



Sesi Akademik <i>Academic Session</i>	2020/2021
Semester/Penggal <i>Semester/Term</i>	2
Kod Kursus <i>Course Code</i>	KIE4013
Tajuk Kursus <i>Course Title</i>	Kejuruteraan Voltan Tinggi <i>High Voltage Engineering</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. E. Kuffel, W.S. Zaengl, J. Kuffel, W. Ziomek, "High Voltage Engineering: Fundamentals", 3rd edition, Elsevier Science, 2016.</li><li>2. M.S. Naidu, V. Kamaraju, "High Voltage Engineering," 2nd editiotn, McGraw-Hill, 2015.</li><li>3. H.M. Ryan, "High Voltage Engineering and Testing," Institution of Electrical Engineers, 2013.</li></ol>
Strategi Pembelajaran <i>Learning Strategies</i>	Kuliah, dan Kerja kursus <i>Lectures and Coursework</i>
Masa Pembelajaran Pelajar <i>Student Learning Time</i>	Bersemuka / <i>Face to face</i> : 31 jam/hours Tidak Bersemuka / <i>Non Face to face</i> : 0 jam/hour Masa Persediaan Pelajar / <i>Student Preparation Time</i> : 49 jam/hours
Kemahiran Boleh Pindah <i>Transferable Skills</i>	Perisian analisis unsur terhingga, Perisian MATLAB <i>Finite Element Analysis software, MATLAB software</i>
Pensyarah / <i>Lecturer</i>	Profesor Madya Ir. Dr. Hazlee Azil Illias
Bilik / <i>Room</i>	Bilik 17, Tingkat 2, Blok Y, Fakulti Kejuruteraan / <i>Room 17, Level 2, Block Y, Faculty of Engineering</i>
Telefon/e-mel <i>Telephone/e-mail</i>	+60379674483 / h.illias@um.edu.my
Sesi Kuliah / <i>Lecture Session:</i>	Rujuk kepada myum.um.edu.my
Hari/Masa / <i>Day/Time</i>	<i>Refer to myum.um.edu.my</i>
Tempat / <i>Venue</i>	
Sesi Tutorial/Amali: <i>Tutorial/Practical Session:</i>	Tiada
Hari/Masa / <i>Day/Time</i>	<i>None</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	Penjanaaan voltan AC, DC dan denyut dan pembinaan litar voltan tinggi <i>Generation of AC, DC and impulse voltages and high voltage circuit construction</i>	Rujukan utama <i>Main references</i>
2	Bahan penebat dielektrik: Pengenalan, kehilangan dielektrik, polimer <i>Dielectric insulation materials: Introduction, dielectric loss, polymers</i>	Rujukan utama <i>Main references</i>
3	Kabel kuasa bawah tanah: Struktur, litar setara kabel XLPE <i>Underground power cables: Structure, XLPE cable equivalent circuit</i>	Rujukan utama <i>Main references</i>
4	Penebatan dalam peralatan voltan tinggi dan kawalan tegangan medan <i>Insulation in high voltage equipment and field stress control</i>	Rujukan utama <i>Main references</i>
5	Keruntuhan dalam gas: Pelepasan Townsend dan Streamer <i>Breakdown in gases: Townsend and Streamer discharges</i>	Rujukan utama <i>Main references</i>
6	Aplikasi runtuh dalam gas: Runtuhan vakum, Hukum Paschen <i>Application of breakdown in gases: Vacuum breakdown, Paschen's law</i>	Rujukan utama <i>Main references</i>
7	Penyelenggaraan minyak pengubah: Analisis gas terlarut <i>Transformer oil maintenance: Dissolved gas analysis</i>	Rujukan utama <i>Main references</i>
8	Pemutus litar dan gear suis: Jenis minyak, SF <sub>6</sub> dan vakum <i>Circuit breaker and Switchgear: Oil, SF<sub>6</sub> and vacuum type</i>	Rujukan utama <i>Main references</i>
9	Voltan pemulihan fana (TRV) untuk pemutus litar voltan tinggi AC <i>Transient recovery voltage (TRV) for AC high voltage circuit breakers</i>	Rujukan utama <i>Main references</i>
10	Pemantauan berdasarkan keadaan (CBM) bagi peralatan voltan tinggi <i>Condition based monitoring (CBM) for high voltage equipment</i>	Rujukan utama <i>Main references</i>
11	Pelepasan separa: Pengenalan, teknik pengukuran dan corak pelepasan <i>Partial discharge: Introduction, measurement techniques and discharge patterns</i>	Rujukan utama <i>Main references</i>
12	Lokasi kegagalan kabel: Kaedah eko denyut, kaedah arus denyut, kaedah pantulan arka <i>Cable fault location: pulse echo method, impulse current method, arc reflection method</i>	Rujukan utama <i>Main references</i>
13	Pengukuran kerintang tanah: Kaedah Wenner dan Schlumberger <i>Soil resistivity measurements: Wenner and Schlumberger methods</i>	Rujukan utama <i>Main references</i>
14	Sistem pembumian, ikatan dan sistem perlindungan kilat <i>Earthing system, bonding and lightning protection system</i>	Rujukan utama <i>Main references</i>