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Week 1:

Aim: Digital Foundations

Introduction to binary systems, logic gates, boolean algebra, combinational circuits, K-map simplification.

Introduction to Verilog and practice simple problems.

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1.1 Revision to basic concepts

Basic concepts: ESC\_basics\_part1 [Study Material](https://drive.google.com/drive/folders/1jR95GsGbwA4BeI4P5WIMYZIfQdcd-jzd)

K-map: Kmap[Study Material](https://drive.google.com/drive/folders/1jR95GsGbwA4BeI4P5WIMYZIfQdcd-jzd)

Only for Y24’s:

i.Flip-Flop+Latches

[Introduction to Sequential Circuits | Digital Electronics](https://www.youtube.com/watch?v=fLN1YOmuAr8&list=PLwjK_iyK4LLCCpnnybEztvRqxpMyfgarS)(Till lecture 25)

ii.Mux & Demux

[Introduction to Multiplexers | MUX Basic](https://www.youtube.com/watch?v=FKvnmxte98A&list=PLw4vax4iD7VCB-bJiDL6dCWex6a4E-0Ih)

iii.Half & Full Adder

[Half Adder and Full Adder Explained | The Full Adder using Half Adder](https://www.youtube.com/watch?v=5XbRIVWFRIw)

iv.K-Map

[Karnaugh Map (K-map) : 2-Variable and 3-Variable K- map Explained](https://www.youtube.com/watch?v=lw1STgKUpW0)

1.2 Intro to Verilog:

1. Verilog basics[Study Material](https://drive.google.com/drive/folders/1jR95GsGbwA4BeI4P5WIMYZIfQdcd-jzd)

2.What is Verilog?

[Verilog Tutorial - javatpoint](https://www.javatpoint.com/verilog#:~:text=Verilog%20is%20a%20Hardware%20Description,using%20HDL%20at%20any%20level.)

[Verilog Tutorial](https://www.chipverify.com/tutorials/verilog) (learn about basic operations in verilog - data types, operators,

assign statements, initial block and always block,etc.)

3.YT resources:

[Basics of Verilog](https://youtu.be/I8lHk36sTB4?si=Np_6prECeL6bD6c5)

[Basic Verilog Programming examples](https://youtube.com/playlist?list=PLTFN8e-Y3kpEhLKNox-tRNJ9eNFxZopA0&si=7juRZ_-k1h6N1O6h)

1.3 FPGA

[What is an FPGA? Intro for Beginners](https://www.youtube.com/watch?v=CfmlsDW3Z4c)