12/13/17	DATE		Technology	DIVISION
X	REQUIRED COURSE			NEW COURSE
	ELECTIVE COURSE		X	REVISION

LAKE LAND COLLEGE
Course Information Form

COURSE NUMBER:	EET 048	TITLE:	Digital Circuits			
SEM CR HRS:	3	**Lecture:** 2	**Lab:** 2	**SOE:**	**ECH:**	4
COURSE PCS #				**(Assigned by Administration)**		
Prerequisites	**EET 076 Digital Electronics**					

Catalog Description: (40 Word Limit)	Applications of digital circuits and devices to consumer products. Advanced application or digital logic fundamentals in design operation of digital circuits & systems.

List the Major Course Segments (Units)	Contact Lt Hrs.	Contact Lab Hrs.
Registers	6	4
Counter	6	10
CPU	12	16
Decoders and Encoders	3	
TTL, CMOS logic families	3	

EVALUATION

QUIZZES:	X	EXAMS:	X	ORAL PRES:		PAPERS:	
LAB WORK:	X	PROJECTS:		COMP FINAL:	X	OTHER:	

TEXTBOOK

TITLE:	*Digital Electronics*
AUTHOR:	Tokheim
PUBLISHER:	McGraw Hill
VOLUME/EDITION:	7th
COPYRIGHT DATE:	2008

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		The student will be able to:
Registers	6	Understand shift registers, serial and parallel data transfer.
Lab – 7 segment Display	2 Lab	Construct and test a 7 segment display circuit
Lab – Flip Flop	2 Lab	Construct and test NAND and NOR gate flip flop circuits.
Counters	6	Understand how asynchronous (ripple) binary counters work and that counters use unconventional signal flow. Understand Mod number and State transition diagrams. Use counters to decode BCD. Cascade counters to count in BCD. Understand when Schmitt trigger devices might be needed.
Lab – Digisim	2 Lab	Design and simulate a 4 bit binary counter (74LS93)
Lab – Counters	2 Lab	Design and simulate a 60 counter using both a Decade counter and a Binary counter.
Lab – One shots	3 Lab	Explore the differences between re-triggerable and non-retriggerable one-shots.
CPU	12	Understand basic microprocessor principles and digital logic programming to include ALU, Buses, program counters and memory.
Lab – CPU	6 Lab	Design and simulate a working microprocessor circuit.
Decoders, Encoders, Muliplexers and Demultiplexers	3	Understand Decoders, Encoders, Multiplexers and Demultiplexers, as well as Binary to BCD are covered.
TTL and CMOS	3	Cite the basic Characteristics of digital IC's. Understand the differences between TTL and CMOS.
Lab – Alarm Clock	6 Lab	Design and simulate a working alarm clock complete with snooze alarm.
Lab – CPU II	6 Lab	Design and simulate a working CPU with display options.

Course Outcomes: At the successful completion of this course, students will be able to:

- Demonstrate the operation of a 7 segment decoder.
- Design and construct counter logic circuits and describe the circuits' input/output logic.
- Troubleshoot combinatorial logic circuits.
- Design and construct a programmable counter.