

EEE241 Electronic Analog 1

Lecturers:

Dr. Norlaili Mohd. Noh	Part 1
Mr Zulfiqar Ali Abd. Aziz	Part 2

Text Book:

Gray, Hurst, Lewis and Meyer. Analysis and Design of Analog Integrated Circuits, Fourth Edition. Wiley, 2001.

Reference Books:

1. Microelectronic Circuits, Fifth Edition. Sedra and Smith. Oxford, 2004.
2. Electronic devices and Circuit Theory, Eighth Edition. Boylestad and Nashelsky. Prentice Hall, 2002.

COURSE DESCRIPTION

Analog circuits fundamental and analysis. The fundamental of the analog circuits is, no doubt, the transistors. This course discusses on the BJTs and MOSFETs characteristics that contribute to the performance of the analog circuits. Part 1 starts with a revision of the type of transistors, the types of single stage amplifiers and the multistage amplifiers.

The objectives of Part 1 of this course can be stated as follows:

(i) To understand the principles behind analog electronic circuits. The emphasis is on the fundamentals of the BJT and MOSFET amplifiers.

(ii) To understand the behavior of the bipolar and MOS transistors in amplifier circuits.

(iii) To learn the types of single and multistage small-signal amplifiers.

Learning Outcomes Part 1:

1. Students will be able to understand the behavior of the bipolar and MOS transistors in amplifier circuits.
2. Students will know the types of single and multiple-stage amplifier configurations.

Course Evaluation:

Part 1	1 Tests + 1 Assignment	15%
Part 2		15%
Final Exam		70%

Syllabus and Schedule Part 1

6/7/09 – 24/7/09

Week 1-3

1. Review on the Models for Integrated-Circuit Active Devices

Large-signal behavior of BJT	(2 hrs)
Small-signal models of BJT	(3 hrs)
Large-signal behavior of MOSFET	(2 hrs)
Small-signal models of the MOSFET	(1 hrs)

2. Single-transistor Amplifiers

Two-port Modeling of Amplifiers
Single-transistor amplifier stages

- CE configuration (1 hr)

27/7/09 and 31/7/09

Week 4

- CS configuration (1 hr)
- CB configuration (1 hr)
- CG configuration (1 hr)

3/8/09 and 7/8/09

Week 5

- CC configuration (1 hr)
- CD configuration (1 hr)
- CE amplifier with emitter degeneration (1 hr)

10/8/09 and 14/8/09

Week 6

CS amplifier with source degeneration (1 hr)
Lecture review (2 hrs)

16/8/09 – 23/8/09 Mid-semester break

Week 7

24/8/09

Week 8

Test 1 on active device and single-transistor amplifier
(1 hr)