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Introduction

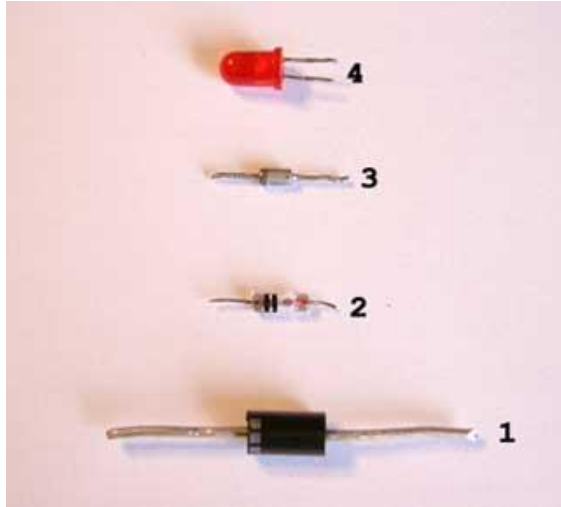
SKEU2012 - ELECTRONICS



- Dr Yeong Che Fai
- cfyeong@fke.utm.my
- Room 4-22, P19a, FKE UTM.

- Slides and updates under ***Teaching*** in <http://cfyeong.fke.utm.my/>.

Electronic Devices



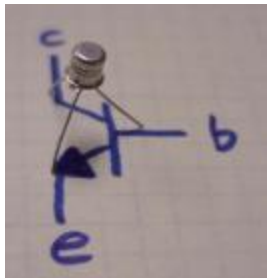
DIODE



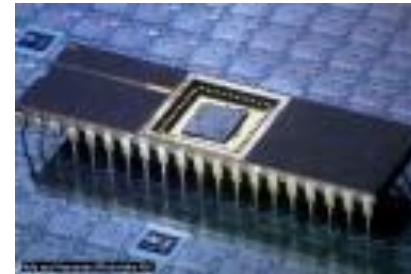
INDUCTOR



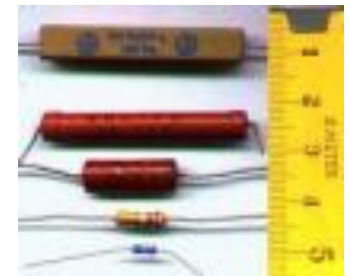
CAPACITOR



TRANSISTOR

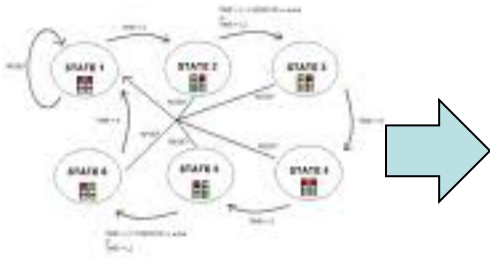


INTEGRATED CIRCUIT (IC)

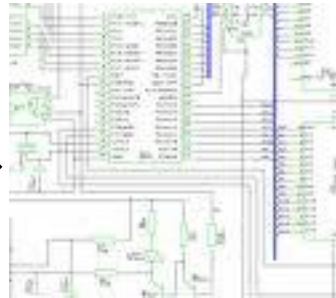


RESISTOR

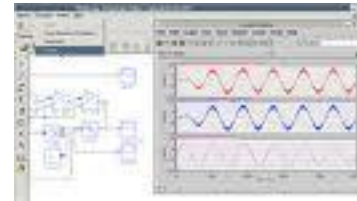
Idea- Block Diagram



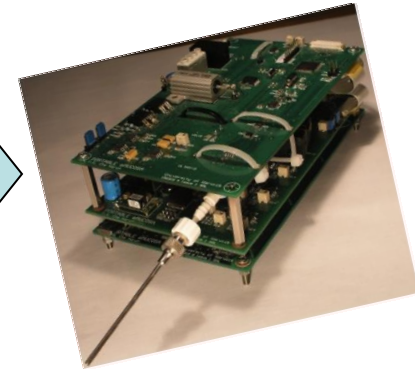
Circuit Design



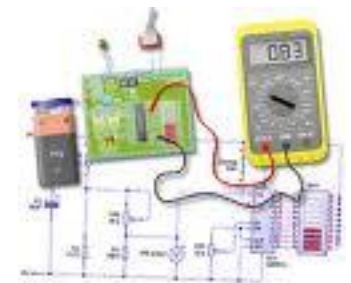
Simulation



Fabrication



- Semiconductor Structure
- Diode Fundamentals
- BJT structure and Analysis
- FET Structure and Analysis
- Thyristor, DIAN, TRIAC, and other device



Testing and Verification

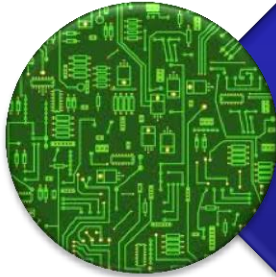


Course Contents

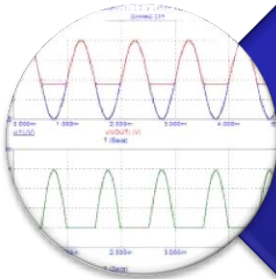
1. **Semiconductor Materials and Diodes** – structure, PN-junction, forward and reversed biased, characteristics, circuit analysis, applications of diode in rectifier circuits, zener diode.
2. **Bipolar Junction Transistor (BJT)** – structure, common-collector, common-base, and common-emitter configurations, BJT biasing, analysis of BJT as amplifier
3. **Field Effect Transistor (FET)** – JFET operations and characteristics, transfer function, DC biasing circuit, small signal AC analysis, common-source amplifier
4. **Operational Amplifier** – 741 op amp characteristics and operation, inverting and non-inverting configuration, inverting adder and subtractor, instrumentation amplifier, comparator, schmitt trigger



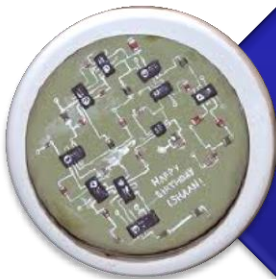
Course Outcomes



Recognize and explain the basic operations of electronic devices.



Analyze circuitry with diode, FET and/or BJT components.



Design basic biasing circuits using information from data sheet.



Class Activity

- Grouping – Groups of 5
- Presentation
- Peer Assessment
- Group Assessment
- Role Play
- Simple Circuit Construction



➤ **Recommended References:**

1. Thomas L. Floyd, Electronic Devices, 9th Edition, Prentice Hall, New Jersey, 2008.
2. Rubita Sudirman, Puspa Inayat Khalid, Siti Hawa Ruslan, Peranti Elektronik, Pearson Education, 2007
3. Puspa Inayat Khalid, Rubita Sudirman, Siti Hawa Ruslan, Modul Pengajaran Elektronik 1, Edisi ke-3, 2001
4. Neamen, Donald. A., Microelectronics - Circuit Analysis and Design, 3rd Ed., McGraw Hill, Int. Ed. 2007.
5. Robert. Paynter, Introductory Electronic Devices and Circuits, 7th Edition Prentice Hall, New Jersey, 2006.
6. Boylestad and Nashelsky, Electronic Devices and Circuit Theory, 9th Edition Prentice Hall, New Jersey, 2006.