

Course Code	TKEE165114													
Course Name	Electromagnetic Compatibility													
Course Instructors	Harry Prabowo													
Course Type	Elective													
Course Classification	Engineering Topics													
Credit / Contact Hour per Week	3 / 150 minutes per Week													
Course Description	Students know, understand, explain, measure, analyze, synthesize and evaluate a phenomenon in science, engineering, electrical technology and electronics into one of four classes of electromagnetic compatibility phenomena: Radiated Emission (RE), Radiated Susceptibility (RS), Conducted Emission (CE), Conducted Susceptibility (CS).													
Prerequisites Courses	Vector Calculus, Physics for Electrical Engineering, Electromagnetics, Measurement and Instrumentation, Signal and System.													
<b>Covered Student Outcome</b>	<b>Fundamental and Engineering Knowledge (a)</b> <b>Modern Tools Utilization (e)</b>													
Learning Outcome	<ol style="list-style-type: none"> <li>1. Students are able to know, understand and explain phenomena in science, engineering, electrical technology and electronics into one of four classes of electromagnetic compatibility.</li> <li>2. Students are able to measure, analyze the RE, RS, CE and CS that occur in science, engineering electrical technology and electronics.</li> <li>3. Students are able to synthesize, evaluate RE, RS, CE and CS that occur in the science, engineering, electrical technology and electronics.</li> <li>4. Students are able to realize the solution of RE, RS, CE, and CS problems that occur in science, engineering, electrical technology and electronics.</li> </ol>													
Topic	<ol style="list-style-type: none"> <li>1. Introduction of EMC</li> <li>2. Prerequisites of EMC for Electronics System</li> <li>3. Signal Spectrum – the relation between time and frequency domain.</li> <li>4. Transmission line and Signal Integrity.</li> <li>5. Non-Ideal Components behaviour.</li> <li>6. CE and CS</li> <li>7. Antenna</li> <li>8. Crosstalk</li> <li>9. Shielding</li> <li>10. System design for EMC</li> </ol>													
Direct Assessment	<table border="1"> <thead> <tr> <th>Direct Assessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Homework</td> <td>LO1,LO2,LO3,LO4</td> </tr> <tr> <td>Final Project</td> <td>LO3,LO4</td> </tr> <tr> <td>Mid Exam</td> <td>LO1,LO2</td> </tr> <tr> <td>Final Exam</td> <td>LO3,LO4</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Direct Assessment Plan	Measured Learning Outcome	Homework	LO1,LO2,LO3,LO4	Final Project	LO3,LO4	Mid Exam	LO1,LO2	Final Exam	LO3,LO4		
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Homework	LO1,LO2,LO3,LO4													
Final Project	LO3,LO4													
Mid Exam	LO1,LO2													
Final Exam	LO3,LO4													
Indirect Assessment	Written test and discussion													
References	<ol style="list-style-type: none"> <li>[1] Introduction to Electromagnetic Compatibility, Clayton R Paul, Second Edition, John Wiley 2006.</li> <li>[2] Electromagnetic Compatibility Engineering, Henry Ott.</li> <li>[3] Engineering Electromagnetic Compatibility : Principles, Measurements, and Technologies, V. Prasad Kodali.</li> <li>[4] Electromagnetic Compatibility for Device Design and System Integration, Karl Heinz Gonschorek.</li> <li>[5] Electromagnetic Compatibility of Integrated Circuits : Techniques for low emission and susceptibility, Sonia Ben Dhia.</li> <li>[6] Advanced Modeling in Computational Electromagnetic Compatibility, Dragan Poljak.</li> <li>[7] Electromagnetic Compatibility in Power Systems, Francesco Lattarulo.</li> </ol>													

	[8] Automotive Electromagnetic Compatibility, Terence Rybak. [9] IEEE Tutorial of EMC [10] IEEE Standard of EMC, EMI, ESD
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