

TAFE Western Sydney Region Planned Delivery 2018

Digital Electronics

Week1

Introduction to Digital

- Two States (on/off, High/Low)
- Number of inputs to possible outcomes 2^n
- $2^{10} = 1024$
- Binary
- Decimal
- Hexadecimal

Advantages-

- Low noise
- Error detection and corrections
- Reduced bandwidth

Disadvantages-

- Lack of accuracy
- Complexity

Week2

Gates-

- And
- Or
- Not
- Nand
- Exor
- Exnor

Truth Tables,
Boolean Algebra,
Symbols

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Lab TTL Ic's / pin outs / 5 volt supply

Week3

Boolean algebra

- Postulates
- Laws

Week4

Universal Gates

- Inverters
 - Nand
 - Nor

Week5

Number and Codes

Numbers-

- Base 2 (Binary)
- Base 8 (Octal)
- Base 16 (Hexadecimal)

Codes

- ASCII
- BCD
- Gray

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Week6

K-Maps-

- 2 – Variable
- 3 – Variable
- 4 – Variable

Week7

Displays-

- Leds
- Seven Segments
- Liquid Crystal
- Fluorescent Displays
- Drivers

Week8

Assessment 1

Analogue to Digital Converters and Digital to Analogue Converter

D.A.C.

- Review Op-Amps
- Weighted Resistors

A.D.C.

- Counter Ramp
- Flash

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Week9

IC Parameters

- Scale of Integration
- Packaging

Logic Families-

- TTL
- CMOS
- ECL

Parameters-

- Voltage Parameters
- Current Parameters
- Time and Frequency Parameters
- Noise Margins

Week 10

Latches and Flip-Flop

- Nand Latch
- Nor Latch
- Gated Latch = Flip Flop
- Nand Latch Gated
- Nor Latch Gated
- Types of clock Triggers
- S R Flip Flop
- J K Flip flop
- Toggle Mode
- D Type Flip Flop (transparent type)
- Asynchronous Inputs

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Week 11

Counters

- Counter Asynchronous
- Ripple
- Modulus
- State Diagram

Week 12

Counters

- Counters Synchronous
- Master Reset
- Pre-Load
- Frequency Dividers

Week 13

Registers

- Parallel Load
- Serial Load
- Combinations Parallel / Serial
- Left and Right Shift
- Universal Shift Register

Week 14

Assessment 2 Theory Monostable and Astable

- Inverters
- 555
- Crystal Locked

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Week 15

Encoding / Decoding
Multiplexing / De-multiplexing

Weeks 16

Computer Architecture

Buses Address
Data
Control
Tri-State Devices
Inverters
Buffers

Week 17

Revision

Week 18

Final Assessment Theory and Practical