* * A Chimpt grown heaching Hold

10/27/95

Course Number _____ELE 040

Page 1

WASHTENAW COMMUNITY COLLEGE COURSE SYLLABUS

Department: Electricity/Electronics	New Course
Course Number: <u>ELE 040</u>	Existing Course X
Course Title: Residential Wiring	
Credit Hours: 2	
Prerequisites: None	
Corequisites: None	12220020000000000000000000000000000000
Catalog Course Description: This course is a practical hands-on course that	at has been designed to help students
better understand the wiring techniques and safety considerations that must	t be considered when dealing with a
residential wiring system. A great deal of "hands on" time is offered and i	s devoted to working with the wiring
materials and constructing circuits of the type found in the home. Typical of	the kinds of circuits that are discussed
and wired by the students are: duplex outlet circuits, dimmer circuits, three	ee and four-way switch circuits, GFI
circuits, lawn and garden lighting circuits, electrical dryer and electrica	al stove circuits. Grading uses the
satisfactory/unsatisfactory system.	
(Place numbers in the appropriate boxes)	
Contact Hours per week in a lecture/recitation setting	1
Contact Hours per week in a laboratory setting	2
Contact Hours per week in a work setting	
Total Contact Hours (per semester): 45	
Course Justification: (Check all that apply.) X program specialty college transfer	X support course
division core X industry training	X personal development
core curriculum	
Prepared By (Faculty Member)	Date 11/14/95
Reviewed By (Department Chair for Department)	Date
Approved By K Buthy (Dean)	Date 2/6/96

Course	Number	040
--------	--------	-----

MAJOR INSTRUCTIONAL UNITS: A Major instructional unit is a grouping of topics which naturally relate to one another.

UNIT OBJECTIVES: Use student outcome based language and format. (Example: The student will define and state the cause of the six major respiratory diseases.)

	11 Constant Codes & Sofety
MAJOI	R INSTRUCTIONAL UNIT #1: Standards, Codes & Safety
	pjectives
1. I	he student will discuss the purpose of U.L. Labs
2. 1	The student will discuss the purpose and application of the N.E.C.
MAJO!	R INSTRUCTIONAL UNIT #2: Measurement of Electricity
Unit O	bjectives
	The student will list and define the basic electrical units of measurement used in residential wiring.
MAJO	R INSTRUCTIONAL UNIT #3: Wire Size and Type
Unit C	Objectives
1.	The student will list and describe the characteristics of the most commonly used wire sizes and type for residential wiring.
MATO	OR INSTRUCTIONAL UNIT #4: Circuit Breakers and Fuses
Unit C	Objectives
1.	The student will list and describe the operation of the various types of circuit breakers and fuses.
MAJ(OR INSTRUCTIONAL UNIT #5: Circuit Basics
Unit (Objectives
1.	The student will correctly draw wiring diagrams for construction in class.

MAJO	R INSTRUCTIONAL UNIT #6: Grounding
Unit O	bjectives
1.]	The student will discuss the importance of proper grounding.
2.	The student will discuss the dangers of improper grounding.
MAJO	R INSTRUCTIONAL UNIT #7: The Service Entrance
Unit C	Dbjectives
-	The student will describe and discuss the need for and correct installation of the service entrance.
MAJC	OR INSTRUCTIONAL UNIT #8: Three Wiring Systems
Unit C	Objectives
	The student will list and describe the uses, advantages and disadvantages of each of the three wiring systems.
MAI	OR INSTRUCTIONAL UNIT #9: Finishing an Installation
	Objectives
1.	The student will describe and discuss the procedures necessary for finishing an installation.
MAJ	OR INSTRUCTIONAL UNIT #10: Old Work: Modernizing
Unit	Objectives
1.	The student will describe and discuss those procedures that are unique and necessary

Course Number <u>040</u>

	RUCTIONAL METHODS: (0	Thack the ar	יחרטחי	riate boxes an	d describe as	needed.)
	and the second s	Seminar	prop.	X	Laboratory	
X	Lecture			Personance	On Job Training	1
	Clinical	Telecourse		Sourceaster!	O11000 11a	3
×	Self-Paced	Other	<u>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	Oddellene o e dubbylanick pa a posocove d elebytatic pa a s	ninininininininininininininininininini	opp see a consiste a c
1237/	ALUATION CRITERIA: (Chec	k the appro	priate	boxes and de	escribe as nee	eded.)
·				Quizzes		
	Class Attendance	accessories de la companya de la com	r===1			
LX.	Class Discussion	φωρ οιέ ε ε ποιού ο σο παρον		Tests		
	Papers	apooonee oo aanaa aa		Midterm	a a amonto co culturalista de la materio conceleración de la cultura de la materio conceleración de la cultura de	<u> </u>
	Portfolio	g yan aa aan waxay a niyo agaala		Final Exam	nacockie Quintaria de la cockie de la propositio de la cockie de la co	n na processo con consequence de la la consequence de la consequence de la consequence de la consequence de la
X	Project/Lab	vennugaristati ili ili elektricoloria		Independent S	tudy	oo aquanta an in market han on on one classe we were expensive to
	Reports	unconsequent productive de la service		Other	oodiraannoonissa oo	пунаросници, а неменения при
	Clinical/Work Performance					
SP	ECIAL EQUIPMENT/FACILI propriate boxes and describe as	TY AND Aneeded.)	CTI	VITY REQU	TREMENTS	: (Check the
[X	Lab Equipment			Testing in Test	ting Center	
L	LRC Reserves			Student Regio	onal Competitio	71S
F	Computers			Off Campus S	ites	
F	Field Trips			Other	ngang staka kalan andron 1900 000 000 000 000 000 000 000 000 00	en en constituen de la constituent
<u></u> (Δ	ttach an additional page if nece		hasana	ad		
(1)	ittaen an accimonal page	• ,				
SU	JGGESTED TEXT: (Omit if to					
1.	Title: Wiring Simplified	BANKS (BROOK) GOOD (BROOK) BOOK	100000444444 77	ingstakk ar no och augustak komplekter kas gegydek ki	ninko oranguningan kana sinangaranga 40 400001	
	Author: H. P. Richter					1990
	Publisher: Park Publishing				Est. Cost: <u>\$3</u> .	50
()	Attach an additional page if mor				l.)	
1,4						

Course Number <u>040</u>

1.	Title: Residential Wiring	
	Author: Dean Russell	Copyright Yr:
	Publisher:	Est. Cost: \$4.00
2.	Title:	
	Author:	Copyright Yr:
	Publisher:	Est. Cost:
	tach an additional page if necessary.)	
FO	PPLIES AND/OR UNIFORMS STUDENT WILL R COURSE SUCH AS: calculators, uniforms, too, pencil, paper, or textbook(s).)	ois, and software, etc. (Canada and
	The continue of the same	Cost Estimate
<u>Descriptions</u>		
********	sc. Hand Tools and Supplies used for wiring	
RF	EFERENCE MATERIALS STUDENTS WILL urnals, books, manuals, maps, etc.	BE REFERRED TO SUCH AS
RF	Sc. Hand Tools and Supplies used for wiring EFERENCE MATERIALS STUDENTS WILL	BE REFERRED TO SUCH AS
RI jou	EFERENCE MATERIALS STUDENTS WILL arnals, books, manuals, maps, etc.	BE REFERRED TO SUCH AS
RI jou	EFERENCE MATERIALS STUDENTS WILL arnals, books, manuals, maps, etc. Ational Electric Code UDIO/VISUAL AND COMPUTER MATERIAL deo tapes, slides, audio tapes, software, etc.	BE REFERRED TO SUCH AS
RI jou	EFERENCE MATERIALS STUDENTS WILL arnals, books, manuals, maps, etc.	BE REFERRED TO SUCH AS

Course Number <u>040</u>

Course	Number	<u>040</u>
--------	--------	------------

WASHTENAW COMMUNITY COLLEGE COURSE HANDOUT

The following information compatible with the Official Course Syllabus must be distributed to students at the first meeting of each course:

- 1. Course name:
- 2. Course number:
- 3. Course description:
- 4. A list of course objectives by unit:
- Required text(s) and/or course packs:
- 6. Criteria for evaluation:
- 7. Requirements (Attendance, Special, or Other):
- Hours/week required out-of-class:
- 9. Additional information:
- 10. A schedule of class meeting dates with lecture topics, lab and homework assignments:

Each Instructor teaching this course should attach a copy of their "Student Handout Sheet" to this document.

rev:12/11/90 techsyl.doc

EE 040 RESIDENTIAL WIRING

This course is a practical hands-on course that has been designed to help students better understand the wiring techniques and safety concerns that must be considered when dealing with a residential wiring system. A great deal of hands-on time is offered and is devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that are discussed and wired by the students are: duplex outlet circuits, dimmer circuits, three and four way switch circuits, GFI circuits, lawn and garden lighting circuits, electrical dryer and electric stove circuits.

Text: Wiring Simplified - H. P. Richter (Latest Edition)
Instructor: D. Russell

973-3458 - Office Phone 482-1608 - Home Phone

EE 040 Course Materials

	Small tool box with lock
2.	Diagonal cutters
3.	Needle nose pliers (long nose)
	Side cutters (Lineman's pliers)
	Flat blade screwdriver
б.	Knife
7.	Wire stripper and crimper (optional)
8	. Cable ripper (optional)
9	. Male plug with 3 screw terminals
10	Four feet of 16/3 rubber covered appliance cord
11	. Roll of plastic electrician's tape
12	2. Neon tester
17	5. Three alligator clips with boots
1 4	Colored pencils (Black, Gray, Red, Green)
18	5. 12 Wire Nuts - Red (76B or #86 or GB-6)
1	5. 2 Duplex outlets - grounded
1	7. 2 Single pole switches - grounded
1	8. 2 Three way switches - grounded
1	9. Grounding Clips
2	O. 2 Porcelain Lampholders
	21 25 Feet of Wire (14-2 NM)

Notes:

EE 040 Meeting Dates and Assigment Schedule

Meeting Number	Date	Material to be discussed	Lab Activity
1	QQQAXXXXIII RAYAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Introduction to 040 and discussion of class operation	חמ
2	NEKRUSERADOOQAANISKUUSSERSAE	Chapters 1, 2 and 3	Splicing and line cord Construction. Circuit board construction.
3 .	alkikiyinden-veled kish oo kakuluksi inaakke siske	Chapters 4 and 6	
4 .	очения при	Quiz *1	LE #2 Phase 1 of the house plan due
5.	Augustinin in State Constitution (State Consti	Chapters 9 and 10	LE #3 and LE #4
6	gggsspermannskrigelikker voorbebaan	Chapter 8	LÉ *5
7	NGSSIOGNASSICALANIA ORANIA PROPERTIES	Quiz #2	LE #6 Phase 2 of the house plan due
8.	40000000000000000000000000000000000000	Chapters 5 and 7	LE #7
9.	THE RESERVE OF THE PROPERTY OF	Chapters 11 and 12	LE *8
10.	endersteinisch die des Scharberteinische besteht der Scharberteinische besteht der Scharberteinische besteht d	Quiz #3	LE #9 Phase 3 of the house plan due
discount to	appropriesses sussesses and an appropriesses and a second a second and	Chapters 13, 14 and 15	LE *10
12.	\$	Chapter 16	LE #11
13.	-sugagagagagastastatustastastastastastastastastastastastastas	_ Chapters 18 and 19	LE #12
14.	AUDIDIDITION OF HER BEST ON CONTRACT OF STRINGS		

Table of Contents

and the second of the second o	aned	4
Course Description		
Course Materials List	Page	2
1 Prof. Prof. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	.Page	3
Meeting Dates & Assignment Schedule	Page	4
Disscussion Outline - Parts of the Residential Installation	.Page	5
Residential Installation - Illustration	Page	6
Service Entrance - Illustration 1	Page	7
Service Entrance - Illustration 2	Page	8
Service Panel - Illustration	Page	9
Discussion Outline - Theory		10
Discussion Outline - Circuits	Page	4
Lab Activity 1 -Progress Chart		12
Splice Illustrations	Page	13
Wiring Techniques - Sheets 1, 2, 3.	Page	14
House Plan Assignment Sheet	Page	17
Check List for House Plan	Page	18
House Plan Illustration	Page	19
Check List for Circuit Wiring.	Page	20
Wiring Board Layout	Page	21
Wiring Components - Description.		22
Circuit Diagrams 1 - 10	440	23
Study Ouestions - Chanters 1-16	Page	33
THE TRANSPORT OF THE PROPERTY	F Sull Vall Val	teaf teaf

ECO 280: International Economics 3 Credits

Prerequsites: ECO 211 Corequisites: None

45 lecture, 0 lab, 0 clinical, 0 other, 45 total contact hours

Fulfills Core Elements: 21 23 24

This is a course in international trade and finance covering topics such as tariffs and quotas, trade agreements, exchange rates, and international finance institutions such as the IMF and World Bank. It is designed primarily for transfer students and those interested in pursuing international

Electrical & Computer Engineering

Spell out rame

ECE

ECE 100: Introduction to Engineering and Computers 2 Credits

Prerequsites: Admission to ASECE program

Corequisites:

30 lecture, 30 lab, 0 clinical, 0 other, 60 total contact hours

Fulfills Core Elements:

This course offers an introduction to the engineering profession with an emphasis on electrical and computer engineering. Engineering ethics, professionalism, and the honor code are also discussed. Students are introduced to digital logic. Laboratory work includes email and Internet applications and an introduction to Excel spreadsheet, Excel Solver, Microsoft Word, and Pspice logic simulation software. Students work in teams on assigned term projects. Students must gain admittance to the Electrical and Computer Engineering program (ASECE) before taking this course.

ECE-210: Circuits 4 Credits

Prerequsites: MTH 192 and PHY 222

Corequisites: None

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Fulfills Core Elements: None

This course covers fundamental laws, electrical elements and sources, energy, and power. DC analysis of linear circuits, node and mesh analysis, operational amplifiers and op-amp circuits, Thevenin and Norton theorems, sinusoidal steady-state response and the phasor concept are also discussed. In addition, students learn about introductory concepts on complex frequency, average power in AC circuits, maximum power transfer in circuits and design projects.

ECE 270A: Computer Fundamentals 4 Credits

Prerequsites: **ECE 100** Corequisites: None

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Fulfills Core Elements: None

This course covers the basic concepts of computer interfacing, sensing, and control integrated with software concepts. Students are introduced to structured programming and C++. Students also learn about computer hardware and software installation and serial communication.

ECE 273: Digital Systems 4 Credits

Prerequsites: **ECE 100** Corequisites: None

45 lecture, 45 lab, 0 clinical, 0 other, 90 total contact hours

Fulfills Core Elements: None

This course offers an introduction to digital logic. Topics include numbers and coding systems, Boolean algebra with applications to logic systems, Karnaugh and Quine-McCluskey minimization, combinational logic design, flip-flops, sequential network design, and design of digital logic circuits.

Electricity/Electronics

ELE

ELE 040: Residential Wiring 2 Credits

COMPASS Reading 51 ≠ or ASSET Reading Prerequsites:

REA 050 (concurrency allowed)

Corequisites:

0 lecture, 45 lab, 0 clinical, 0 other, 45 total contact hours

Fulfills Core Elements:

None

This course is a practical hands-on course that has been designed to help students better understand wiring techniques and safety considerations for dealing with a residential wiring system. A great deal of "hands on" time is offered and is devoted to working with the wiring materials and constructing circuits of the type found in the home. Typical of the kinds of circuits that are discussed and wired by the student are; duplex outlet circults, dimmer circuits, three and four-way switch circuits, CGI circuits, lawn and garden lighting circuits, electrical dryer and electric stove circuits. Grading is by the satisfactory/unsatisfactory system.

Electricity/Electronics Department Prerequisites

All CNT, ECE, and ELE courses with Level I prerequisites require a **C- minimum** grade from the prerequisite course.

The following Level I prerequisite changes should be made:

ELE 040 Residential Wiring L1: College Level Entrance Scores

ELE 137 Switching Logic VL1: MTH 097A or COMPASS Algebra = 46

The following prerequisites should be moved to Level II:

ELE 134 Motors and Controls & KL2: ELE 111 or ELE 123B or Equivalent

ELE 150 PC Hardware Concepts & L2: CIS 100 or Equivalent

ELE 155 Advanced Computer Concepts VL2: ELE 150 or Equivalent

ELE 204 National Electrical Code ON L2: ELE 111 or Equivalent

ELE 211 Basic Electronics & L2: ELE 111 or Equivalent

ELE 216A Modem Hardware Install by L2: ELE 150 or Equivalent

ELE 224: Intro to PLC's &L2: ELE 137 or Equivalent

ELE 225A Network Installation & L2: ELE 150 or Equivalent

ELE 254: PLC Applications & ML2: ELE 224 or Equivalent

RECEIVED

OCT 25 2001

Office of The Dean of Business Washtenaw Community College