

# ECE 7811: Electromagnetic Interference and Compatibility

## Course Description

Electromagnetic interference and compatibility, signal integrity in ICs, conducted emissions and electromagnetic radiation susceptibility, and crosstalk and shielding.

**Prior Course Number:** ECE 614

**Transcript Abbreviation:** EM Inter & Comp

**Grading Plan:** Letter Grade

**Course Deliveries:** Classroom

**Course Levels:** Graduate

**Student Ranks:** Masters, Doctoral

**Course Offerings:** Autumn

**Flex Scheduled Course:** Never

**Course Frequency:** Odd Years

**Course Length:** 14 Week

**Credits:** 3.0

**Repeatable:** No

**Time Distribution:** 3.0 hr Lec

**Expected out-of-class hours per week:** 6.0

**Graded Component:** Lecture

**Credit by Examination:** No

**Admission Condition:** No

**Off Campus:** Never

**Campus Locations:** Columbus

**Prerequisites and Co-requisites:** Prereq: 6010 (719).

**Exclusions:** Not open to students with credit for 614.

**Cross-Listings:**

**Course Rationale:** Existing course.

**The course is required for this unit's degrees, majors, and/or minors:** No

**The course is a GEC:** No

**The course is an elective (for this or other units) or is a service course for other units:** Yes

**Subject/CIP Code:** 14.1001

**Subsidy Level:** Doctoral Course

## Course Goals

Learn the EMC requirements for Electronic Systems
Learn the non-ideal behaviors of components
Learn the conducted and radiated emissions and susceptibility
Learn how to use commercial tools to analyze signal integrity for ICs
Learn how to generate eye diagrams for studying SI, crosstalk, and jitter in ICs

## Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
EMC requirements for electronic systems	2.0							
Non-ideal behaviors of components	8.0							

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Conducted and radiated emissions and susceptibility	8.0							
Crosstalk and shielding	8.0							
Using tools for signal integrity analysis	8.0							
Study eye diagrams for communication systems	8.0							

## Representative Assignments

Homeworks
Midterm
Final Project

## Grades

Aspect	Percent
Homeworks	40%
Mid-term	25%
Final Project	35%

## Representative Textbooks and Other Course Materials

Title	Author
<i>Introduction to Electromagnetic Compatibility</i>	C. R. Paul

## ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
**	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
*	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
**	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
**	i	A recognition of the need for, and an ability to engage in life-long learning.
***	j	A knowledge of contemporary issues.
***	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## Additional Notes or Comments

Updated abbreviation, prereqs, exclusions, and goals to conform to university format  
3/29/12

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