



COURSE SYLLABUS FOR

INDUSTRIAL ELECTRONICS

ELMT 2433

INSTRUCTOR: AI Forte Office Phone: 335-6517 Cell Phone: 230-0678 Office Hours: by appointment

COURSE NUMBER: ELMT 2433

CREDIT HOURS: 4 (3/3)

PREREQUISITE: NONE

CATALOGUE DESCRIPTION: Devices, circuits, and systems primarily used in automated manufacturing and/or process control including computer controls and interfacing between mechanical, electrical, electronic, and computer equipment. Includes presentation of programming schemes. (SCANS 3,5,8,9)

TEXTBOOK DIGITAL ELECTRONICS by William Kleitz ISBN 978-0-13-243578-9

SUPPLIES:

1. Calculator
2. Digital VOM meter
3. Other

LEARNING OUTCOMES: After completing this course, the student should be able to demonstrate competency in:

- describe how electronic input and output circuits are used to control automated manufacturing
- describe and/or process systems
- identify basic elements used for input, output, timing, and control
- define how programmable electronic systems use input data to alter output responses
- troubleshoot a representative system
- demonstrate how system operation can be altered with software programming.

COURSE REQUIREMENTS:

- Complete all scheduled homework
- Complete all scheduled labs
- Complete written\lab tests
- Complete a written\lab final test

METHODS OF EVALUATION:

GRADING SCALE	
POINTS	GRADE
90-100	A
80-89	B
70-79	C
65-69	D
0-64	F

WEIGHT OF COURSE REQUIREMENTS	
AREA	GRADE WEIGHT
LAB ASSIGNMENTS	25%
TESTS	25%
FINAL TEST	25%
PROFESSIONALISM	25%
TOTAL	100%

ATTENDANCE POLICY\PROFESSIONALISM POLICY

Attendance is the greatest predictor of your success. Your attendance at EVERY ONE of the classes and labs is important and expected. A substantial grade penalty will be assessed to late work; including homework, lab assignments, and test. The "Professionalism Grade" will be determined by such factors as attendance, tardiness, class participation, and other classroom factors.

The following chart is a syllabus outline for topics and task. Each topic may include labs, lab questions, and other requirements.

LESSON #	GENERAL TOPIC	SPECIFIC TOPIC	LAB\TASK\INFO
1	Intro Syllabus Review Breadboard Basics	<ul style="list-style-type: none"> ┌ Digital Overview ┌ Breadboard ┌ LED's 	<ul style="list-style-type: none"> ┌ LAB 1.1 ┌ Breadboard, LED's
2	Digital Electronics	<ul style="list-style-type: none"> ┌ Overview ┌ Number Systems ┌ Integrated Circuits ┌ Logic Families ┌ Pin Identification ┌ Power and Speed 	<ul style="list-style-type: none"> ┌ LAB 2.1 ┌ Breadboard ┌ Digital Logic ┌ Logic Probes ┌ Insertion\Extraction Tools
3	Design Techniques Logic Gates	<ul style="list-style-type: none"> ┌ Definitions ┌ AND/OR GATES ┌ INVERT Function ┌ Clocks 	<ul style="list-style-type: none"> ┌ LAB 3.1 ┌ Gating devices ┌ Logic ┌ Clocks
4	Design Techniques Logic Gates	<ul style="list-style-type: none"> ┌ Gates ┌ Design Techniques 	<ul style="list-style-type: none"> ┌ LAB 4.1 ┌ Gate Design ┌ Game Show
5	Digital Clocks	<ul style="list-style-type: none"> ┌ Clocks ┌ Edge Devices 	<ul style="list-style-type: none"> ┌ LAB 5.1 ┌ Flip Flop Basics
6	Edge Sensitive Devices	<ul style="list-style-type: none"> ┌ Edge Devices ┌ Binary Counting 	<ul style="list-style-type: none"> ┌ LAB 6.1 ┌ Binary Code
7	Counters	<ul style="list-style-type: none"> ┌ Binary Coded Decimals 	<ul style="list-style-type: none"> ┌ LAB 7.1 ┌ Counters using 74191
8	Displays	<ul style="list-style-type: none"> ┌ Diodes ┌ 7 Segment Displays 	<ul style="list-style-type: none"> ┌ LAB 8.1 ┌ 7 Segment Displays
TEST #1			
9	Display Drivers	<ul style="list-style-type: none"> ┌ 7 Segment Displays ┌ Decoder Drivers 	<ul style="list-style-type: none"> ┌ LAB 9.1 ┌ 7447 Decoder Driver
10	Displays	<ul style="list-style-type: none"> ┌ Hex Displays ┌ Counters 	<ul style="list-style-type: none"> ┌ LAB 10.1 ┌ Hex Display (TIL 311) ┌ Set\Reset\Clear
11	Counters	<ul style="list-style-type: none"> ┌ Design Techniques 	<ul style="list-style-type: none"> ┌ LAB 11.1 ┌ Design techniques with Set\Reset\Clear
TEST #2			
12	Clock\Timer	<ul style="list-style-type: none"> ┌ Square Wave Generator ┌ 555 Chip 	<ul style="list-style-type: none"> ┌ LAB 12.1 ┌ 555 Chip ┌ Design techniques
13	Shift Registers	<ul style="list-style-type: none"> ┌ Basis Shift Operation 	<ul style="list-style-type: none"> ┌ Lab 13.1 ┌ 74164 Chip
14	Shift Registers	<ul style="list-style-type: none"> ┌ Input\Output Operations 	<ul style="list-style-type: none"> ┌ Lab 14.1 ┌ Baseball Scoreboard
15	Shift Registers	<ul style="list-style-type: none"> ┌ Serial\Parallel 	<ul style="list-style-type: none"> ┌ Lab 15.1 ┌ Serial Input\Parallel Output
16	Shift Registers	<ul style="list-style-type: none"> ┌ Parallel 	<ul style="list-style-type: none"> ┌ Lab 16.1 ┌ Parallel Loading

17	Shift Registers	↳ Data Transfer	↳ Lab 17.1 ↳ Data Transfer
TEST # 3			
18	Data Selection	↳ Data Manipulation	↳ LAB 18.1 ↳ Data Selection ↳ 74151 ↳ Electronic Organ
19	Memory	↳ Data Memory	↳ LAB 19.1 ↳ Data Memory ↳ 7489
20	Random Information	↳ Random Digits	↳ LAB 20.1 ↳ RC Time delays ↳ 74192
21	Binary Arithmetic	↳ Addition	↳ LAB 21.1 ↳ Binary Addition ↳ 7483
22	Decoders	↳ Binary Decoding	↳ LAB 22.1 ↳ Decoding ↳ 7442
23	Analogue-to-Digital	↳ AtoD Conversion	↳ LAB 23.1 ↳ A to D conversion ↳ ADC0804
24	Microprocessors	↳ Microprocessor Basics	↳ LAB 24.1 ↳ uprocessor basics ↳ Motorola 68HC11
FINAL TEST			

Special Needs

Odessa College complies with Section 504 of the Vocational Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. If you have any special needs or issues pertaining to your access to and participation in this or any other class at Odessa College, please feel free to contact me to discuss your concerns. You may also call the Office of Disability services at 432-335-6861 to request assistance and accommodations.

Learning Resource Center (Library)

The Library, known as the [Learning Resources Center](#), provides research assistance via the [LRC's catalog \(print books, videos, e-books\)](#) and [databases \(journal and magazine articles\)](#). [Research guides](#) covering specific subject areas, [tutorials](#), and the "[Ask a Librarian](#) " service provide additional help.

Student E-mail

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update your account: <http://www.odessa.edu/gmail/>. All assignments or correspondence will be submitted using your Odessa College email.

Student Portal

Please access your [Odessa College Student E-mail](#), by following the link to either set up or update your account: <http://www.odessa.edu/gmail/>. All assignments or correspondence will be submitted using your Odessa College email.

Technical Support

For Blackboard username and password help and for help accessing your online course availability abd student email account contact the Student Success Center at 432-335-6878 or online at https://www.odessa.edu/dept/ssc/helpdesk_form.htm.

Important School Policies

For information regarding student support services, academic dishonesty, disciplinary actions, special accommodations, or student's and instructors' right to academic freedom can be found in the [Odessa College Student Handbook](#).