COURSE SYLLABUS

Tunxis Community College

Education That Works For a Lifetime

Course Title:	Digital Fundamentals	Date submitted:	4/30/2018 (18-37)
Department:	Advanced Manufacturing Technology		
Curriculum:	Technology Studies		

Course Descriptors:
Make certain that the course descriptors are consistent with college and Board of Trustees policies, and the current course numbering system.

Course Code: (eg. ACC 101)	MFG*138
Course Type:	X

A: Clinical B: Lab D: Distance Learning I: Individual/Independent L: Lecture N: Internship M: Seminar P: Practicum U: Studio X: Combined Lecture/Lab Y: Combined Lecture/ Clinical/Lab Z: Combined Lecture/Studio

Elective Type:	G

AH: Art History E: English FA: Fine Arts FL: Foreign Language G: General HI: History HU: Humanities LAS: Liberal Arts & Sciences M: Math S: Science SS: Social Science

Credit Hours:	3
Developmental: (yes/no)	No
Contact Hours: Lecture:	1.5
Clinical:	0
Lab:	1.5
Studio	0
Other:	0
TOTAL:	3
Class Maximum:	24
Semesters Offered:	Fall

Prerequisites:

None

Corequisites:

None

Other Requirements:

None

Catalog Course Description:

Digital Fundamentals provides the basic foundation necessary for the understanding of digital logic. The student is introduced to the concepts of digital vs. analog wave forms, digital and other numbering systems, digital codes, and Boolean algebra. The student is then introduced to the various logic gates that are incorporated into all logic systems from that of a computer to a microprocessor in a household appliance. This course explores the combinational circuits, data control devices, sequential logic (flip- flop and counters) circuits and shift registers, and finishes with an interface with the world of analog.

Topical Outline:
List course content in outline format.

[The outline should be in title case and use the numbering format below. You may not have subtopics, but if you do, here is the format.]

1. Digital Number Systems and Representations
2. Logic Gate Operation and Specifications

3. Combinational Logic Circuits and Reduction Techniques
4. Data Control Devices
5. Flip-Flops and Sequential Logic
6. Counter Circuits and Shift Registers
7. Interfacing to the Analog World

Outcomes:
Describe measurable skills or knowledge that students should be able to demonstrate as evidence that they have mastered the course content.

Upon successful completion of this course, the student will be able to do the following:

1. Demonstrate an understanding of several number systems and codes that are the foundation of digital theory and digital applications.
2. Demonstrate an understanding of the various logic gates; their role in an integrated circuit (IC) and their role in digital devices, such as a switch.
3. Demonstrate an understanding of combinational logic circuits, an understanding of Boolean algebra laws and rules for the simplification of logic circuits, and an understanding DeMorgan's theorem and Karnaugh's mapping procedures.
4. Demonstrate an understanding of the design and function of a medium-scale, integration, fixed-function (MSI) IC (Integrated Circuit), that are utilized by data control devices, such as comparator, encoders, decoders, multiplexers and demultiplexers.
5. Demonstrate an understanding of data storage circuitry represented by various types of flip-flops and latches.
6. Demonstrate an understanding of the design and application of sequential logic of the counter circuits and of the shift register.
7. Demonstrate an understanding of the conversion of analog data / signal to digital data / signal and of digital to analog.

PROGRAM: *Electronics Technology Certificate and A.S. Degree*

[Any Program Abilities should be cut and pasted here as they appear in the current catalog, including numbers. Please note that MSWord may have numbered these automatically, so when you cut and paste, make sure the numbers are correct – you will need to make them "hard" numbers rather than auto numbers.]

1. Demonstrate an understanding of Shop Safety.
2. Demonstrate an understanding the theory of electrical structure, voltage, current, resistance, and electrical circuit and their measurement.
3. Demonstrate an understanding of the basic laws of arithmetic.
4. Demonstrate an understanding of several number systems and codes that are the foundation of digital theory and digital applications.
5. Make comparisons with personal computers; as well as, develop an understanding of its origin and growth since conception.
6. Demonstrate an understanding of the fundamentals of Automated Manufacturing systems.

GENERAL EDUCATION: *(Numbering reflects General Education Outcomes as they appear in the college catalog)*

[Select the General Education Abilities from the listing below.]

No General Education outcomes.

Evaluation: List how the above outcomes will be assessed.	**Assessment will be based on the following criteria:** 1. Tests and quizzes
Instructional Resources: List library (e.g. books, journals, on-line resources), technological (e.g. Smartboard, software), and other resources (e.g. equipment, supplies, facilities) required and desired to teach this course.	**Required:** Full electronics lab. **Desired:**
Textbook(s)	Digital and Microprocessor Fundamentals Theory and Applications, William Kleitz, Prentice Hall, latest edition