

EE3019 – Integrated Electronics

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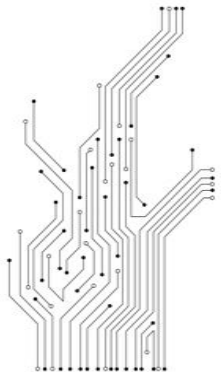
Syllabus

14 hours – A/P Gwee Bah Hwee

- Integrated Circuit Components
- Complementary metal-oxide-semiconductor (CMOS) Logic Circuits
- CMOS Flip-Flops and Memories
- Feedback Amplifier

12 hours – by another professor

- Voltage Reference and Current Sources
- Operational Amplifier Circuits
- Applications of Operational Amplifiers
- Power Supplies



Text and Reference Books

Text Book

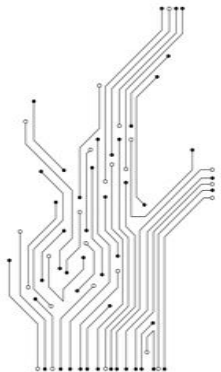
Feedback Circuit by Sedra and Smith

1. Adel S. Sedra and Kenneth C. Smith, Microelectronic Circuits, 7th Edition, Oxford University Press, 2015. (NTU Library Call no. - TK7867.S449 2015)

Reference Books

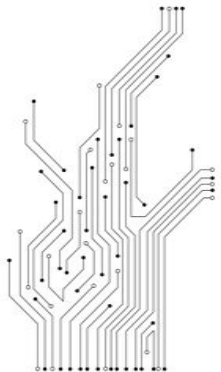
CMOS Digital IC by SM Kang

- 1 Kang Sung-Mo and Leblebici Yusuf, CMOS Digital Integrated Circuits: Analysis and Design, 4th Edition, McGraw-Hill, 2015 (TK7871.99.M44K16 2015)
- 2 Gray Paul R and Meyer Robert G, Analysis and Design of Analog Integrated Circuits, 5th Edition, John Wiley, 2010. (TK7874.G781 2010)
- 3 Franco Sergio, Design with Operational Amplifiers and Analog Integrated Circuits, 4th edition, McGraw-Hill, 2015 (TK7874.F825 2015)
- 4 Neil Weste and David Money Harris, Integrated Circuit Design, 4th edition, Pearson, 2011.



Continuous Assessment (40%) and Exam (60%)

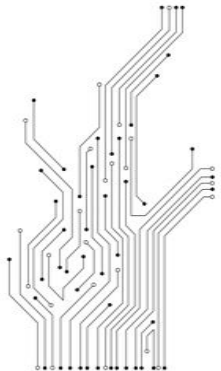
Type	Description: Topics to be covered
CA – Home Assignment (10%)	Week 4: CMOS Logic Circuits
CA – Quiz #1 (10%)	Week 7: CMOS Logic Circuits, Latches & Flip Flops, Semiconductor Memories
CA – Quiz #2 (10%)	Week 11: Power Supply Circuits and Bias Circuits
CA – Lab (10%)	Week 11 – 13: ADC and DAC Electronic Lab
Final Exam (60%)	Duration: 2 hours Format: 4 long questions



Learning Objectives



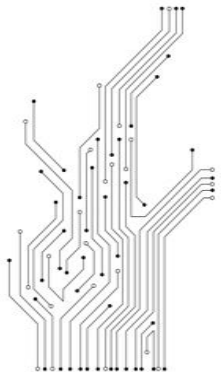
- This course encompasses analog and digital electronic circuits from a circuit and monolithic (integrated circuit) implementation point of view.
- The objective of this course is to provide Year 3 electrical and electronic undergraduates with sufficient fundamental theoretical and practical knowledge to pursue advanced topics in analog and digital integrated circuits.



Learning Objectives



- The course includes the design of elements in bipolar- and CMOS-based op amps, feedback, power supplies, linear and non-linear applications circuits with the op amp as the basic building block, and transistor circuits for realising basic digital circuits.
- This course provides sufficient basic knowledge for the undergraduate to understand the design of op amps and their applications as well as the design of digital circuits.



Good Luck

