

## KNU Course Syllabus

Course Title	Fields and Waves
Course Code	Blank
Credits	3.0
Department	Blank
Semester	2017S
Course Categories	Blank
Instructor	Dr. Mahesh P. Abegaonkar
Hours	Blank
Location	Blank
Phone/E-mail	<a href="mailto:abegaonkar.mahesh@gmail.com">abegaonkar.mahesh@gmail.com</a>
Office Hours	blank
language	English

[ Syllabus ]

<b>Course Goals and Objectives</b>
<p>This is the first course of the intermediate level EM sequence in ECE curricula. It is required for both electrical engineering and computer engineering majors. It provides an introduction to EM fields and waves and their engineering applications. By the end of the course, you will be able to:</p> <ol style="list-style-type: none"> <li>1. Obtain the TEM wave-equation from the full set of Maxwell's equations, relate the solutions to radiation from time-varying current sheets</li> <li>2. Calculate the stored energy and transported power densities of TEM waves in the context of Poynting Theorem, and express monochromatic plane wave solutions using phasors and frequency-domain form Maxwell's equations</li> <li>3. Calculate the attenuation of TEM plane waves in lossy media</li> <li>4. Analyze the polarizations of plane waves (emphasis on linear and circular polarizations and handedness), design current sheet antennas to generate waves with desired polarizations</li> </ol>
<b>Textbook and other references</b>
<ol style="list-style-type: none"> <li>1. David K. Chang , Field and Wave Electromagnetics, 2nd Edition, Addison-Wesley.</li> <li>2. Handouts would be given for most of the topics</li> </ol>
<b>Course Description, Methods, and Materials</b>
Mostly lectures by the instructor
<b>Assignments, Grading Criteria, Prerequisite Subject</b>
<p>The final course grade will be determined on the following basis. However, some minor changes in the ratio may follow.</p> <p>Mid-Term Exam (20%), Final Exam (25%), Homework (30%), Class Attendance (25%).</p>

100% attendance is must.

### Notice To Students

1. Students should come to class in time.
2. Cheating is not allowed.
3. Students will have a better understanding in the lectures when they read the reading materials assigned for each class before they come to class.
4. Questions in class are more than welcome.

### Academic Support for Students with Disabilities

[ Course Lesson Plan ]

no	Course Goals and Objectives	Assignment	Text & Materials	Etc.
1	Static and quasi-static electric fields			
2	Polarization			
3	Conduction, capacitance			
4	Static and quasi-static magnetic fields			
5	Induction and inductance			
6	Dynamic fields and Maxwell's equations			
7	Dynamic fields and Maxwell's equations			
8	Mid-term exam			
9	Wave solutions of Maxwell's equations in free space and homogeneous media			
10	Wave solutions of Maxwell's equations in free space and homogeneous media			
11	Wave solutions of Maxwell's equations in free space and homogeneous media			
12	Time- and frequency-domain analysis of waves in transmission line circuits and Smith Chart			
13	Time- and frequency-domain analysis of waves in transmission line circuits and Smith Chart			
14	Time- and frequency-domain analysis of waves in transmission line circuits and Smith Chart			
15	Final Exam			

Cheating, plagiarism, and other dishonest practices will be punished as harshly as Kyungpook National University policies allow. The University specifies that cheating is grounds for dismissal.

Penalties less severe may be imposed instead. A list of possible disciplinary actions is given below. Actions by the university:

- Failure in course
- Suspension from university for a designated period
- Expulsion from university