

Sesi Akademik <i>Academic Session</i>	2020/2021
Semester/Penggal <i>Semester/Term</i>	1
Kod Kursus <i>Course Code</i>	KIE 4019
Tajuk Kursus <i>Course Title</i>	Rekabentuk Litar VLSI Analog <i>Analog VLSI Circuit Design</i>
Bahasa Pengantar <i>Medium of Instruction</i>	Bahasa Inggeris <i>English</i>
Rujukan Utama <i>Main Reference</i>	<ol style="list-style-type: none"> <li>1. P.E.Allen and D.R.Holberg, CMOS Analog Circuit Design, 3<sup>rd</sup> Ed, Oxford University Press, 2013.</li> <li>2. B.Razavi, Design of Analog CMOS Integrated Circuit, 2<sup>nd</sup> Ed, McGraw Hill, 2016.</li> <li>3. P.R.Gray, P.J. Hurst, S.H. Lewis and R.G. Meyer, Analysis and Design of Analog Integrated Circuits, 6<sup>th</sup> Ed, John Wiley &amp; Sons, Inc., 2016.</li> </ol>
Strategi Pembelajaran <i>Learning Strategies</i>	Kuliah dan Pembelajaran Kendiri <i>Lectures and Independent learning</i>
Masa Pembelajaran Pelajar <i>Student Learning Time</i>	Bersemuka / <i>Face to face</i> : 31 jam/ <i>hours</i> Tidak Bersemuka / <i>Non Face to face</i> : 0 jam/ <i>hour</i> Masa Persediaan Pelajar / <i>Student Preparation Time</i> : 49 jam/ <i>hours</i>
Kemahiran Boleh Pindah <i>Transferable Skills</i>	Penyelesaian Masalah, Kemahiran Menganalisa <i>Problem Solving Skills, Analytical Skills.</i>
Pensyarah / <i>Lecturer</i>	Assoc. Prof. Ir. Dr. Hari Krishnan Ramiah
Bilik / <i>Room</i>	Tingkat 2, Blok Y
Telefon/e-mel <i>Telephone/e-mail</i>	03-79675262 / hrkhari@um.edu.my
Sesi Kuliah / <i>Lecture Session:</i>	Rujuk jadual waktu kuliah
Hari/Masa / <i>Day/Time</i>	
Tempat / <i>Venue</i>	<i>Refer to the lecture timetable</i>
Sesi Tutorial/Amali: <i>Tutorial/Practical Session:</i>	Rujuk jadual waktu kuliah
Hari/Masa / <i>Day/Time</i>	<i>Refer to the lecture timetable</i>
Tempat / <i>Venue</i>	
Perincian Pemberatan Penilaian <i>Detail of Assessment Weightage</i>	Penilaian Berterusan / <i>Continuous Assessment</i> : 40%  Peperiksaan Akhir / <i>Final Examination</i> : 60%



**Jadual Pengajaran / Teaching Schedule**

Minggu Week	Topik & Aktiviti Topic & Activities	Rujukan References
1	Pengenalan dan model MOS <i>Introduction and MOS models</i>	Rujukan utama <i>main references</i>
2	Teknologi dan pembentangan CMOS <i>CMOS technologies and layouts</i>	Rujukan utama <i>main references</i>
3	Diod dan perintang aktif CMOS <i>CMOS diodes and active resistor</i>	Rujukan utama <i>main references</i>
4	Penguat CMOS peringkat sendirian <i>CMOS single stage amplifiers</i>	Rujukan utama <i>main references</i>
5	Arus cermin dasar dan rintangan keluaran tinggi <i>Basic and high output impedance current mirrors</i>	Rujukan utama <i>main references</i>
6	Penguat CMOS pasangan kebezaan dan kaskod <i>CMOS differential pair and cascode amplifiers</i>	Rujukan utama <i>main references</i>
7	Penguat arus, keluaran dan penguatan tinggi <i>CMOS current, output and high gain amplifiers</i>	Rujukan utama <i>main references</i>
8	Litar voltan dan arus kesaksamaan rujukan CMOS <i>CMOS precision voltage and current reference circuits</i>	Rujukan utama <i>main references</i>
9	Rekabentuk dan kompensasi penguatkerja CMOS <i>Design and compensation of CMOS operational amplifier</i>	Rujukan utama <i>main references</i>
10	Analisis hingar dalam penguatkerja CMOS <i>Noise analysis of CMOS operational amplifier</i>	Rujukan utama <i>main references</i>
11	Pembaikpulihan ketaksamaan dan pembentangan penguatkerja CMOS <i>Mismatch optimization and layout of CMOS operational amplifier</i>	Rujukan utama <i>main references</i>
12	Litar analog ketaklurusan- Pendarab sel Gilbert <i>Nonlinear analog circuits- Gilbert cell multiplier</i>	Rujukan utama <i>main references</i>
13	Litar analog ketaklurusan- Gelung terkunci fasa (PLL) <i>Nonlinear analog circuits-Phase locked loops (PLL)</i>	Rujukan utama <i>main references</i>
14	Teknik termaju <i>Advanced techniques</i>	Kertas Kerja Terkini <i>Journal References</i>