



University of Michigan

—◆交大密西根学院◆—

UM-SJTU Joint Institute



Shanghai Jiao Tong University

VE 434 Course Profile

Degree Program:

ECE-Electrical & Computer Engineering

Course Name: Principles of Photonics

Course Code: VE 434

Course Credits: 4

Course Category: Elective

Terms Offered:

Summer 2017

Course Pre-requisites:

VE 230 or VE334 or graduate standing

Course Co-requisites (recommended but not mandatory):

Textbook:

B.E.A. Saleh and M.C. Teich, "Fundamentals of Photonics"

Additional References:

A. Yariv, "Optical Electronics in Modern Communications"

E. Hecht, "Optics"

H.A. Haus, "Waves and Fields in Optoelectronics"

Instructor:

Tian Yang 杨天 tianyang@sjtu.edu.cn

Office hours (please kindly contact me before dropping in): Fri 2-4pm, JI Rm 422

Teaching Assistants:

Xiaodan Wang 王晓丹 wxd43@126.com

Cheng Chen 陈成 chenchengstc@sjtu.edu.cn

Office hours:

Grading Policy:

Midterm exam 30%

Open-book open-notes final exam 30%

Final paper and presentation 30%

Homework 10% (but won't be lower than your total grade)

Academic Integrity:

Homework assignments, reports, projects and take-home exams should be finished independently unless otherwise specified by the instructor. Plagiarism is strictly forbidden. Violations will be reported to the Honor Council.



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Course Description

Lightwave propagation and confinement; dielectric and semiconductor photonic devices; selected topics on applications and advanced research, e.g. optical communication, solar cells, solid state lighting, display and nanophotonics.

Tentative Syllabus

- 1 Introduction
- 2 Electromagnetism
- 3 Polarization optics
- 4 Mirrors and interferometers
- 5 Guided waves
- 6 Midterm
- 7 Fiber optics
- 8 Waveguide coupling
- 9 Optical resonators
- 10 Lasers and LEDs
- 11 Lab: fiber lasers and sensors
- 12 Photodetectors and Photovoltaics
- 13 Modulators
- 14 Selected Topics
- 15 Project presentation
- 16 Final exam