upon completion of the course, students should:

Course Objectives	Assessment of Objectives
1233-1. (Motors & Controls) Work safely with Electricity	Exams, Assignments, Labs
1233-2. (Motors & Controls) Read and draw electrical wiring diagrams	Exams, Assignments, Labs
1233-3. (Motors & Controls) Read and Understand a voltmeter, ohmmeter and ammeter	Exams, Assignments, Labs
1233-4. (Motors & Controls) Identify internal components of electrical devices relating to Motors & Controls	Exams, Assignments, Labs
1233-5. (Motors & Controls) Perform Ohm's law calculations	Exams, Assignments, Labs
1233-6. (Motors & Controls) Determine transformer capabilities by Performing Transformer calculations	Exams, Assignments, Labs
1233-7. (Motors & Controls) Select overload heaters, replacement motors and starting components	Exams, Assignments, Labs
1233-8. (Motors & Controls) Demonstrate the ability to wire and diagnosis electrical motor systems	Exams, Assignments, Labs

Aspects of the course objective assessments may be used in the university's assessment of student learning. If applicable, an asterisk (*) above indicates this course is used in the university assessment program.

COURSE ACTIVITIES

In this course students will:

- How to work safely with Electricity.
- How to read and understand basic motor control schematics.
- How to read and Understand a voltmeter, ohmmeter and ammeter
- How motor controls are used in practical applications.
- How to wire and diagnosis electrical motor systems.

EVALUATION - GRADES WILL BE BASED ON THE QUALITY AND COMPLETION OF THESE TASKS:

Participation	20%
Quiz	20%
Lab/Unit Exam	40%
Final Exam	10%
Final Lab	10%
Total	<u>100%</u>

OSUIT Grading Scale
A = 90%-100%
B = 80%-89%
C = 70%-79%
D = 60%-69%
F = 59% & below

*The student's grade for this assignment will be used in the university's assessment of student learning. A 70% competency or higher receives a Pass rating. This Pass/Fail rating is independent of the student's course grade.

Daily and/or weekly quizzes, small weekly assignments and similar type projects: Normal return time to student by next class meeting or no later than one (1) week.

Extensive assignments, large lab projects, extensive quizzes, exams and similar type projects: Normal return time to students in one (1) to two (2) weeks.

RECOMMENDED STUDENT COMPETENCIES/SKILLS

N/A

AUTHORIZED TOOLS

Students will use tools that are purchased for ECNT 1253, no additional tools will be required

LATE WORK

No late work will be accepted, unless arrangements have been made prior to the due date.

TESTING

Refer to "Academic Dishonesty" section of Syllabus Attachment

OTHER LAB AND CLASSROOM POLICIES

Students are expected to abide all safety rules during lab projects. No cell phones or laptops are allowed in classroom or lab except for specific times set by instructor.

SYLLABUS ATTACHMENT

View the Syllabus Attachment, which contains other important information, by visiting http://osuit.edu/center/student_syllabus_information

Course Schedule			
Course Outline Schedule	Topic	Assignment	Due
Day 1 1/4 & 8/2018	Introductions, Review Syllabus & Course expectations	Supplemental Handout, Pages 1 thru 9	Next Class
Day 1 Week 2	Basic Electro-Magnetism review & Motor Action	Supplemental Handout, Pages 9 thru 17 & 24 thru 27	Next Class
Day 2 Week 2	Single & Poly-Phase Motors	Supplemental Handout, Pages 17 thru 24	Next Class
Day 1 Week 3	Motor Nameplate Info, Power Factors & Efficiencies	Classroom Discussion, Reading Assignment Unit 1 and 2 Mike Holt Textbook	Next Class
Day 2 Week 3	Basics of Control Circuits	Unit 3, Mike Holt Textbook	Next Class
Day 1 Week 4	Electrical Drawings & symbols; Review for Test	Review for Test on Supplemental Handout & Units 1, 2, & 3	Next Class
Day 2 Week 4	Test (Supplemental Handout & Units 1, 2, & 3)	Lab 1 & 2 (Supplemental handout)	Next Class
Day 1 Week 5	Lab 1 & 2 (Supplemental handout)	Units 4, 5, & 6 Mike Holt Text	Next Class
Day 2 Week 5	Motor Control Schematics and Devices	Units 4, 5, & 6 Mike Holt Text	Next Class
Day 1 Week 6	Motor Control Schematics and Devices; Review for test Units 4, 5, & 6	Review for Test Units 4, 5, & 6 Mike Holt Text	Next Class
Day 2 Week 6	Test Units 4, 5, & 6	Lab 3, & 4 (Supplemental Handout)	
Day 1 Week 7	Lab 3, & 4 (Supplemental Handout)	Lab 3, & 4 (Supplemental Handout)	Next Class
Day 2 Week 7	Lab 3, & 4; Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Next Class
Day 1 Week 8	Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Next Class
Day 2 Week 8	Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Review for test; Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Next Class
Day 1 Week 9	Test; Motor conductor & Protection (Supplemental Handout & Annex B Mike Holt Text)	Lab 5 & 6 (Supplemental Handout)	Next Class

Day 2 Week 9	Lab 5 & 6 (Supplemental Handout)	Lab 5, 6, 7 & 8 (Supplemental Handout)	Next Class
Day 1 Week 10	Lab 5, 6, 7 & 8 (Supplemental Handout)	Lab 7 & 8 (Supplemental Handout)	Next Class
Day 2 Week 10	Lab 7 & 8 (Supplemental Handout)	Lab 9 (Supplemental Handout)	Next Class
Day 1 Week 11	Lab 9 (Supplemental Handout)	Reversing Controls (Units 11, 12, 13, & 14 Mike Holt Text)	Next Class
Day 2 Week 11	Reversing Controls (Units 11, 12, 13, & 14 Mike Holt Text)	Lab 10 & 11 (Supplemental Handout)	Next Class
Day 1 Week 12	Lab 10 & 11 (Supplemental Handout)	Lab 10 & 11 (Supplemental Handout)	Next Class
Day 2 Week 12	Lab 10 & 11 (Supplemental Handout)	Jogging Controls (Hand-Off-Auto)	Next Class
Day 1 Week 13	Jogging Controls (Hand-Off-Auto)	Lab 12 & 13 (Supplemental Handout)	Next Class
Day 2 Week 13	Lab 12 & 13 (Supplemental Handout)	Lab 14 & 15 (Supplemental Handout)	Next Class
Day 1 Week 14	Review Units 11, 12, 13, & 14 for Test	Lab 14 & 15 (Supplemental Handout)	Next Class
Day 2 Week 14	Test Units 11, 12, 13, & 14	Review Final Exam Written	Next Class
Day 1 Week 15	Final Exam Written	Review Lab Final	Next Class
Day 2 Week 15	Lab Final	N/A	N/A

Quiz could be given any time & will be on subjects/labs that have been covered.

Your participation grade is based on your participation in discussions both in class & labs.

This grade is judged every time we have class or a lab.

This schedule may vary depending on: unforeseeable circumstances that may arise; individual class rate of comprehension and evaluation; and at the discretion of the instructor.