



University of Michigan

—◆交大密西根学院◆—

UM-SJTU Joint Institute



Shanghai Jiao Tong University

Course Profile

Degree Program:

- ☒ ECE-Electrical & Computer Engineering
☐ ME -Mechanical Engineering
☐ General Courses for Both ECE & ME Degree Programs

Course Name: Electromagnetics II

Course Code: Ve330

Course Credits: 4

Course Category: ☒ Required ☐ Elective

Terms Offered:

- ☐ Fall _____ (YYYY-YYYY)
☐ Spring _____ (YYYY-YYYY)
☒ Summer 2013 _____ (YYYY-YYYY)

Course Pre/Co-requisites: Ve230

Textbook: Field and Wave Electromagnetics (2nd edition) by David K. Cheng

Supplementary books: Microwave Engineering (4th edition) by David M. Pozar; Fundamentals of Applied Electromagnetics (5th edition) by Fawwaz T. Ulaby

Instructors:

Dr. Xinen Zhu

Email: zhuxinen@sjtu.edu.cn

Tel: 3420-6733

Address: Rm. 223, North Law Building, UM-SJTU JI,

Office Hours: Monday and Wednesday 3-4 PM.

Teaching Assistants:

1. Duo Liu (刘铎) 13585566917 liuduo1117@gmail.com,
Office Hours: TBD Recitation: Friday 8-9 pm, 东上院 206.

Grading Policy:

Homework	25%
Laboratory	10%
Midterm	30%
Final	35%

Academic Integrity:

The UM-SJTU Joint Institute honor code fully applies to all the activities associated with VE330, including



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homework, lab reports, midterm and final exams. Students enrolled to VE330 should act as an honorable and trustworthy person. Any violation to the Honor Code will be reported to the UM-SJTU Joint Institute. Detailed rules for VE330 are described below.

Class rules:

- Please do not come in late and do not get up to leave until the class is dismissed.
- You are responsible for all material covered in class, whether or not it is in the book.

Homework rules:

- Homework will be assigned online at Sakai on every Friday. They are usually due one week later or specified otherwise. One day automatic grace time. Second day late penalty -25%, further later no credit.
- Students should complete the homework independently. Copy of others' homework is not allowed and a violation to the Honor Code.
- Solutions will be posted on Sakai two days after the due date.

Lab rules:

- Neither food nor drink is allowed in lab.
- Follow instructions and TAs for equipment operation.
- There will be totally 3 laboratories over the semester.
- Each team consists of three students.
- Prepare for each lab before it starts. Pre-lab report is required and will be checked and signed by TAs. Pre-lab reports count to 10% of total lab score.
- Absence will have 50% of lab scores deducted.
- One final team lab report is due two weeks after each lab.

Exam rules:

- There will be one mid-term exam and one final exam. Each lasts 100 minutes.
- Students should complete the exam independently. No talk and collaboration are allowed.



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Syllabus:

Tentative Course Schedule

Week 1	Revision of Ve230 on Maxwell's equations and plane waves; Normal and oblique incidence at a plane conducting boundary.
Week 2	Normal and oblique incidence at a plane dielectric boundary; Normal incidence at multiple dielectric interfaces.
Week 3	Transmission line equations; Field analysis of transmission lines; Terminated lossless transmission lines;
Week 4	The Smith chart; Lossy transmission lines; Transients on transmission lines
Week 5	Waveguides and Transmission lines: General solutions for TEM, TE and TM waves; Parallel plate waveguides, rectangular waveguides
Week 6	Circular waveguides; Dielectric waveguides; Cavity resonators. Midterm Exam.
Week 7	Coaxial lines and microstrip lines. Microwave network analysis: Impedance, admittance and scattering matrices. ABCD matrix; signal flow graphs.
Week 8	Discontinuity and modal analysis. Impedance matching with lumped elements. Single-stub and double stub tuning
Week 9	Quarter wave transformers; Multisection matching transformers
Week 10	Antenna basics.
Week 11	Practical antennas and antenna array.
Week 12	Microwave systems.
Week 13	Review. Final Exam.

Tentative Lab Schedule

Lab 1	Network analyzers and microwave connectors.
Lab 2	Lumped circuit elements, transmission lines and waveguides. Measurement of S-parameters. De-embedding process.
Lab 3	HFSS simulation of waveguides and antennas.

Lab Sessions: Monday and Friday 2:00-3:40 pm at the 6th, 8th and 10th week.