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| Sesi Akademik <i>Academic Session</i> | 2020/2021 |
| Semester/Penggal <i>Semester/Term</i> | 2 |
| Kod Kursus <i>Course Code</i> | KIE3009 |
| Tajuk Kursus <i>Course Title</i> | Penukaran Tenaga dan Penghantaran Voltan Tinggi <i>Energy Conversion and High Voltage Transmission</i> |
| Bahasa Pengantar <i>Medium of Instruction</i> | Bahasa Inggeris <i>English</i> |
| Rujukan Utama <i>Main Reference</i> | 1. S. Ray, "Electrical Power Systems: Concept, Theory and Practice," 2nd Ed., PHI Learning, 2014. 2. B.M. Weedy et. al., "Electric Power System", 5th Ed., New York: John Wiley Sons, 2012. 3. H. Saadat, "Power System Analysis", 3rd Ed., McGraw-Hill, 2011. |
| Strategi Pembelajaran <i>Learning Strategies</i> | Kuliah, Tutorial, Kerja kursus <i>Lectures, Tutorials, Coursework</i> |
| Masa Pembelajaran Pelajar <i>Student Learning Time</i> | Bersemuka / <i>Face to face</i> : 45 jam/hours Tidak Bersemuka / <i>Non Face to face</i> : 0 jam/hour Masa Persediaan Pelajar / <i>Student Preparation Time</i> : 75 jam/hours |
| Kemahiran Boleh Pindah <i>Transferable Skills</i> | Perisian PowerWorld <i>PowerWorld 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> | 0379674483 / 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> | Rujuk jadual waktu |
| Hari/Masa / <i>Day/Time</i> | <i>Refer to 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 |
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| 1 | Penjanaan tenaga elektrik melalui hidro dan angin <i>Electric power generation through hydro and wind</i> | Rujukan utama <i>Main references</i> |
| 2 | Penjanaan tenaga elektrik melalui haba, nuclear dan sel bahan api <i>Electric power generation through thermal, nuclear and fuel cell</i> | Rujukan utama <i>Main references</i> |
| 3 | Penjanaan kuasa solar: Panel photovoltaic, pengiraan kuasa, kecekapan <i>Solar power generation: Photovoltaic panel, power calculation, efficiency</i> | Rujukan utama <i>Main references</i> |
| 4 | Pengenalan kepada komponen sistem kuasa dan pencawang kuasa <i>Introduction to power system components and power substations</i> | Rujukan utama <i>Main references</i> |
| 5 | Pengiraan kuasa elektrik nyata dan reaktif, faktor kuasa dan sistem per unit <i>Calculation of real and reactive electric power, power factor and per unit system</i> | Rujukan utama <i>Main references</i> |
| 6 | Sistem per unit: Gambarajah satu talian, galangan setara per unit <i>Per unit system: One line diagram, per unit equivalent impedance</i> | Rujukan utama <i>Main references</i> |
| 7 | Kegagalan simetri: Litar setara Thevenin, matriks kemasukan bus <i>Symmetrical fault: Thevenin equivalent circuits, bus admittance matrix</i> | Rujukan utama <i>Main references</i> |
| 8 | Simulasi PowerWorld: Pengenalan, kajian kes, analisis kegagalan <i>PowerWorld simulation: Introduction, case studies, fault analysis</i> | Rujukan utama <i>Main references</i> |
| 9 | Litar pengubah: Litar setara, pengubah auto, kawalan voltan <i>Transformer circuits: Equivalent circuits, autotransformer, voltage control</i> | Rujukan utama <i>Main references</i> |
| 10 | Penjana segerak: Derivasi litar setara, penyegerakan penjana <i>Synchronous generator: Equivalent circuit derivation, generator synchronisation</i> | Rujukan utama <i>Main references</i> |
| 11 | Perlindungan sistem kuasa dan pengagihan kuasa rumah <i>Power system protection and home power distribution</i> | Rujukan utama <i>Main references</i> |
| 12 | Pengatur voltan automatik (AVR) dan Kawalan frekuensi beban (LFC) <i>Automatic voltage regulator (AVR) and Load frequency control (LFC)</i> | Rujukan utama <i>Main references</i> |
| 13 | Lebihan voltan, fenomena kilat dan penyelarasan penebat <i>Overvoltage, lightning phenomena and insulation coordination</i> | Rujukan utama <i>Main references</i> |
| 14 | Talian penghantaran Arus Terus Voltan Tinggi (HVDC) <i>High Voltage Direct Current (HVDC) transmission lines</i> | Rujukan utama <i>Main references</i> |