# Advanced Theory of Electromagnetic Compatibility

2 units (selection)

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**Target**〉 To help the students understand electromangetic compatibility (EMC), measurement and analysis methods related to EMC.

**Outline**〉 This course presents electromagnetic compatibility (EMC), measurement and analysis methods related to EMC.

**Style**〉 Lecture

***Keyword***〉 ***electromagnetic compatibility, frequency spectrum, antenna***

**Fundamental Lecture**〉 "**Advanced Circuit Theory**"(1.0), "**Advanced Theory of Electronic Circuits**"(1.0), "**Advanced Biological Engineering**"(1.0)

**Relational Lecture**〉 "**Erectric Power System**"(0.5), "**Advanced Theory of Electric Power Engineering**"(0.5)

**Requirement**〉 Prerequisites: Electrical Circuit Theory (Electrical Circuit Theory 1 an 2, and Exercise), Electromagnetics (Electromagnetics 1 and 2, Exercise)

**Goal**〉

**1.** To understand overview of electromagnetic compatibility.
**2.** To understand the analysis methods related to EMC.
**3.** To understand the measurement methods related to EMC.

**Schedule**〉

**1.** Introduction of Electromagnetic Compatibility (EMC).
**2.** Common EMC Units.
**3.** Power Loss in Cables.
**4.** EMC Requirements for Electronic Systems.
**5.** Fundamentals of Frequency Spectrum.
**6.** Spectra of Digital Waveforms.
**7.** Spectrum Analyzers.
**8.** Midterm Examination (Evaluation of Achievement 1) .
**9.** Explanation for the Answers to Midterm Examination.
**10.** Transmission Lines.
**11.** The Time-Domain Solution of the Transmission Lines.
**12.** Antenna.
**13.** Effects of Reflections.
**14.** Shielding.
**15.** Final Examination (Evaluation of Achievement 2 and 3) .
**16.** Explanation for the Answers to Final Examination.

**Evaluation Criteria**〉 Assignments 20%, Midterm Examination 30%, and Final Examination 50%. Totally 60% is required. Attendance and participation in class are essential.

**Textbook**〉 Clayton R. Paul, Introduction to Electromagnetic Compatibility, Wiley-Interscience

**Contents**〉 http://cms.db.tokushima-u.ac.jp/cgi-bin/toURL?EID=216784

**Student**〉 Able to be taken by only specified class(es)

**Contact**〉

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**Note**〉

◇ Language: English
◇ Self-study:Preparation 2 hours and review 2 hours for every class (2hours) .