**Reedley College MFGT 92-54376 SPRING 2012**

**Motor Controls 2: E3 (2 UNITS)**

**INSTRUCTOR:** GARTH GADDY

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**OFFICE:** IND 18

**CLASSROOM:** IND 17

**LAB:** IND 16

**OFFICE HOURS:**

**DESCRIPTION:**

THE STUDY OF INTERMEDIATE MOTOR CONTROLS FOUND IN COMMERCIAL/MANUFACTURING USE. METHODS OF DESCRIBING, DIAGRAMMING, DOCUMENTING, WIRING, OPERATING, AND TROUBLESHOOTING BASIC MOTOR CONTROLS IN A SAFE MANNER. AC AND DC MOTORS, DRIVES, REVERSING CIRCUITS, SOLID STATE DEVICES AND SYSTEM INTEGRATION, TIMERS AND COUNTERS, RELAYS, SSR'S, SOLID STATE STARTERS, SENSORS, REDUCED VOLTAGE STARTING ARE COVERED.

**EXPECTED**

**OUTCOMES:**

STUDENT WILL UNDERSTAND AND BE ABLE TO WORK SAFELY WITH ELECTRICAL CIRCUITS

STUDENT WILL BE ABLE TO WORK WITH BASIC ELECTRICAL TOOLS AND TEST INSTRUMENTS

STUDENT WILL BE ABLE TO DESIGN, SIMULATE, AND DOCUMENT ELECTRICAL CIRCUITS

STUDENT WILL BE ABLE TO CONFIGURE AND RUN AN AC DRIVE.

STUDENT WILL BE ABLE TO INTEGRATE A VARIETY OF REAL WORLD DISCRETE COMPONENTS INTO A SYSTEM.

STUDENT WILL BE ABLE TO CONFIGURE AND WIRE A TON AND TOFF DELAY TIMER.

STUDENT WILL BE ABLE TO INTEGRATE AND WIRE A VARIETY OF RELAYS.

STUDENT WILL BE ABLE TO INTEGRATE AND WIRE A VARIETY OF SENSORS

STUDENT WILL UNDERSTAND SOLID STATE STARTERS AND REDUCED VOLTAGE STARTERS.

**BASIC SKILLS**

**ADVISORIES:** ELIGIBILITY FOR ENGLISH 126 AND MATH 101

**PREREQUISITES:** Motor Controls 1 (E2). If E2 has not been completed, instructor interview and/or basic electrical test may be required.

**MINIMUM STUDENT**

**MATERIALS:**

1. TEXTBOOK "Electrical Motor Controls for Integrated Systems" 4th edition

2. WORKBOOK: "Electrical Motor Controls for Integrated Systems" 4th edition

3. UGLY'S Electrical Reference 2011

4. SAFETY GLASSES

5. 3 RING BINDER

6. SCIENTIFIC CALCULATOR

**HOW CLASS WILL BE**

**CONDUCTED:**

1. LECTURE - DEMONSTRATIONS

2. INSTRUCTION

3. WORKBOOK ASSIGNMENTS

4. LABORATORY TASKS

5. QUIZZES (open note, closed book)

6. MIDTERM AND FINAL EXAMS (open note, closed book)

**COURSE OUTLINE:**

1. INTRO, BASIC ELECT REVIEW, TEST INSTRUMENTS, SAFETY, BASIC MOTOR THEORY

2. AC AND DC MOTOR DRIVES

3. REVERSING MOTOR CIRCUITS

4. SOLID STATE DEVICES AND SYSTEM INTEGRATION

5. TIMERS AND COUNTERS

6. RELAYS AND SOLID STATE STARTERS

7. SENSING DEVICES AND CONTROL

8. REDUCED VOLTAGE STARTING

9. REVIEW AND FINAL

**LAB OUTLINE:**

1. NONE

2. DESIGN A START/STOP CIRCUIT IN CONTSTRUCTOR AND WIRE SAME TO OPERATE THE SIMULATOR VFD

3. DESIGN A REVERSING CIRCUIT IN CONSTRUCTOR, THEN WIRE IT TO THE TEST MOTOR.

4. TEST A VARIETY OF COMPONENTS USING DMM AND CONTROL VOLTAGE

5. DESIGN IN CONSTRUCTOR AND WIRE TON AND TOFF TO TURN LIGHTS AND MOTOR ON/OFF

6. DESIGN IN CONSTRUCTOR AND WIRE NC AND NO CONTACTS TO LIGHTS AND MOTOR

7. DESIGN IN CONSTRUCTOR AND WIRE A VARIETY OF DISCRETE SENSORS TO TURN ON LIGHTS AND MOTOR.

8. CATCH UP OR NONE.

**GRADING:**

POINTS TOTAL

 NUMBER EACH POINTS

SAFETY TEST 1 50 50

DAILY QUIZZES 10 25 250

WORKBOOK 7 25 175

MIDTERM EXAM 1 100 100

FINAL EXAM 1 200 200

LAB 7 20 140

DAILY ATTENDANCE 9 12 108

**TOTAL POINTS POSSIBLE 1023**

**DAILY POINT SYSTEM:** 12 POINTS POSSIBLE PER DAY

 MORNING TARDY -3

 BREAK TARDY -3

**GRADING SCALE:** 90-100% A

 80-89% B

 70-79% C

 60-69% D

 < 60% F

**FINAL: THURSDAY, March 8th**

**Completion of reading assignment is due the following class unless the instructor allows in class time.**

**READING ASSIGNMENTS**

|  |  |  |  |
| --- | --- | --- | --- |
| Week | Description | Chapter | Pages |
| 1 | Basic Motor Theory | 19 | 571-608 |
| 2 | AC and DC Motor Drives | 10 | 259-286 |
| 3 | Reversing Motor Circuits | 12 | 335-362 |
| 4 | Solid State Devices and System Integration | 13 | 363-408 |
| 5 | Timers and Counters | 14 | 409-430 |
| 6 | Relays and Solid State Starters | 15 | 431-466 |
| 7 | Sensing Devices and Controls | 16 | 467-502 |
| 8 | Reduced Voltage Starting | 18 | 545-570 |
| 9 | Final |   |   |

**ESSENTIAL**

**INFORMATION:**

1. ANY ASSIGNMENT TURNED IN UP TO ONE WEEK LATE WILL

RECEIVE 50% CREDIT.

2. HOME WORK WILL NOT BE ACCEPTED MORE THAN ONE WEEK

LATE.

3. EXTRA POINTS MAY BE EARNED DURING THE SEMESTER BY

ATTENDING FIELD TRIPS, DOING RESEARCH PAPERS, OR EXTRA

SHOP WORK OUTSIDE OF SCHEDULED LABORATORY TIME.

4. ATTENDANCE AND PARTICIPATION IS VERY IMPORTANT. YOU

MUST BE IN CLASS IN ORDER TO PARTICIPATE AND COMPLETE ALL

OF THE WORK.

5. IN THE EVENT OF CLASS BEING CANCELLED YOU WILL BE

NOTIFIED WITH A SIGN ON THE DOOR.

6. CHEATING AND/OR PLAGIARISM WILL NOT BE TOLERATED. A

STUDENT WILL RECEIVE NO CREDIT FOR THE ASSIGNMENT IF, IN

THE OPINION OF THE INSTRUCTOR, THE INDIVIDUAL HAS

CHEATED.

7. IF YOU CARRY A CELLULAR PHONE OR PAGER, YOU NEED TO

HAVE THE RINGER SET ON VIBRATE.

Important Dates

January 5 (Th) Campus re-opens after Winter Break

January 9 (M) Spring 2012 instruction begins

January 9 - March 9 (M-F) Spring 2012 short-term classes, fi rst nine weeks

January 16 (M) Martin Luther King, Jr. Day observed (no classes held, campus closed)

January 20 (F) Last day to drop a full-term class for a refund for Spring 2012

January 27 (F) Last day to register for a full-term fall class for Spring 2012

January 27 (F) Last day to drop a full-term class to avoid a “W” for Spring 2012

February 10 (F) Last day to change a class to/from a Pass/No-Pass grading basis

February 17 (F) Lincoln Day observed (no classes held, campus closed)

February 20 (M) Washington Day observed (no classes held, campus closed)

March 9 (F) Last day to drop a full-term class (letter grades assigned after this date)

March 12 - May 18 (M-F) Spring 2012 short-term classes, second nine weeks

March 21 (W) Summer/Fall 2012 registration begins for continuing students

April 2-6 (M-Th) Spring Recess (no classes, campus open, classes reconvene April 9)

April 7 (F) Good Friday (no classes, campus closed)

April 10 (T) Summer/Fall 2012 registration begins for Reg-To-Go students

April 16 (M) Summer 2012 registration begins for new, transfer, and returning students

May 14-18 (M-F) Spring 2012 fi nal exams week

May 17 (Th) Fall 2012 registration begins for new, transfer, and returning students

May 18 (F) End of spring semester/commencement

**POLICIES AND**

**PROCEDURES:**

**FAILURE TO ATTEND CLASS**

FAILURE TO ATTEND CLASS ON A REGULAR BASIS WILL

ADVERSELY AFFECT YOUR PERFORMANCE IN THIS COURSE.

PLAGIARISM OR CHEATING OF ANY KIND WILL RESULT IN A

GRADE OF "F" FOR THIS COURSE. THERE ARE NO MAKEUP

EXAMS WITHOUT PRIOR PERMISSION OF THE INSTRUCTOR.

**REQUIRED READING**

REQUIRED READING SHOULD BE COMPLETED BEFORE THE

CORRESPONDING LECTURE/DEMONSTRATION. ALL GRADES

ARE FINAL UNLESS AN ERROR IN MATH HAS BEEN MADE BY THE

INSTRUCTOR. THE INSTRUCTOR RESERVES THE RIGHT TO

ADJUST THE COURSE OUTLINE, SCORING, GRADING, AND

CONTENT AS NEEDED.

**HAVING TROUBLE?**

IF AT ANY TIME YOU FIND YOU ARE HAVING TROUBLE

SUCCEEDING IN THIS COURSE WHETHER BECAUSE OF A

CHANGE IN YOUR LIFE CIRCUMSTANCES OR BECAUSE OF

SOMETHING YOU DO NOT UNDERSTAND ABOUT THE MATERIAL -

PLEASE SEE ME. THERE ARE A NUMBER OF SERVICES

AVAILABLE TO ASSIST REEDLEY COLLEGE STUDENTS TO

SUCCEED IN THEIR COURSE WORK. I WOULD BE HAPPY TO

RECOMMEND ONE OF THESE TO YOU.

**ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:**

IF YOU HAVE NEEDS AS ADDRESSED BY THE AMERICANS WITH

DISABILITIES ACT (ADA), OR SECTION 504 OF THE

REHABILITATION ACT, PLEASE NOTIFY ME IMMEDIATELY.

REASONABLE EFFORTS WILL BE MADE TO ACCOMMODATE

YOUR NEEDS.

**KEEP TRACK OF RETURNED WORK.** YOU SHOULD SAVE ALL OF

YOUR WORK UNTIL THE END OF THE SEMESTER SO YOU CAN

DOUBLE CHECK THE FINAL GRADE EARNED AS RECORDED BY

THE INSTRUCTOR.