MARTIN COMMUNITY COLLEGE
COURSE SYLLABUS
Semester/Year: Spring/2011

COURSE NUMBER: ELN 133 (01)

COURSE TITLE: Digital Electronics

CREDIT HOURS: 4

CONTACT HRS/WK: 6 (3 Class 3 Lab)

PREREQUISITES: None

COREQUISITES: None

INSTRUCTOR: Joe Rogers

OFFICE NO: Building 1 Room 11

PHONE NO: 252-789-0277

FAX: 252-792-0826

E-MAIL: jrogers@martincc.edu

COURSE DESCRIPTION:
This course covers combinational and sequential logic circuits. Topics include number systems, Boolean algebra, logic families, MSI and LSI circuits, AD/DA conversion, and other related topics. Upon completion students should be able to construct, analyze, verify and troubleshoot digital circuits using appropriate techniques and test equipment.

PROGRAM LEARNING OUTCOMES:
1. Use electrical test equipment including voltmeters, ohm meters, and amp meters to measure voltage, trouble-shoot, analyze and repair electrical apparatus found in residences such as receptacles, light switches, circuit breakers, special purpose outlets.
2. Install and maintain equipment which consists of conduit, service and lighting panels found in commercial related businesses such as schools, malls, stores, theaters, restaurants, and churches.
3. Select, install, and maintain equipment found in industrial settings such as motors, motor starters, transformers, and PLCs. Interpret, write and modify ladder logic diagrams used by control equipment and PLCs in industrial manufacturing processes.

COURSE LEARNING OUTCOMES:
1. Select a particular solid state digital device(s) which will be able to meet the demands of a given task.
2. Incorporate solid state digital devices in simple and complex circuits.
3. Apply ohms law and utilize test instruments to verify, trouble shoot and repair simple and complex circuits with digital devices in them.

REQUIRED TEXTBOOKS:
Textbook : Gerrish, H. H., & Dugger, W. E., & Roberts, R. M.(2009). Electricity and electronics. Wesley Chapel, Fl.: Goodhart-Wilcox Company.

SUPPLEMENTAL RESOURCES:
Supplies/Materials; books, tools, basic calculator, pens, pencils and scratch paper.

LEARNING/TEACHING METHODS: Lecture, individual/group discussions, written tests, hands on projects, and outside reading assignment.

ASSESMENTS/METHODS OF EVALUATION:

1. Outside Reading Assignment = 5% (Subject for ELN 133) How has the TV changed the modern world. The QEP (Quality Enhancement Program) reading assignments will be evaluated in the following manner:

   A = 100 to 90 Points for 300 words or more with 5 or less misspellings
   B = 89 to 80 Points for 300 words or more with 7 or less misspellings
   C = 79 to 70 Points for 300 words or more with 9 or less misspellings
   D = 69 to 60 Points for 300 words or more with 11 or less misspellings
   F = 59 to 0 Points for less than 300 words or more than 300 words with 12 or more misspellings
   F = 0 for any form of plagiarism

2. Projects = 40%
3. Tests = 40%
4. Final Exam = 15%
5. Total = 100%

GRADING POLICY:

1. Grading Scale: A (90 to 100)
   B (80 to 89)
   C (70 to 79)
   D (60 to 69)
   F (below 60)

COURSE OUTLINE: COURSE HOURS: ELN 133 meets for approximately 16 weeks in the Spring Semester 2011 From January 5 Through May 5.

TIMELINE FOR COVERING TOPICS

WEEK 1: Getting Started With Digital Logic.	Chapter 1
Assignment: Using digital logic and components.	
WEEK 2: Combinational & Sequential Logic.	Chapter 2
Assignment: Analyzing combinational and sequential logic.	
WEEK 3: Digital Logic Integrated Circuits.	Chapter 3
Assignment: Assemble digital logic integrated circuits.	
WEEK 4: Switch & Relay Logic.	Chapter 4
Assignment: Using switch and relay logic as And & Or Gates.	
WEEK 5: Using Switches To Make Four Kinds Of Gates.	Chapter 5
Assignment: Build logic gates using switches and relays.	
WEEK 6: Transistor Logic To Make A Yes Gate & A Not Gate Etc.	Chapter 6
Assignment: Integration of Yes and Not Gates.	
WEEK 7: Use Of The Quad Nor Gate.	Chapter 7
Assignment: Implement and use the Quad Nor Gate.	
WEEK 8: Use Of The Quad Nand Gate.	Chapter 8
Assignment: Implement and use the Quad Nand Gate.	
WEEK 9: The Hex & Logic Inverter.	Chapter 9
Assignment: Identify and use the Hex & Logix Inverter.	
WEEK 10: The Quad Exclusive Or Gate & The Four Bit Comparator Digital Lock.	Chapter 10
Assignment: Incorporating into circuits and using the Four Bit Comparator Digital Lock.	
WEEK 11: The Quad Bi-Lateral Switch.	Chapter 11
Assignment: Assemble the Quad Bi-Lateral Switch into digital circuitry.	

WEEK 12: Build A Pulsating Dual Flasher Circuit. Chapter 12
Assignment: Building and incorporating the Pulsating Dual Flasher Circuits with digital components.
WEEK 13: The Dual Data Flip Flop & The Toggle Flip Flop. Chapter 13
Assignment: Compare and use the Dual and Toggle Flip Flop.
WEEK 14: The Decade Counter Decoder. Chapter 14
Assignment: Using the Decade Counter Decoder to analyze digital circuits.
WEEK 15: The Switch Bounce Analyzer & Programmable Divide By N Counter. Chapter 15
Assignment: Incorporating the Switch Bounce Analyzer to divide by N Counter logic.
WEEK 16: BCD To Seven Segment Decoder & Build A Binary To Decimal Keypad. Chapter 16
Assignment: Interface a Seven Segment Decoder to a Binary To Decimal Keypad.

STUDENT ATTENDANCE POLICY: ELN 133 is a 6 contact hour course. An F will be given once absenteeism exceeds 20 percent of class contact hours. For ELN 133, 18 hours is the 20 percent point. The rule is established by MCC's attendance policy which is stated in the 2009-2011 Career Catalog.

REQUEST FOR EXCUSED ABSENCES FOR RELIGIOUS OBSERVANCES*

*In compliance with G.S. 115D-5, MCC policy permits a student to be excused, with the opportunity to make-up any test or other missed work, a minimum of two excused absences per academic year for religious observances required by the student's faith. The policy limits the excused absences to a maximum of two days per academic year.

Students who wish to be excused for a Religious Observance required by their faith must complete and submit a request form to the instructor(s) prior to the census date of each class. The Request for Excused Absences for Religious Observances form can be picked up from Student Services. This does not supersede the college-wide attendance policy as outlined in the college catalog or syllabus, with the exception of a reasonable accommodation for the make-up of missed course work.

Tardiness: If the student is not in class at its scheduled start time, it is a tardy. Three times tardy is equal to one hours absence and if a student misses a full hour(s) or more, absenteeism will be accumulate for each hour missed and a tardy for the portion of next hour.

Early Departure: If a student leaves class early, each hour he is out of class is counted as one hour's absence.

Tardiness and/or early departure in a course will be considered in computing class attendance. The preceding paragraph explains the instructor's definition of tardiness and early departure.

Students will be counted absent from the date they register for each course.

Note: Under DVA regulations, the enrollment of veterans or dependents will be terminated or adjusted if they are administratively withdrawn or if they officially withdraw.

If an instructor fails to report for a class within 15 minutes of the scheduled beginning time and has not left instructions, those students present should sign a sheet before leaving and designate a student to submit it to the Dean of Academic Affairs and Student Services.

Students will receive a grade of "WF" for the administrative withdrawal. The "WF" will be equivalent to an "F" which will be calculated into the student's GPA.

A student may remove the "WF" grade by submitting appropriate paperwork for an official withdrawal by the last day to officially withdraw without receiving an "F" during the semester to the Registrar's office. When a student has been administratively withdrawn from a course and he/she wishes to be reinstated, he/she must contact the instructor of the course. If the instructor grants the student's request to be reinstated to the course, a Course Reinstatement form must be signed by the instructor and submitted to the registrar.

COURSE POLICIES:
Classroom conduct and safety policy:

1. No horseplay
2. Safety glasses will be worn at all times while in project installation area.
3. Safety glasses or approved goggles will be worn at all times when using any power tools such as drills, grinders, porta-band saws, threaders, etc.
4. Safety glasses or approved goggles will be used when using a hammer, chisel or any other device which may cause injury by catapulting flying debris.
5. Always use a ladder when climbing (never use a chair or a stool for higher reach purposes).
6. No sleeping or laying head down on desk. If you are too tired to stay awake in class you will have to leave the classroom and receive an absence for that period.
7. Do not sit on or put your feet desk tops.
8. Students are to remain silent while the instructor is talking or another student is answering a question for the instructor.
9. No tobacco products of any kind will be consumed in the classroom.
10. Do not throw any object or objects in the classroom or while on campus.
11. Keep your work area clean and put objects back in the store room when finished.
12. You are expected to bring your tools, books, paper and calculator to class each day.
13. Cell phones and any sound reproducing devices must be off while in the classroom.
14. Students will not make threatening or intimidating comments or gestures to other students and if threatened by another student notify the instructor and the student making the threat will be dealt with according to MCC student conduct rules.
15. Visitors: The only time a person not registered for the class can be in the classroom is during break time or between classes.
16. **Missed Tests: They must be completed before the last day of class, be it blocked or regular. If a missed test is not completed before the last day of class, a grade of 0 will be entered for that test.**

If you cannot reach your instructor, you may contact Dr. Phyllis Broughton, Dean of Academic Affairs and Student Services at (252)789-0246 or (252) 789-0247 by phone, pbroughton@martincc.edu by e-mail, or in person at her office in Building 2, Room 33.

To acess the Martin Community College Career Catalog for policies and curriculum requirements, please go online to www.martincc.edu

If you have a need for a disability-related accommodation, please notify the Student Services counselor at (252) 789-0293.